10704. *Q.* And they would remove as soon as they ascertained that the air was cut off? You would expect them to report the circumstance? *A.* Yes.
10705. *Q.* So that that danger is purely imaginary? *A.* I think so.
10706. *Q.* Where it is necessary to have very large pillars, say 100 yards square, of course cut-throughs every 30 yards would be out of the question? *A.* Yes.
10707. *Q.* And it is necessary to have large pillars in deep mines? *A.* It is.
10708. *Q.* And, as a matter of fact, all you require in such cases, the main object, is to have sufficient ventilation? *A.* That is the main object.
10709. *Q.* And is it not quite immaterial how that is secured? *A.* Immaterial.
10710. *Q.* So long as sufficient ventilation is supplied? *A.* Yes.
10711. *Q.* Now, Mr. Bruce Smith said something about the danger of using the hydrogen flame—do you know that the pressure in the cylinder is 1,500 lb. to the square inch? *A.* I believe that it is something like that.
10712. *Q.* And that is not a lamp to be used for every day use? *A.* I do not think it is.
10713. *Q.* Do you know anything about the time it takes to make a test with the hydrogen lamp? *A.* I do not.
10714. *Q.* Have you seen it used by anybody else? *A.* No.
10715. *Q.* You have already said that you think the men would be disinclined to go to the trouble of being shown the different exits from the mine? *A.* Yes, I think so.
10716. *Q.* Assuming that they were willing to be shown once; say that they were willing to be shown an exit a mile long to-day: do you think that they would be willing to be shown another to-morrow? *A.* I do not think so.
10717. *Q.* And other exits each day for five, or six, or ten days afterwards? *A.* I do not think that they would be willing to be shown.
10718. *Q.* And can you realise that it is quite possible that to show the different exits of a mine might take ten days or more in large mines? *A.* Yes.
10719. *Q.* Then, in the event of an explosion in a mine, no one can say where it has occurred? *A.* No.
10720. *Q.* And no one can say whether the course they may take will lead them into danger? *A.* They cannot be sure.
10721. *Q.* It is really a toss-up whether they go into danger or into safety? *A.* Yes.
10722. *Q.* You do not approve of gunpowder for use in any mine where gas has been seen? *A.* No; I do not approve of gunpowder.
10723. *Q.* You think some of the safety explosives should be used? *A.* Yes.
10724. *Q.* Do you know that these safety explosives are used in the colony already? *A.* Yes; I believe roburite is used at the Metropolitan.

Examination by Mr. Ritchie:—

10725. *Q.* Do I understand you to say that there is no greater risk to the miner working 100 yards ahead of a cut-through than there is to one working only 30 yards ahead? *A.* I do not think there is any greater risk.
10726. *Q.* Let me put a case like this to you: supposing a large fall took place somewhere in the mine, which sent out a large blast of air heavily charged with carbonic acid gas, disarranged the canvas, and sent this blast of air heavily charged with carbonic acid gas into the heading, 100 yards ahead of the cut-through—would the men 100 yards away have the same chance of escaping as the men 30 yards away? *A.* There would be the same danger at 30 yards of the carbonic acid gas getting into the face.
10727. *Q.* Would there be the same possible hope of the men getting away from 100 yards ahead of the cut-through as from 30 yards? *A.* They would have farther to go.
10728. *Q.* With the ventilation heavily charged with carbonic acid gas, would not a man who has to go 100 yards stand a greater chance of going down than a man who has only to go 30 yards? *A.* Yes.
10729. *Q.* Now, is not there a danger? *A.* In currents charged like that there would be.
10730. *Q.* Then you admit that there is a greater danger for the miner working 100 yards ahead of a cut-through than there is for the miner working 30 yards ahead of it? *A.* Under the circumstances that you relate.
10731. *Q.* Now, you have said that it is necessary to have larger pillars in a deep mine than in a shallow mine: have you got any formula laid down to guide you in that? *A.* I have read formulæ attached to it. The greater the depth the greater the pressure.
10732. *Q.* Would not a great deal depend on the nature of the strata immediately next the coal? *A.* No.
10733. *Q.* If you had good hard strata for some considerable thickness next the coal, it would be of no advantage over strata of a soft nature? *A.* If we had small pillars with thick covering, I do not see that the hard nature of the stone next to the coal would have much to do with it. It might bring on a creep with small pillars and thick covering.
10734. *Q.* Take it that the pillars are 30 yards, and the cut-throughs are 6 feet wide: would the nature of the strata next the coal have nothing at all to do with the question of whether the roof would remain up or not? *A.* Every cut-through weakens the pillar.
10735. *Q.* That may be quite true: but the question is this, would not the thickness of the pillars required depend very much on the nature of the strata next the coal? *A.* Well, it may depend on that slightly, yes.
10736. *Q.* Then, it does not follow that the same size of pillar would be requisite in any two mines with the same thickness of strata? *A.* They nearly all run the same.
10737. *Q.* What do you mean by that? *A.* Taking the strata generally for the South Coast District, it is pretty well all the same. There is not much difference in the various collieries.
10738. *Q.* But we are dealing with a question affecting other collieries? *A.* Which is one reason why we could not make it a hard and fast rule. All collieries are not alike.
10739. *Q.* Then, in your opinion, would 30 yards be sufficient for the South Coast strata? If you had a 30 yard pillar would that be sufficient to maintain the roof? *A.* I think the larger we make the pillars the better, on the South Coast.
10740. *Q.* The better for what? *A.* To ensure safety from creep.
10741. *Q.* Have you ever known of any creeps through the pillars being too small here? *A.* No.
10742. *Q.* You have not known of any creeps in this district through the smallness of the pillars? *A.* I have heard tell of one or two.
10743. *Q.* Where were they? *A.* South Bulli, I believe, was one; South Clifton, I believe, was another.
10744. *Q.* Have you heard of any creeps at Mount Keira? *A.* No.

10745. *Q.* Do you know that the pillars in Mount Keira have been driven so thin in years gone by that they have been driven into one another? *A.* I have heard that.
40746. *Q.* Have you found them even the half of 30 yards? *A.* I have heard that.
10747. *Q.* Not 5 yards, in many places; and yet you have no creeps there? *A.* When the covering was very thin?
10748. *Q.* Do you know the thickness of the covering from the tunnel mouth at Mount Keira? *A.* It might be 100 feet at the tunnel mouth.
10749. *Q.* And what is it now where they are working? *A.* From 400 to 600 feet, I suppose.
10750. *Q.* How long have you had these pillars going in the way you have mentioned here, about 60 yards? *A.* For a number of years, in some cases.
10751. *Q.* Have you had them going for ten years? *A.* I believe we have had some going for ten years.
10752. *Q.* I suppose you know that you could not have them going for ten years for that distance? You know that under the old Act they could not run over 35 yards? *A.* We have pillars that were driven, under the old Act, there which are 40 yards thick, at any rate.
10753. *Q.* But you have not had them 40 yards so far back? *A.* Without cut-throughs?
10754. *Q.* Without cut-throughs? *A.* I could not say.
10755. *Q.* You know that the Act, prior to 1896, would not permit it? *A.* Yes.
10756. *Q.* Do you not know that prior to the passing of that Act you had no real pillars at all? *A.* We had some very large pillars.
10757. *Q.* You do not think there were any over 35 yards? *A.* I could not say for certain.
10758. *Q.* Do you know that at that time they were breaking into one another? *A.* I do not know.
10759. *Q.* What district do you examine? *A.* The Old Straight.
10760. *Q.* Do you examine for the men in the morning? *A.* Yes.
10761. *Q.* How many places have you got to examine? *A.* About thirty-two.
10762. *Q.* And do you know approximately what area these thirty-two places cover? *A.* I could not say.
10763. *Q.* Would they be half a mile apart? Would the two extremes of the places be half a mile apart? *A.* Yes, something like that.
10764. *Q.* And when do you begin your examination in the morning? *A.* Four o'clock. I leave the tunnel mouth at 4.
10765. *Q.* You examine these thirty-two places? Do you examine the roadways also? *A.* Yes.
10766. *Q.* You examine all the ventilating roadways? *A.* Yes.
10767. *Q.* And what time do you get done? *A.* About ten minutes to 7.
10768. *Q.* And where have you got to be at that time? *A.* At the station.
10769. *Q.* How far is that from the tunnel mouth? *A.* It might be about a mile.
10770. *Q.* And what method do you adopt in your examination? *A.* I examine each place for any gases, on the bottom. I also examine at the highest point for fire-damp; and two or three examinations along the face
10771. *Q.* Do you do that in every place? *A.* In every place.
10772. *Q.* Do you mean to tell us you do that in thirty-two places from 4 o'clock in the morning till ten minutes to 7? *A.* I do.
10773. *Q.* And you examine the roadways? *A.* Yes.
10774. *Q.* About what distance do you travel now, in those thirty-two places? How many miles? *A.* I could not say.
10775. *Q.* Do you take any part in examining the waste workings? *A.* Yes.
10776. *Q.* How often do you do that? *A.* Once a week.
10777. *Q.* Do you do it by yourself? *A.* Yes. I have done it in company with the under-managers.
10778. *Q.* And do your duties in examining the waste workings take you all over the mine? *A.* No; only those in my district.
10779. *Q.* And what method do you adopt in examining waste workings? *A.* I go into all places that I can get into. I go up on the falls.
10780. *Q.* Do you go in as far as you can get in? *A.* Yes.
10781. *Q.* And this is done regularly every week? *A.* Yes.
10782. *Q.* I suppose you have got reports of these examinations? *A.* Yes.
10783. *Q.* Do you write your report on the state of the working places and the ventilation every morning before the men are allowed to go in? *A.* Yes.
10784. *Q.* Now, in connection with the deputies and shot-firers, I think you said, in answer to Mr. Robertson, that the deputies really had the lives of the whole of the men in their hands? *A.* Yes; they have practically got the lives of the men in their hands.
10785. *Q.* Now, in view of that very great responsibility, do you not think it absolutely necessary that they should have some certificate showing their fitness for the positions which they have been appointed to? *A.* I believe it is possible for the practical man to be better than the man who can pass an examination and has the education.
10786. *Q.* Perhaps: we will not dispute that at all: but do you not think that it is necessary that he should have some certificate, given by a competent authority, to show that that is so? *A.* It is necessary that he should have some certificate of some examination; but I should say a certificate by a manager would be sufficient.
10787. *Q.* But do you not think that the judgment of three examiners would give more confidence than the judgment of one? *A.* Yes.
10788. *Q.* And would it not give greater security to have the judgment of three persons than of one, who might be liable to misjudge? *A.* I do not think a manager would send a man who was incompetent into that position.
10789. *Q.* But I think you have said already that a person who did not know anything at all about gas was incompetent? *A.* Yes.
10790. *Q.* And this person was a deputy? *A.* I do not know anything at all about a deputy being incompetent.
10791. *Q.* But we have it in evidence that you said that a person who did not know anything at all about gas was incompetent; and this person who did not know anything at all about gas was a deputy.
10792. *Mr. Bruce Smith.*] I think he said he did not know anything about the composition of gas.
10793. *Mr. Ritchie.*] I will not press the matter in that way.

10794. *Q.* Do you not think it is absolutely necessary that the person, or any person, who is going to be appointed as an examining deputy, should be practically tested, if not tested in a theoretical way? *A.* I think so.
10795. *Q.* As a matter of fact, he should demonstrate his fitness for the position? *A.* I think so.
10796. *Q.* Well, is that practice adopted in appointing deputies now? *A.* By the Managers, yes.
10797. *Q.* How do you know that? *A.* That is the practice at Mount Keira.
10798. *Q.* Take your own case: what examination did the Manager put you through? *A.* The first time, I was appointed was by the late Mr. MacCabe; and he asked me several questions concerning the position.
10799. *Q.* Of course you had a certificate then? *A.* Yes.
10800. *Q.* Well, of course, that in itself would probably be taken as sufficient by any ordinary manager? *A.* Yes.
10801. *Q.* But you have other deputies at Mount Keira who have not got certificates? *A.* Yes.
10802. *Q.* Do you know of any test that the Manager put them to? *A.* I believe that the late Mr. MacCabe put my brother through a test.
10803. *Q.* What test did he put him through? *A.* I could not say.
10804. *Q.* And, after all, do you not think, considering the serious responsibility in connection with the position of deputy, which you appear to have realised, that it would be a greater security to have a certificate by three competent persons, at least, certifying to a man's fitness, instead of one? *A.* It may give the men greater security.
10805. *Q.* Now, do you not think that it is absolutely necessary that the greatest measure of security possible should he had that is consistent with a fair examination, in order to ensure the safety of the workmen? *A.* Oh, yes.
10806. *Q.* You realise, of course, the great responsibility these men, the deputies have? *A.* Yes.
10807. *Mr. Bruce Smith.*] I have found that answer of Livingstone's, the deputy referred to by Mr. Ritchie as having said that he had no knowledge of gas. He says that all the knowledge he has is a practical knowledge of coal-getting, and a practical knowledge of looking for gas, which does not involve a knowledge of chemistry. That is a sort of summary by His Honor of what the witness had said.
10808. *Mr. Ritchie.*] I believe that that is generally what the witnesses have said who have expressed their ignorance of gas and their ignorance of its properties; but it has only been put in that way by them when the question has been put to them in that way. Some of them have openly said that they had no knowledge of gas; and it was only when the question was put to them in that way that they put it in that qualified manner.
10809. *Mr. Bruce Smith.*] Mr. Lysaght said that a deputy had been appointed who had no knowledge of gas; and then His Honor said: "He says that all the knowledge he has is a practical knowledge of coal-getting, and a practical knowledge of looking for gas, which does not involve a knowledge of chemistry."
10810. *Mr. Ritchie.*] Yes; I know they have made that qualification when it has been put in that way.
10811. *Q.* Now, do you think that they should be able to demonstrate their practical knowledge of gas? *A.* Yes.
10812. *Q.* And that they should be certified to as having a practical knowledge of gas? *A.* Yes.

Further examination by Mr. Robertson:—

10813. *Q.* With reference to this hypothetical case stated by Mr. Ritchie, of a fall driving out carbonic acid gas upon the men, and endangering men 70 yards ahead of a cut-through, I suppose you know of the Long-wall system? You know that that is the most approved system of coal-mining? *A.* Yes.
10314. *Q.* And in Long-wall you may have 500 or 1,000 yards of face in a long split? *A.* Yes.
10815. *Q.* And the same thing might happen there, and put, not two men, but twenty, in danger, or more? *A.* Yes.
10816. *Q.* Now, I understood from an answer you gave to Mr. Ritchie, that you believed that the old Act did not permit cut-throughs to be driven more than 30 yards apart? *A.* That I said so?
10817. *Q.* Yes? *A.* No. That was not my meaning, at all events.
10818. *Q.* I think Mr. Ritchie suggested that? *A.* Yes; he asked me some question relating to the old Act.
10819. *Q.* That the old Act stipulated for cut-throughs to be 35 yards apart? *A.* Yes.
10820. *Q.* As a matter of fact, the old Act permitted cut-throughs to be driven any distance apart under a certain condition? *A.* So far as I know, it did.
10821. *Q.* That is so, if bratticed up? *A.* Yes.
10822. *Q.* Now, in answer to Mr. Ritchie, you modified your opinion as to the necessity for deputies and shot-firers passing an examination? *A.* Yes.
10823. *Q.* You thought it would give more confidence? *A.* Yes; it would give more confidence to the men if the men knew that the deputies had passed an examination; but it would depend upon whom the examination would be by.
10824. *Q.* Now, assuming that the board of examiners would be the same gentlemen as now act for the examination of managers and under-managers—you have already said that the qualities necessary in a deputy or shot-firer are personal qualities, and a practical knowledge—can you tell me how such a board would ascertain a candidate's practical knowledge in a room? *A.* It would be very difficult.
10825. *Q.* Is it possible, unless they have had the opportunity of watching the man, his methods, and his work, over some long period? *A.* They could not do it very well.
10826. *Q.* It would practically only be his book-knowledge that they could ascertain? *A.* Yes.
10827. *Q.* Do you, therefore, think that their certificate would give more confidence than the testimonial of a manager who knows his men, and selects them because of their ability and experience? *A.* No; I do not think it would. A manager who has watched a man's practical work ought to know better how he is qualified.
10828. *Q.* Supposing you are a Manager of a mine: which would you rather have—a certificate or testimonial from another manager as to a deputy's or shot-firer's qualifications; or the certificate of such a board? *A.* I would sooner have the man as a practical man under me.
10829. *Q.* Whose certificate would you rather have? *A.* The manager's or the board's?
10830. *Q.* Yes? *A.* I would take the manager's certificate.

[*Witness left.*]

THOMAS

THOMAS MUIR was sworn, and examined as under:—

Examination-in-chief by Mr. Curtiss:—

10831. *Q.* What is your name? *A.* Thomas Muir.
10832. *Q.* Where are you working? *A.* Mount Kembla.
10833. *Q.* How long have you been there? *A.* These last fifteen years.
10834. *Q.* What are you? *A.* A miner.
10835. *Q.* Do you remember the day of the disaster at Mount Kembla? *A.* I do: quite well. I should remember it too. I was in it.
10836. *Q.* Where were you working on that occasion? *A.* In the shaft district.
10837. *Q.* What part were you working in? Any particular part of the shaft district? *A.* I was in No. 11 bord, at the left-hand of the shaft district.
10838. *Mr. Ritchie.*] *Q.* Is that where you were working before the disaster? *A.* When it happened. My cavil was in the 2nd Right; but I was working down there in No. 11. I was working in the pillar.
10839. *Mr. Curtiss.*] *Q.* Can do describe what occurred? *A.* That would be very hard to do, in the position I was in—to describe the explosion.
10840. *Q.* Did you notice anything? *A.* The only thing I noticed was about half-past 1—there was a dulness in my ears. I was working with the pick at the face; and I felt a dulness coming on me in the head. I worked from them until a quarter to 3; and I went out then as the smoke was coming rolling in.
10841. *Q.* Was it smoke? *A.* Smoke and smell. My nephew was there with me; and I said to him "It is time we were getting out of this: this is something we have never seen before."
10842. *Q.* What is your nephew's name? *A.* James Muir.
10843. *Q.* Then, did you get out? *A.* Yes; I got out. Of course I got out; you see me here, do you not?
10844. *Mr. Bruce Smith.*] *Q.* You yourself, or your nephew, which? *A.* Both of us.
10845. *Mr. Curtiss.*] *Q.* Do you know gas when you see it in the mine? *A.* No; I have never seen gas.
10846. *Q.* You have never seen gas? *A.* Unless after we had fired a shot. I have seen it there: walking up with a light, it would light up before you got near the face. It would catch about this far off [*indicating a distance of about a foot*]. I do not know whether you call that gas: I have seen that often enough.
10847. *Q.* You have seen that after firing a shot? *A.* Yes.
10848. And you cannot say whether it was gas, that is fire-damp, or powder gas? *A.* No; I am not learned enough. But I have seen that often in Mount Kembla.
10849. *Q.* Where you were working, did you ever see any signs of gas? *A.* No.
10850. *Q.* Did you ever work at the 4th Right pillars? *A.* Yes.
10851. *Q.* When was that? *A.* Just before the explosion.
10852. *Q.* How long before? *A.* Between three and four weeks. I could not be certain to a day or a date.
10853. *Q.* Did you see any gas there, or black damp? *A.* I have seen plenty of black-damp. Well; I do not know whether it was black-damp; but my lamp would not burn, and I had to hang it up in the fork: bnt when we finished the last pillar the light burned nicely, brightly.
10854. *Q.* Have you worked in other parts of the mine? *A.* Yes; I have worked in nearly all parts of the mine.
10855. *Q.* And you never came across gas, or anything that looked like gas, before this explosion? *A.* No, not from the face of the coal, like. I have seen it there; but I do not know what you call it; I suppose it is gas.
10856. *Q.* Can you describe the appearance of this flame? How it appeared after the shot was fired? *A.* Well, in certain cases, I just walked up to see how the shot had done its work—of course you like to see how it does its work, whether it brings the coal down or not—and I just went up with the naked light on my head; and the thing flared just as I went up to look at it.
10857. *Q.* Have you seen any falls of roof in Mount Kembla? *A.* Yes.
10858. *Q.* Do they throw up dust? *A.* They throw up gas. I think that is where the gas came from—that No. 1 fault.
10859. *Q.* Where is that? Is it near the waste? *A.* No.
10860. *Mr. Robertson.*] I think he thinks you said a fault.
10861. *Mr. Curtiss.*] I said a fall.
10862. *Witness.*] I thought you said a fault. I meant a fault.
10863. *Mr. Curtiss.*] *Q.* Is any dust thrown down in these falls? *A.* Yes.
10864. *Q.* What colour is it? *A.* White. Of course, a fall of stone always throws a white dust out.
10865. *Q.* Did you take out any of the men who were injured in the disaster? *A.* Yes.
10866. *Q.* Who? *A.* I took one out.
10867. *Q.* Do you know who he was? *A.* Tommy Tost.
10868. *Q.* Did you see any signs of burning or singeing on him? *A.* No; I did not notice. He was brought out by the men who were in there before me, and was laid in a certain place: and when I went in we found him there. We had lights; but we could not see anything with these safety-lamps in Mount Kembla: we could not see where we were going, or anything. I had to take him out: and I had a brother very near dying at the same time; and I could not see anything with those lights. But, from what I could hear, there were a terrible lot of them burnt—Aitken, and a whole lot. They were just near where Aitken was, in the 4th Left.
10869. *Q.* But you did not see those yourself? You cannot speak about them of your own knowledge? *A.* No.
10870. *Q.* Did you ever work with a man named Mick Quinn? *A.* Michael Quinn, yes.
10871. *Q.* Where were you working with him? *A.* I was working pretty well all over the pit with him—in the shaft and all over, for about seven cavils.
10872. *Q.* Did you ever see him light blowers of gas? *A.* No.
10873. *Q.* Did he ever tell you he had done so? *A.* Not then; but he has told me that he had seen them: but that was some time when he had been having a drink or two.
10874. *Q.* On the day of the disaster did you hear any noise? *A.* I heard nothing—only this deafness in the ears, you know; it simply struck me dumb (deaf?) somewhat.
10875. *Q.* As a matter of fact, you could not distinguish things? You were bewildered? *A.* Yes.

Examination by Mr. Bruce Smith :—

10876. *Q.* You live at Kembla? *A.* Yes.
10877. *Q.* When did you come from Kembla, to-day? *A.* I came yesterday morning.
10878. *Q.* Then you have been about Wollongong all yesterday and all to-day? *A.* Yes.
10879. *Q.* Where did you stay last night? *A.* I stayed at the "Station Hotel."
10880. *Q.* And you have been waiting about this morning, have not you? *A.* Yes.
10881. *Q.* Are you well to-day? *A.* Oh, pretty well, as far as that goes. I would like another whisky if I could get it.
10882. *Q.* Where did you have breakfast? *A.* At the "Railway Hotel."
10883. *Q.* Early? *A.* About 9 o'clock, I suppose.
10884. *Q.* Well, you are not in good working order to-day, are you? *A.* Pretty well.
10885. *Q.* Could you do a good day's work to-day? *A.* Yes; I feel fit enough.
10886. *Q.* Now, I am just going to ask you some questions: how long have you been a working miner? *A.* About twenty years.
10887. *Q.* And you have never occupied any position except as a miner getting coal? *A.* No.
10888. *Q.* I think you said you have often seen a blaze after a shot? *A.* I did not say after a shot. I have seen it.
10889. *Q.* When you have got in? *A.* I did not see it often.
10890. *Q.* How often have you seen it? *A.* I have seen it once.
10891. *Q.* Have you seen it more than once? *A.* I might have.
10892. *Q.* And how long after a shot is fired do you go in? *A.* Very quickly: as soon as it goes off you go in, you generally rush in to see it. A working miner, especially, is always in a hurry.
10893. *Q.* The shot is all over, and everything cleared away when you go in? *A.* No; certainly not. There is something left there.
10894. *Q.* What is that? *A.* What lights, the gas, of course. How does the naked light light anything? There must be something there.
10895. *Q.* Just tell the Court what happens when you go in? Or what has happened? *A.* Sometimes we have the light in our hands, and sometimes on our heads. You go in to look at it, and the first thing you get is a blaze and you fall back.
10896. *Q.* And perhaps it singes your hair? *A.* Yes; and your face, too, perhaps.
10897. *Q.* And you have had that happen in Mount Kembla? *A.* Yes.
10898. *Q.* How long ago? *A.* About fifteen months ago.
10899. *Q.* Did you report that to anybody? *A.* Yes.
10900. *Q.* To whom? *A.* It is not worth talking about. To Nelson; he is dead now.
10901. *Q.* Did you ever find out whether he reported it in a book? *A.* No.
10902. *Q.* You never knew anything about it? *A.* No.
10903. *Q.* Now, it has occured to you more than once? *A.* Yes.
10904. *Q.* Several times? *A.* Yes.
10905. *Q.* Did you report it several times? *A.* Certainly.
10906. *Q.* Have you ever known gas, or anything of that kind, at all events, whatever you may call it, to appear on other occasions than after you fired a shot? *A.* No; I have never seen anything.
10907. *Q.* Have you ever seen anything in the roads, or during your work? *A.* No.
10908. *Q.* Or when coal fell? *A.* No.
10909. *Q.* Do you know of other men finding it? *A.* Yes; I have heard of others.
10910. *Q.* You have often heard of it? *A.* Yes, of others seeing gas in Kembla.
10911. *Q.* Have you ever heard any of the other men inform deputies of having found gas? *A.* Yes; I believe I have.
10912. *Q.* Which deputies? *A.* I could not be sure; so it is best to hold my tongue.
10913. *Q.* Could you tell me now the way you came out of that mine after you felt that dulness in your ears? *A.* Yes.
10914. *Q.* Which way did you come? *A.* I came out the main tunnel.
10915. *Q.* Straight down to the main entrance to the mine? *A.* Yes.
10916. *Q.* Then how did you get over to the No. 1 District? *A.* I never went near the No. 1.
10917. *Q.* You did not go in again that day? *A.* I went in that night.
10918. *Q.* Then, I take it, that, as soon as you could after you noticed this dulness in your ears, you got into the shaft tunnel and came straight out of the mine? *A.* When?
10919. *Q.* After you felt this dulness, and after this smoke came, you and your nephew got into the main tunnel and came straight out? *A.* Yes; straight out of the main tunnel.
10920. *Q.* You did not rescue anybody that day? *A.* I never tried to, because we could not.
10921. *Q.* You had no difficulty in coming straight out? *A.* Yes, we had.
10922. *Q.* What difficulty? *A.* When we came down from the shaft into what we call the No. 4.
10923. Can you show me that No. 4 on this plan? *A.* I suppose I could. I am not well up in this sort of thing.
10924. *Q.* There is your place, and here is the No. 1 main shaft tunnel. Would it take long to get into the shaft district? *A.* Pretty long.
10925. *Q.* How long? *A.* About an hour.
10926. *Q.* To get into the shaft district? *A.* To get into our working place.
10927. *Q.* But how long did it take you to get into the main travelling road? *A.* We did not get into the main travelling road.
10928. *Q.* Where did you get? *A.* Into the main road.
10929. *Q.* How long did it take you to get into the main road? *A.* About an hour.
10930. *Q.* I did not ask you that. How long did it take you to get from your working place into the main road? *A.* About four or five minutes.
10931. *Q.* Then you came straight out? *A.* Yes.
10932. *Q.* Then, what did you meet? *A.* I had my nephew on my back all the time. As soon as I went out into the main tunnel I picked up Peter Muir's boy, and I put him on my shoulder and carried him out; and I was staggering, and he fell when I fell. Of course, I had a hard time to get out.

10933. *Q.* And you met nothing else on the way? *A.* When I got out to what we call old No. 4, where it dips, like.
10934. *Q.* That is No. 4 Right off the shaft? *A.* That is the worst time I had, going into there.
10935. *Q.* Why? *A.* Because I felt worse there than anywhere else. I felt giddier, like.
10936. *Q.* Then you got out that night and got home? *A.* Yes.
10937. *Q.* And the next day you went in again? *A.* Yes, that night again.
10938. *Q.* How did you go in? *A.* On my feet, of course.
10939. *Q.* I did not suppose you went in in a carriage and pair. Which way did you go in? *A.* On the travelling road.
10940. *Q.* Which travelling road? *A.* The only travelling road in Mount Kembla.
10941. *Q.* No. 1? *A.* There is only one travelling road in Mount Kembla.
10942. *Q.* Do you know the shaft district? *A.* I think so.
10943. *Q.* Do you know the No. 1 Right? *A.* Yes.
10944. *Q.* Is not there a travelling road in No. 1 Right? *A.* Yes; but you must always start at the one place.
10945. *Q.* Did you turn off into No. 1 Right, or go up the shaft district? *A.* I went into No. 1.
10946. *Q.* Can you show me which way you went? *A.* No.
10947. *Q.* You are not a scholar? *A.* I am scholar enough.
10948. *Q.* But you are not scholar enough for that? *A.* No.
10949. *Q.* Which way did you go? *A.* Into No. 1 Right. I was silly then.
10950. *Q.* You were silly then? *A.* Yes, and I am silly now.
10951. *Q.* Were you as silly then as you are now? *A.* I do not know.

Cross-examination by Mr. Lysaght:—

10952. *Q.* How long were you with Mr. Rogers yesterday? *A.* I was not working at all.
10953. *Q.* How long were you with Mr. Rogers at all round here? *A.* I was not with him at all.
10954. *Q.* Last night? *A.* Yes, last night.
10955. *Q.* Last night you were? *A.* I was not.
10956. *Q.* Nor any time yesterday? *A.* No.
10957. *Q.* Did not you see Mr. Rogers in Wollongong yesterday? *A.* I saw him here in the Court.
10958. *Q.* Did not you speak to him yesterday? *A.* Well, I spoke to him; but nothing about this.
10959. *Q.* Who else is staying at this hotel with you? *A.* I could not tell you.
10960. *Q.* Are not there some other lads from Kembla? *A.* No.
10961. *Q.* Had you a conversation with Mr. Rogers about the evidence you were to give? *A.* No.
10962. *Q.* Did not you give a statement? *A.* Not to Mr. Rogers.
10963. *Q.* To whom did you give it? *A.* No one.
10964. *Q.* Do you mean to say that you have not given any statement at all? *A.* I do mean to say that.
10965. *Q.* Were not you asked questions, before you came here, about what you have been asked this morning? *A.* No.
10966. *Q.* Do you know Mr. Wade? *A.* I could not tell whether I have seen him or not. He might be here for all I know.
10967. *Q.* Do you mean to say that nobody has asked you any questions concerning the disaster until you came in here?
10968. *Mr. Bruce Smith.*] I tell Mr. Lysaght that I have a proof of his evidence taken by Mr. Wade.
10969. *Mr. Lysaght.*] *Q.* Did not you sign a statement? *A.* No.
10970. *Q.* Did not you let a statement be taken down in writing? *A.* Not to Mr. Wade.
10971. *Q.* Well, to any person? *A.* Well, many a thousand times, I suppose.
10972. *Q.* I want the last one? *A.* Well, I do not know who he is.
10973. *Q.* How long ago was it? *A.* I do not know. No one takes any statement; I always talk the sound truth.
10974. *Q.* Yes, I know; but how long ago was it since you gave this statement? *A.* I did not give any statement; I do not think I did. I would like to get whoever is guilty found guilty, and get them punished for it—whoever is in fault. I have a brother killed. You may convict me, and give me fourteen days' cells; I do not care what you do. I always like to tell the truth.

Examination by Mr. Robertson:—

10975. *Q.* I want to know was there any smoke after the shot when something went off, which you thought was gas? *A.* Yes.
10976. *Q.* Was there smoke? *A.* Yes.
10977. *Q.* A lot of smoke? *A.* Yes; it came in there in volumes, just where my nephew and I were working. He was boring a hole on the left-hand side of the place, and splitting the pillar; and I was looking at his light; and his light looked as red as anything.
10978. *Q.* You went into your place after you fired a shot, and something went off? You know you told us that it lit at your light? *A.* That was not there at all; that was in No. 1.
10979. *Q.* Never mind where it was. You went into your place after a shot had been fired, and your light on your head lit something, and you thought it was gas? *A.* Yes. Well, I did not say I thought it was gas.
10980. *Q.* Never mind what it was. Was there smoke in your place then? *A.* Yes.
10981. *Q.* Had the shot done its work? *A.* The shot was broken, and it did not come.
10982. *Q.* The shot had not done its work properly? *A.* I just went to have a look at it to see what it had done, and it blazed and went right by us.
10983. *Q.* But the shot had not done its work? *A.* No. It had done its work; only it just happened where the shot was fired, like. Of course, as you say, it had not done its work.

[*Witness retired.*]

Mr. THOMAS JOHNSON was sworn, and examined as under :—

Examined by Mr. Bruce Smith :—

10984. *Mr. Bruce Smith.*] I will first examine the witness on behalf of Mr. Wade; and I will then afterwards put any questions to him which I may consider necessary from the departmental point of view.
10985. *Q.* What is your name? *A.* Thomas Johnson.
10986. *Q.* What are you? *A.* A miner.
10987. *Q.* Engaged at Mount Kembla? *A.* Yes.
10988. *Q.* How long have you been a miner? *A.* I have been something over seventeen years.
10989. *Q.* And how long have you been working in Mount Kembla? *A.* I have been working in Mount Kembla all that time.
10990. *Q.* Were you in Mount Kembla at the time of the disaster? *A.* Yes.
10991. *Q.* Where were you working in that quarter? *A.* I was working in the 5th Right.
10992. *Q.* The 5th Right or the 4th? *A.* The 5th Right, at the time of the disaster.
10993. *Q.* Do you remember what part? *A.* No. 91.
10994. *Q.* Your mate was Livingstone? *A.* Yes.
10995. *Q.* What was the first indication you had that anything had taken place? *A.* Of the disaster?
10996. *Q.* Yes. *A.* Well, the first was a sort of whizzing in the ears, a humming noise.
10997. *Q.* That is the first you experienced? *A.* Yes.
10998. *Q.* Did you say anything to your mate? *A.* My mate was not working that day.
10999. *Q.* Then you were alone? *A.* Yes.
11000. *Q.* What were you doing? *A.* I was filling my skip.
11001. *Q.* Did you see anything at that time? *A.* No sir; I saw nothing.
11002. *Q.* No difference in the air? *A.* No.
11003. *Q.* No smoke? *A.* No smoke, or anything.
11004. *Q.* Just these signs in the ear? *A.* In the ear.
11005. *Q.* Was there any movement in the air, more than usual? *A.* No; I never took notice when I heard it.
11006. *Q.* What did you do? *A.* I stopped; and then I ran down to the turn, after this heavy fall.
11007. *Q.* After which heavy fall? You have not told us of that? Did you hear anything? *A.* Oh yes; I heard a very heavy fall.
11008. *Q.* Before you felt this whizzing? *A.* No; I got the whizzing in the ears first.
11009. *Q.* And then you heard the noise afterwards? *A.* Yes; the noise followed.
11010. *His Honor.*] *Q.* When you say "a heavy fall," you mean a noise? *A.* A noise. I did not know whether it was a fall, or what it was at the time.
11011. *Mr. Bruce Smith.*] *Q.* About how long after you first felt this whizzing in your ears did you hear the fall? *A.* I believe it may have been a minute, as near as I can tell you; but it came very quickly after the whizzing.
. *Q.* Did you know then what that noise was, or did you find out afterwards? *A.* Well, I found out afterwards.
11012. *Q.* Then I may take it that at the time you simply felt the whizzing in your ears; and a minute afterwards you heard this great noise, but you did not know at the time what it was? *A.* No; not at the time.
11013. *Q.* What did you do? *A.* I ran down, and got into the dark——[*Meaning that his light went out*].
11014. *Q.* You ran down until you came to the turn? *A.* Yes.
11015. *Q.* Do you mean the cut-through leading into McKinley and Laidlaw's bord? *A.* No, to the left of that.
11016. *Q.* You went to the left of that down the cut-throughs? *A.* Yes, through the road the skips go out.
11017. *Q.* You went right down the bord until you came to the rope road? *A.* No. We went straight up the back heading. When I came down my bord I turned to the left through the first cut-through.
11018. *Q.* Did you go against the air or with it? *A.* We went with the air coming to our faces.
11019. *Q.* Then you went to the left? *A.* Yes.
11020 *Q.* Then how far did you go before you went down to the 5th Right? *A.* We were working in the 5th Right——[*Meaning in the 5th Right section*].
11021. *Q.* Your bord ran up a considerable distance from the 5th Right rope road.? *A.* We ran up about 100 yards until we came on to the rope road.
11022. *Q.* Did you get on to the rope road at once, or did you go through some cut-throughs first? *A.* We went along, I believe it was, the back heading.
11023. (Witness then explained to Mr. Bruce Smith on the map that he went round the first cut-through on the left on the way out of the mine, passed a number of bords on the left-hand side, then went down to the 5th Right rope road, and along the cross-cut heading rope road to the daylight heading.)
11024. *Mr. Bruce Smith.*] *Q.* Did you meet anybody going along past the other bords? *A.* I met Charlie Smith.
11025. *Q.* Which way was Charlie Smith going? *A.* I could not say whether it was Charlie Smith who came to my bord and called me, and then I ran; or whether it was Jack Laidlaw.
11026. *Q.* Before you went out of your bord, Charlie Smith or Jack Laidlaw came to your bord? *A.* They shouted out to me; I could not see them.
11027. *Q.* What did they shout out? *A.* They told me to come out at once.
11028. *Mr. Robertson.*] *Q.* Where did you meet Smith? *A.* I met him afterwards; but it would be about 50 yards or more after I got through the cut-through out of my bord.
11029. *Mr. Bruce Smith.*] *Q.* Did you meet them, or were they going the opposite way? *A.* They were stopped then, for I told them the way to go.
11030. *Q.* You knew the daylight tunnel? *A.* Yes.
11031. *Q.* Was that a help to you? *A.* Yes; it was.
11032. *Q.* Were Laidlaw and any others with Smith? *A.* Yes; but I could not tell you their names
11033. *Q.* I take it that Laidlaw and others were waiting at the end of a bord? *A.* Yes.
11034. *Q.* You showed them the way out? *A.* I said, "For God's sake men get out on the haulage road."

11035. *Q.* Did you show them the way out by the daylight tunnel? *A.* I told them to get out by the daylight tunnel.
11C36. *Q.* Did you know the daylight tunnel? *A.* Yes.
11037. *Q.* What caused you to go out on any occasion that way? *A.* Mr. Frost was there to stop us.
11038. *Q.* Then you went out by the tunnel with these men? *A.* Yes, and Mr. Adam Frost, junior, was waiting there for us. He was on the haulage road.
11039. *Q.* Did he take you out then? *A.* No; he just told us which way to go out.
11040. *Q.* First of all you heard a buzzing in the ears? *A.* Yes.
11041. *Q.* Then you heard a fall a minute afterwards? *A.* Yes.
11042. *Q.* Then Laidlaw, or his mate, called out to you to get out? *A.* Yes.
11043. *Q.* And you came down your bord and went along the cut-throughs, leaving the other bords on your left; and then you met these men; and then you went along the haulage road and met Frost; and he showed you the way out? *A.* He told us the way to go out.
11044. *Q.* What was the noise like which you heard some time after the whizzing? *A.* It put me in mind of a very heavy fall in a bord.
11045. *Q.* Was the noise like anything that you hear outside the mine? *A.* No, without it was a heavy clap from the Heavens.
11046. *Q.* Thunder, you mean? *A.* Yes.
11047. *Q.* Was it anything like thunder? *A.* I imagine it was.
11048. *Q.* But did you think it was thunder? *A.* No.
11049. *Q.* But it was like thunder? *A.* It was a very heavy fall.
11050. *Q.* How many parts of this mine have you worked in? *A.* I have worked in very nearly all the sections in it.
11051. *Q.* Have you ever come across gas in that 4th Right District, or No. 1 District? *A.* No.
11052. *Q.* And you have come across black-damp? *A.* Yes.
11053. *Q.* And how do you distinguish the black-damp? *A.* My light would not burn. Well, when I say it would not burn, it would burn black, but not as it ought to do.
11054. *Q.* Did you ever report to the deputies what you had seen? *A.* It would not want much reporting, because he was there every day to see for himself.
11055. *Q.* That is the black-damp? *A.* Yes
11056. *Q.* Did you show it to him? *A.* He could see it too.
11057. *Q.* How high would this affect your lamp from the floor? *A.* We used to have it just about up to there [*indicating the height of his chest*]. You could not use it on your head. You had to put it on a prop.
11058. *Q.* Do you mean to tell me that the light would go out if you placed it on your head? *A.* It would not burn. If you turned your head quickly it would go out.
11059. *Q.* Then it was up above your mouth? *A.* I do not know; but it would not burn if it was on my head.
11060. *Q.* Did you feel any effect in breathing? *A.* No.
11061. Did you ever see anything after shots were fired, when you went back into your bord? *A.* I have seen nothing in the 4th Left.
11062. *Q.* I am asking about any part of the mine: did you ever see gas in any part of the mine? *A.* Only in No. 4 Right main heading, in the Shaft District.
11063. *Q.* How long is that ago? *A.* That will be twelve years: it might be more: I could not say rightly.
11064. *Q.* What form did the gas take then? What happened? Was it an explosion? *A.* No.
11065. *Q.* You see, I am trying to get information from you. I am only a town chap, who does not understand it? *A.* I did not see it until my light caught it.
11066. *Q.* Your light caught it? *A.* Yes.
11067. *Q.* Did it flare? *A.* It flared in the roof a bit, and then it beat itself out back again.
11068. *Q.* Did it burn you? *A.* No, it went over my head.
11069. *Q.* How often did you see that happen? *A.* I have only seen it once in there.
11070. *Q.* How many times have you seen it elsewhere? *A.* I have seen it once in, I believe it would be, the 4th Left, or 2nd Left, in No. 1. I saw a slight touch of it there one morning.
11071. *Q.* How long ago? *A.* It would be shortly after the time I left this heading and came back again.
11072. *Q.* Do you mean since the disaster? *A.* No.
11073. *Q.* You mean shortly after you were in No. 4 Right? *A.* Yes.
11074. *Q.* And that was some years ago? *A.* Yes.
11075. *Q.* What is the latest time you have seen gas in the mine? *A.* The last time I have told you there.
11076. *Q.* And you have never seen gas since then? *A.* No.
11077. (At this stage Mr. W. R. Pratt attended to take shorthand notes of the evidence and proceedings.)
11078. *Q.* Have you had experience of lighting smoke after firing a shot? *A.* I have seen my mate do it.
11079. *Q.* You have seen him light smoke after firing a shot? *A.* After firing a shot, if it had not done its work, but had blown down or blown out on the top.
11080. *Q.* You say, "If it had not done its work"? *A.* Yes.
11081. *Q.* Will you describe what happened on this occasion when your mate went to see what had happened at the firing of a shot which had not done its work? *A.* You could only see the smoke.
11082. *Q.* What happened? *A.* My mate went to see what had happened and he saw the heat, and she caught and went out again. After that you could not light her.
11083. *Q.* Was there an explosion? *A.* You can call it what you like.
11084. *Q.* What colour was it? *A.* Red, as far as I can tell you.
11085. *Q.* What colour was the flame when you saw gas? *A.* It went so quick that I never looked. I stooped down.
11086. *Q.* You form the opinion that if anything happens after a shot it is the powder smoke going off. *A.* That is my opinion, I do not know whether it is right or not.
11087. *Q.* Did that occur often? *A.* This is the only time I have seen it—it is the only time I have seen the trick done.
11088. *Q.* Do you not light it? *A.* I never played with it.

11089. *Q.* Will that smoke burn? *A.* When a hot shot is fired, and the smoke goes up, and you put a light to it, it will.
11090. *Q.* You have seen stone fall? *A.* Yes.
11091. *Q.* Where? *A.* Nearly all over the pit.
11092. *Q.* A large amount? *A.* I have seen some very heavy falls.
11093. *Q.* Falls of yards or over acres? *A.* I have seen them cover a good few yards, but not acres.
11094. *Q.* You say there was dust with it? *A.* A sort of white dust.
11095. *Q.* What effect does it produce on anything on which it settles? *A.* I do not suppose it takes any effect.
11096. *Q.* What colour is it? *A.* White.
11097. *Q.* Is it a floury kind of dust? *A.* Yes, you see it on the rib.
11098. *Q.* On that occasion when you found gas, twelve years ago, who were your deputies? *A.* Davie Evans and Willie Nelson.
11099. *Q.* Did you inform them? *A.* I informed the under-manager, Mr. Rogers. That was the time I found gas in No. 4.
11100. *Q.* I think some canvas was put up on that occasion? *A.* That was in No. 1.
11101. *Q.* When you heard this buzzing noise, how did the air become? *A.* Hotter.
11102. *Q.* What was it like? *A.* The hot air came with this terrible noise.
11103. *Q.* Do you know what distance you were from the 35-acre goaf? *A.* No, I can give you no idea.
11104. *Q.* But you know you were 400 yards away? *A.* Yes.
11105. *Q.* You heard the noise distinctly? *A.* Yes.

Cross-examined by Mr. Lysaght:—

11106. *Q.* Did you get any smell just after the disaster? *A.* No.
11107. *Q.* When you reported gas to Mr. Rogers, did you make any remark about it? *A.* I told Mr. Rogers that there was gas there; and he ordered safety-lamps to finish the work with.
11108. *Q.* How long were the lamps in use? *A.* Until we finished it—two or three shifts.
11109. *Q.* Did any one else use safety-lamps? *A.* Only me and my mate.
11110. *Q.* Do you know whether any other person had been ordered to use safety-lamps before that? *A.* No, I did not.
11111. *Q.* Can you say whether Mr. Rogers knew, before you reported it, that gas was given off in Kembla mine? *A.* I cannot say whether he knew or not.
11112. *Q.* I suppose you have some theory as to the cause of the disaster? *A.* I know nothing about it. I know I was in it; that is all I know.
11113. *Q.* You cannot say whether it was caused by an explosion of gas? *A.* I cannot say.
11114. *Q.* Although you have not discovered it very often, I suppose you have heard the miners talk about gas? *A.* I never heard the miners speak about it. Only on the two occasions I found it myself.
11115. *Q.* How often have you known the air to be reversed in Mount Kembla, because of a westerly wind? *A.* Once or twice to my knowledge.
11116. *Q.* How long ago? *A.* I can give you no idea—a man never thinks about these things.
11117. *Q.* During the last twelve months? *A.* Long before that.
11118. *Q.* During the last three or four years? *A.* You can put it at that.
11119. *Q.* For how long was the air reversed? *A.* Only while the wind changed about the furnace.
11120. *Q.* How long—an hour or half an hour? *A.* I can give you no idea.
11121. *Q.* Roughly speaking? *A.* I cannot tell you.
11122. *Q.* You remember the occurrence of the air being reversed a couple of times, but cannot remember whether it was reversed for a day or an hour? *A.* You may say for an hour or so; but not for a day.
11123. *Q.* Have you ever known the air to be reversed from any other cause? *A.* No.
11124. *Q.* Have you never known the furnace to be defective. *A.* I never noticed it.
11125. *Q.* Have you not had the smoke standing in your own place for want of air? *A.* If the canvas has not been up—that is what would cause that.
11126. *Q.* Have you not had the smoke last in your place for two or three hours? *A.* No.
11127. *Q.* For how long? *A.* Oh, for twenty minutes or half an hour—that is a long time.
11128. *Q.* How often have you had it last for twenty minutes? *A.* Not many times.
11129. *Q.* You are still cutting coal? *A.* Yes.
11130. *Q.* Is your place dusty? *A.* No.
11131. *Q.* Is it wet? *A.* Just a little moisture.
11132. *Q.* Is it ever watered? *A.* Only the main heading.
11133. *Q.* Who fires the shots? *A.* Nobody.
11134. *Q.* Do you not fire the shots? *A.* No.
11135. *Q.* Have you not fired shots since the disaster? *A.* No; I have been in a pillar once; but now I am in a heading.
11136. *Q.* Would you approve of deputies and shot-firers holding certificates of competency by examination? *A.* That has nothing to do with me. I know nothing about that.
11137. *Q.* Do you think it would be an extra precaution? *A.* That ought to be a Government affair: it is not my business.
11138. *Q.* Do you not think that, as an extra precaution, deputies should undergo an examination? *A.* Well, I think they should pass an examination. It does not do for any one who is silly to take on the work. They should pass an examination like anyone else.
11139. *Q.* Then your experience is that anyone takes it? *A.* I did not say so.
11140. *Q.* Do you know a young man named Forsythe—do you think he is competent? *A.* I cannot say anything about him at all.
11141. *Q.* With regard to the use of safety-lamps. Do you think the Government Inspector should have power to order them, if necessary? *A.* I am not well up in these kind of things at all.
11142. *Q.* Oh, well, I will not trouble you about these recommendations; except this one:—Do you know how many roads there are out of the Mount Kembla mine? *A.* I know about four.
11143. *Q.* Did anybody show them to you? *A.* No.
11144. *Q.* You do not know that road out by the daylight heading? *A.* Oh, don't I? 11145.

11145. *Q.* I thought Frost showed it to you? *A.* He had no need to show it to me. I am working by the daylight heading now. I told the men to get on the road, and to get out by the daylight heading.
11146. *Q.* Were you the only one who knew that road? *A.* I expect the others knew it.
11147. *Q.* Did you give a statement of your evidence to any person? *A.* No.
11148. *Q.* Did you not make a statement? *A.* I went across to Mr. Rogers.
11149. *Q.* When? *A.* One night, about a week ago.
11150. *Q.* Who was present? *A.* Have I got to answer such a question.
11151. *Q.* Why do you object? *A.* I do not know whether I should answer it.
11152. *His Honor.*] There is no objection to the question being asked.
11153. *Witness.*] Well, there were a couple of gentlemen there, Mr. Wade was there.
11154. *Mr. Lysaght.*] *Q.* Is there any harm in it? *A.* I do not know. I cannot say.
11155. *Q.* Did you put anything in your statement which was not true? *A.* No, I did not.

Examined by His Honor :—

11156. *Q.* The first thing that you noticed was a buzzing? *A.* Yes.
11157. *Q.* How long after that was it when you heard a noise, which you say sounded like a fall? *A.* It would be about a minute.
11158. *Q.* Do you think it was as long as a minute? *A.* The buzzing came first, and the sound followed. I was a bit dazed at the time.
11159. *Q.* Was it like one sound; or was it a running sound? *A.* It was like one heavy fall.
11160. *Q.* When you say that you felt a change like hot air coming up, was that before you heard the sound? *A.* The buzzing came; and the fall, as I thought, sent the hot air into the place.
11161. *Q.* The fall and the hot air seemed to come together? *A.* I think so.
11162. *Q.* And you say it was like one single heavy sound? *A.* Yes, like one heavy sound.
11163. *Q.* Not a rumbling sound? *A.* No—just one sound. It came just like a bord falling in with a heavy fall.
11164. *Mr. Bruce Smith.*] One theory would be that the fall was the effect, and not the cause, of the explosion.
11165. *His Honor.*] I know that.
11166. *Mr. Robertson.*] The fall could not possibly be heard by this man.
11167. *His Honor.*] *Q.* Do you not think that there might be a little mistake as to how long there was between the first coming of the buzzing in your ears and the sound? *A.* That is what I remember, because I was dazed at the time. That is what I put it down to.
11168. *Q.* Were you shovelling at the time? *A.* I was picking. The heat came, and the buzzing.
11169. *Q.* Did the heat come before the sound? *A.* They seemed to come together. It came like a hot wind; there was not much difference between the three of them. Just about a minute.
11170. *Q.* A minute is a long time? *A.* Of course, it might not be that time.
11171. *Q.* Now, tell me when you think a minute is up. (His Honor looked at his watch). *A.* I am not going to say that,
11172. *Q.* Just guess it? *A.* A man on that day would not consider whether it was a minute or two minutes.
11173. *Q.* I want to know how long you think it was? *A.* I am not going to take that on at all. I will go as near to the matter as my memory will allow me; but I will not go any further.
11174. *Q.* Now, you can do this, put your hand down firmly on the desk; raise it up and put it down again; and let there be the same distance of time apart as there was between the buzzing and the sound. Place your hand on the desk once for the buzzing and another time for the sound. *A.* I cannot say anything about that. I think it would be about a minute.
11175. *Q.* Now just do what I say, it is easy? *A.* It is easy enough to do it. I came here to tell the truth about it.
11176. *Mr. Bruce Smith.*] *Q.* Put one hand down when the hissing took place, and another when the sound came? *A.* There was a hissing: and if you had been in it you might have remembered it better than me.
11177. (Mr. Bruce Smith raised his hand from the table, and said, "Suppose that is the hissing, tell me when the sound came"; the witness replied in the affirmative; and Mr. Smith brought his hand down on to the table, the space of time occupied being a few seconds.)
11178. *Mr. Ritchie.*] *Q.* Are you sure that you heard the sound after the hissing? *A.* Yes.
11179. *His Honor.*] *Q.* I suppose you were rather astonished at hearing it? *A.* Yes, it frightened me.
11180. *Q.* And you thought it time to leave? *A.* Yes, when the after-damp came up. We put it down as an explosion. When we got to the haulage road we got into good air; because we went the way the air was coming in from the daylight heading, and that put the after-damp back.
11181. *Mr. Robertson.*] *Q.* You said at the beginning of your examination that you saw no difference in the air—no movement? *A.* I did not stop to look. I cleared out.
11182. *Q.* You said that there was no movement in the air—no difference. Now you say there was a rush of hot air? *A.* I took no notice of it—where it came from. The hot air came up the bord.
11183. *Q.* Then what you said at the beginning, that there was no movement in the air, was wrong? *A.* I suppose so.

Examined by Mr. Ritchie :—

11184. *Q.* Did the air blow your light out? *A.* I think the running put it out.
11185. *His Honor.*] *Q.* You were running against the air? *A.* I was running the way the after-damp was coming. Probably it was my running that put the light out.
11186. *Mr. Bruce Smith.*] *Q.* Did the air continue to come the same way after you felt it hot? *A.* I cannot tell you.
11187. *Q.* It was not reversed? *A.* When the hot breeze came I ran.
11188. When you ran, the air was coming its right way? *A.* From the daylight heading.
11189. *Mr. Ritchie.*] *Q.* Did you feel it coming from the north daylight heading? *A.* Yes; and it was a little sultry until we got to the haulage road.
11190. *Mr. Robertson.*] *Q.* Which way do you say the air was coming? *A.* The air was coming in our faces, it was a bit warm; but the air from the north daylight heading pushed the other air back.

[*Witness retired.*]

11191. The witness, John Morrison, was called; but, there being no appearance, the Commission, at 12·45 p.m., adjourned until 2 p.m.
11192. The Commission reassembled at 2·10 p.m.; and the name of the witness, John Morrison, was called outside the Court; but there was again no appearance.
11193. His Honor said that, there being no witnesses in attendance, the sitting of the Commission would be adjourned until the following Monday; when it would meet at the Land Court, Darlinghurst, Sydney, at 2 o'clock.

MONDAY, 2 FEBRUARY, 1903.

[*The Commission met at the Land Appeal Court, Darlinghurst.*]

Present:—

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq., Commissioner. | D. RITCHIE, Esq., Commissioner.

Mr. Bruce Smith, Barrister-at-Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf of the Crown.

Mr. A. A. Atkinson, Chief Inspector of Coal-mines, assisted Mr. Bruce Smith.

Mr. A. A. Lysaght, Solicitor, appeared on behalf of—
(*a*) the representatives of deceased miners, wheelers, &c., (victims of the explosion);
(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.); and
(*c*) the Illawarra Colliery Employees' Association (the Southern Miners' Union).

Mr. F. Curtiss, Solicitor, appeared on behalf of the Mount Kembla Coal and Oil Company (Proprietors of Mount Kembla Mine).

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings.)

Mr. JOHN MORRISON, previously sworn, was recalled, and further examined, as under:—

Examination by Mr. Bruce Smith:—

11194. *Q.* When you gave your evidence to Mr. Wade the other day, you spoke of a number of objects being driven inbye and outbye from the 4th Right, did you not? *A.* Driven inbye.
11195. *Q.* And some outbye—both ways? *A.* I think most of those I spoke about were driven inbye.
11196. *Q.* I did not say most. I say that you spoke of some being driven inbye and some outbye? *A.* Well, I cannnot remember ——[*Interrupted.*]
11197. *Q.* Did you mention to the Commissioners any indications of force going down towards the 4th Right from the top of No. 1 heading? *A.* None in the main tunnel. I never mentioned it, anyway, to the Commissioners.
11198. *Q.* Now, in giving your evidence the other day to Mr. Wade, did you speak of indications of force going from the end of No. 1 level down the travelling road towards to 4th Right? *A.* No.
11199. If anything did go in that direction, it would be quite contrary to all the forces which you mentioned in your evidence? *A.* No.
11200. *Q.* If any such thing were there, it would be quite contrary? *A.* Yes.
11201. *Q.* To the forces which you spoke of? *A.* I was never asked any question.
11202. If anything was driven down from the end of No. 1 heading, down the travelling road towards the 4th Right, that would be quite contrary to all the forces you spoke of? *A.* No, it would not be contrary.
11203. *Q.* It would not be contrary? *A.* No.
11204. *Q.* It would be going doing from No. 1, would it not?
11205. *Mr. Ritchie.*] I think it would be better to call it outward and inward, outbye and inbye.
11206. *Mr. Bruce Smith.*] *Q.* Yes. It would be going outbye, would it not, if it came from the top of No. 1 heading? *A.* I do not quite understand.
11207. *Q.* I say, if anything were driven from the top of No. 1 heading down towards the 4th Right, outbye, it would be in the contrary direction to those forces which you spoke of the other day? *A.* Yes.
11208. Well, was there not before the disaster a door in No. 1 back heading, just inbye of the 5th Right? *A.* Yes.
11209. *Q.* The door was surrounded by brickwork, was it not? *A.* Stonework.
11210. *Q.* Was not that stonework driven outbye, down to the 5th Right? *A.* Yes.
11211. *Q.* Now, there were two stoppings, were there not, on the cut-throughs, inbye of that door, which I have mentioned? *A.* Yes.
11212. *Q.* Were not they surrounded by stonework? *A.* Yes; they were stopped up.
11213. *Mr. Ritchie.*] Which are you referring to?
11214. *Mr. Bruce Smith.*] The two cut-throughs immediately inbye of that door which I have referred to.
11215. *Mr. Ritchie.*] I understand.
11216. *Mr. Bruce Smith.*] *Q.* And these two stoppings were in the middle of those two cut-throughs? *A.* No.
11217. *Q.* How far from the middle? *A.* They were nearer the main tunnel.
11218. *Q.* What is the whole distance across? *A.* Eleven yards.
11219. *Q.* How far were they from the main tunnel? *A.* They were 3 or 4 feet in from the main tunnel; but I could not say what width [*meaning thickness*] they were.
11220. *Q.* Were they not blown from the travelling road to the main tunnel? *A.* One of them—the first one.
11221. *Q.* That is the nearer to the 4th Right? *A.* The nearer to the 5th Right.
11222. *Q.* The nearer to the 5th Right was blown from the travelling road in a westerly direction? *A.* Into the main tunnel.

11223. And the one above was driven from the main tunnel into the travelling road? *A.* No.
11224. *Q.* What do you say? *A.* Well, I say just, like, the corner of it fell into the main tunnel.
11225. *Q.* Which way was it in relation to its original position? *A.* Just the corner fell into the main tunnel.
11226. *Q.* It fell in the same direction as the other one? *A.* Yes.
11227. *Q.* Only one was blown right in, and the other fell in the same direction? *A.* Yes.
11228. *Q.* Now, you remember the morning of the disaster—before it all occurred? *A.* Yes.
11229. *Q.* That morning you inspected, did you not? *A.* Yes.
11230. *Q.* I want to know from you whether you went up to the extreme end of No. 1, where it was fenced off? *A.* I do not understand the question. Do you want to know if I went through the fence?
11231. *Q.* Yes. Did you go through the fence and examine? *A.* No.
11232. *Q.* Is this statement made by Mr. Rogers right: "The fence at the top of No. 1 Right was put there because there was no one working up there. The bratticing was up to the face of that place. No. 1 heading had been standing for six or eight months." Is that right? *A.* I could not say how long it had stood.
11233. *Q.* It had stood for some considerable time? *A.* Yes.
11234. *Q.* Did you hear Mr. Rogers give this evidence at the inquest? *A.* No.
11235. *Q.* He said: "There was no reason for not inspecting the 30 or 40 yards beyond the fence at the top of the No. 1 Right, except that there were no men working there." That is true? *A.* I never inspected it; and there were no men working there.
11236. *Q.* How long before that time had you inspected it? *A.* I was once there—once up in those headings.
11237. *Q.* Only once beyond the fence? *A.* Beyond the fence.
11238. *Q.* How long before the disaster was that? *A.* I cannot say.
11239. *Q.* Was it hours, or days, or weeks? *A.* Oh, I was just newly on the job at the time—just newly started. It was weeks before.
11240. *Q.* Some weeks? *A.* Some weeks, yes.
11241. *Q.* To your knowledge had any examination been made of the No. 1 heading, the extreme part of it, beyond that fence? *A.* Yes; William Nelson told me ——[*interrupted*].
11242. *Q.* When did he tell you?
11243. *Mr. Curtiss.*] Would that be evidence?
11244. *Mr. Bruce Smith.*] I do not want it; but I think it would be fair to get it.
11245. *His Honor.*] Nelson is dead. I think we should have it.
11246. *Witness.*] Another man was with him who is alive.
11247. *Mr. Bruce Smith.*] *Q.* When did he tell you? *A.* On the 19th.
11248. *Q.* Was there any man with you? *A.* Willie Hay, and Johnson.
11249. *Mr. Lysaght.*] I object to that. One of the witnesses is alive, and can be called.
11250. *His Honor.*] This is evidence given by Morrison of what Nelson told him. The other man can only speak of what was said by Nelson to Morrison.
11251. *Mr. Bruce Smith.*] *Q.* Was Hay with Nelson at the time Nelson told you; or was he with Nelson at the time Nelson went to examine this place? *A.* At the time Nelson went to examine it.
11252. *Q.* Where is he? *A.* At Mount Kembla.
11253. *Q.* With the exception of that visit by Nelson and Hay, you know of no inspection of that place for a considerable time before the disaster? *A.* No.
11254. *Q.* Had you ever examined to see that the brattice was in good order beyond the fence? *A.* No, never; only the once I was up there.
11255. *Q.* So that, for all you knew, the brattice might have been down? *A.* Quite possibly.
11256. *Q.* And that might have been just the sort of place for the accumulation of gas, for all you know? *A.* I did not know. I never examined it.
11257. *Q.* You said the other day—at least I understood you to say—that your son was found in the 4th Left travelling road? *A.* Near the 4th Left.
11258. *Mr. Bruce Smith.*] I thought so.
11259. *His Honor.*] Mr. Bruce Smith, it strikes me, so far as that evidence, which has not been given, is concerned, that, for the purpose of showing that Morrison, to a certain extent, did his duty, it may be proved that his superior officer, or some one else whose duty it was to make examinations, had informed him of the making of a certain examination at a certain time; because it would be upon that very information that he would possibly, properly or otherwise, ground his action in not making an examination himself.
11260. *Mr. Bruce Smith.*] I would be very glad to ask him; but Mr. Lysaght objected to bringing that out.
11261. *His Honor.*] I have no objection to allowing that.
11262. *Mr. Bruce Smith.*] *Q.* Tell me when Nelson first told you that he had made that examination? *A.* It was on the Monday night.
11263. *A.* Let us get the date first? *A.* It would be about the 21st.
11264. *Q.* How long before the disaster? *A.* It was on the 19th that we examined; and it was on the Monday after.
11265. *His Honor.*] *Q.* The 19th July? *A.* Yes.
11266. *Mr. Bruce Smith.*] *Q.* According to the statement he made to you he examined on the 19th; and then he told you on the 21st, the Monday? *A.* Yes.
11267. *Q.* That would be ten days before the explosion? *A.* Yes.
11268. *Q.* Did he tell you anything about that heading beyond that he had examined it? *A.* I would like to give a little explanation of it. There was a repair being done in the furnace, and the furnace was out; and he went round to examine all the highest parts of the mine.
11269. *Q.* He told you? *A.* That the furnace was out; and he went and examined all the highest places.
11270. *His Honor.*] *Q.* You know, yourself, that the furnace was out? *A.* Yes.
11271. *Mr. Bruce Smith.*] *Q.* Did he name these "highest places"? *A.* He named the main heading as one.
11272. *Q.* That was ten days before the explosion? *A.* Yes.
11273. *Q.* Did he say anything to you about your examining it? *A.* No; he did not say anything to me about examining it.

11274. *Q.* Or about not examining it? *A.* Oh; I was not understood to examine it. It was understood that I was not to examine it.
11275. *Q.* What do you mean by being understood; what was the cause of the understanding? *A.* Well, of course, my examination is the examination of all the working places: unless it is my monthly examination.
11276. *Q.* And because work had ceased there you ceased to examine it? *A.* Well, of course, the man who was there before me did not examine it either; and he went along and showed me how to examine the places.
11277. *Q.* That, and the fact that you were only required to examine the working places, led you to believe that you had not to inspect that place? *A.* Yes, in the morning inspection.
11278. *Q.* Then, as far as you know, it was not examined for ten days before the explosion, either morning or night? *A.* Not to my knowledge.
11279. *Q.* Now, I was asking you about your son—you see, it appears in the notes, that you found him in the 4th Left travelling road, near the main tunnel? *A.* I did not say I found him. I say that is where he was got. He was found there.
11280. *Q.* He was found in the 4th Left travelling road, near the main tunnel? *A.* No; he was in the main tunnel, just right opposite.
11281. *Q.* Opposite the 4th Left? *A.* Yes.
11282. That is not quite correctly reported, then, in the notes in para. 8867. It is rather a matter of importance, because the son's body was one of the bodies that might be of importance. It says here that he was found in the 4th Left travelling road, near the main tunnel.
11283. *Mr. Robertson.*] I see it here quite the opposite; that he was found in the main tunnel near the 4th Left.
11284. *Mr. Bruce Smith.*] Yes.
11285. *Q.* Is that right? *A.* Yes.
11286. *His Honor.*] And here, in another place, it is "found in the 4th Left near the main tunnel."
11287. *Mr. Bruce Smith.*] It is just reversed. I wonder there are not more of the same kind.
11288. *His Honor.*] *Q.* Was he just about the corner of the two, just where they met? *A.* That is what I have been told.
11289. *Q.* You did not see him? *A.* I did not see him. I passed the place; but I did not go and see. I knew he was there.
11290. *Mr. Bruce Smith.*] *Q.* You said the other day that Dungey was found on the 5th Left—was that correct? *A.* No.
11291. *Q.* Is it not a fact that he was found on No. 1 main level? *A.* Yes. There is no 5th Left in the mine.
11292. *Q.* There is a cut-through there that I thought perhaps you would call the 5th Left; but he was really found in the main level? *A.* Yes.
11293. *Q.* Now, was it not between the first and second stoppings on the main level—as near as possible half-way between the first and second stoppings inbye of the 5th Right? *A.* Yes.
11294. *Q.* Just inbye of the cut-through with the two rings round it on the plan, half-way between the first and second stoppings? *A.* Yes.
11295. *Q.* You spoke in your evidence the other day of that shirt that you said belonged to Tost? *A.* Yes.
11296. *Q.* You do not know where Tost left his shirt that day? *A.* I know where the rest of his clothes were found. That is the only thing I can go by.
11297. *Q.* You do not know where he left his shirt that day, do you, of your own knowledge? *A.* No; I do not know exactly where he left his shirt.
11298. *Q.* But I understand you found his shirt apart from the rest of his clothes? *A.* Yes.
11299. *Q.* I do not think you told us where the other clothes were? *A.* No. His clothes were opposite the turn, just in past the turn into his bord, just on the inbye side. [*Witness then pointed out on the plan to Mr. Bruce Smith and the Commission the places where the shirt and the other clothes were found.*]
11300. *Q.* What did the other clothes consist of? *A.* A coat and waistcoat, and an oil-bottle belonging to him.
11301. *Q.* I understood the waistcoat and the oil-bottle were found in his bord? *A.* They were found in the line of cut-throughs opposite his bord, just at the corner. The coat and waistcoat and the oil-bottle were together.
11302. *Q.* Then you found them all together? *A.* Yes.
11303. *Q.* Different from the shirt? *A.* Yes.
11304. *Q.* Then you found the shirt in his bord, and you found the coat and waistcoat and oil-bottle up that cut-through to the left? *A.* I found his shirt in the line of cut-throughs further in past his bord, about 15 yards, in the same line of cut-throughs.
11305. *Q.* And you found the coat and waistcoat just at the corner of his bord and the cut-through? *A.* Yes.
11306. *Q.* And you found the shirt further in the cut-through, how far? *A.* Some 14 yards.
11307. *Q.* Now, I cannot quite understand, from the evidence you gave the other day, in what position the knife, which you found stuck into the prop, was pointing. You found it stuck in like that (*blade and handle at right-angles*)? *A.* Yes.
11308. *Q.* Suppose it were drawn out like that (*blade and handle in same straight line*) which way would it be pointing? *A.* Just give it to me and I will show you. (*Knife handed to Witness, who indicated the position in which he found the knife in the mine with Mr. Bruce Smith's knife and an upright gas-pipe in the Court.*) This is going in the line of cut-throughs.
11309. *Q.* The same way as the shirt? *A.* Yes. It was in like that (*handle at right-angles to blade*); and the blade was bent (*indicating a sideways bend of the blade*); and the handle was bent down.
11310. *Q.* Which side was it? *A.* The knife seemed straight from the prop; but still, when you took it out, it seemed to be bent, and then straightened up again.
11311. *Q. Mr. Robertson.*] Suppose that little passage-way (*indicating a passage-way in the Court*) is the cut-through? *A.* Yes.
11312. *Q.* And this (*the upright gas-pipe*) is the prop? *A.* Then it was in that way [*indicating*].
11313. *His Honor.*] *Q.* Which is west and which is east? *A.* (*Witness pointed out the position on the plan.*)
11314. *Q. Mr. Bruce Smith.*] *Q.* Something like that (*indicating*)? *A.* Yes. 11315.

11315. *Q.* Away from No. 1? *A.* Yes; you are facing the prop now; and you are looking from No. 1; and the knife was in that direction.
11316. *His Honor.*] *Q.* Had the knife been fired from the No. 1? *A.* It seemed to have been fired from No. 1.
11317. *Mr. Bruce Smith.*] *Q.* So that the blade was really blown in a westerly direction? *A.* Yes.
11318. *Q.* I think you said you had no idea whose knife it was? *A.* I tried to find out, but I could not find out, whose it was. I got Aitken's knife and gave it to his wife.
11319. *Q.* And therefore this was not his? *A.* No. It might have belonged to the son. I have got Aitken's own knife. I do not know whether the son had one.
11320. *Q.* Now, you said this—I will just read a bit of the evidence before it so that you will know what I am coming at (see page 960). Speaking of Morris' working place, you were asked "Before the disaster was there any screen there?" and you said "Yes." Then you were asked "On Morris' side?" and you said "On the cut-through between the two headings on the side near Morris'?" *A.* On the outbye side.
11321. *Q.* I only want to read this to you. You were asked "Was the canvas led from that particular screen across the cut-through to Morris' place? And you said "Yes." You were asked was the canvas there?" and you answered "Yes, on the side of the cut-through nearest to Morris' working place." You were then asked "That is on the side running up to the back heading?" and you said "It was a canvas door; and it was across the mouth of the cut-through." You were then asked "On the back heading, not on the front heading?" and you said "Yes." The next question was "From that particular canvas, across that cut-through, the canvas was carried into Morris' working place?" and you said "Yes." That was put to you by Mr. Wade; and you simply said "Yes." Now, I want to know how do you know that the canvas was carried into Morris' working place? How do you know that that particular canvas was carried into Morris' working place across the cut-through? *A.* I did not say it was carried into Morris' working place.
11322. *Q.* Now, I will read the question and answer. Mr. Wade said this to you "From that particular canvas, across that cut-through, the canvas was carried into Morris' working place?" and you said "Yes." And then I said "The same canvas?" and you said "Yes." Now, I ask you how do you know that that was the same canvas? *A.* What I said was this, if your Honor will allow me to explain: there was a canvas across the mouth of the cut-through next the back heading; and then the canvas was carried into Morris' place; and that canvas, and the canvas opposite the back heading, were thrown up the back heading; and the canvas was lying up against the rib in Morris' place.
11323. *His Honor.*] Mr. Bruce Smith, have not you got a little bit mixed between the meaning of the word "carried," and the meaning of the word "thrown"? When he speaks of canvas being carried he means how it was fixed up, how it was put up originally.
11324. *Mr. Bruce Smith.*] *Q.* Then you are not referring to the canvas that was across the mouth of the cut-through? *A.* Yes; it was thrown up.
11325. *Q.* Were not they separate altogether? There was one canvas across the mouth of the cut-through? *A.* Yes.
11326. *Q.* And another canvas up into Morris' heading? *A.* There would be no use for carrying the air unless they were connected.
11327. *Q.* Were they one piece of canvas? *A.* They would be no use unless tacked together.
11328. *Q.* Sewn together? *A.* No; tacked up with tacks.
11329. *Q.* But they were separate pieces of canvas? *A.* Yes.
11330. *Q.* Now, first of all with regard to that canvas which went into Morris' heading—that particular part was driven up against the wall inbye of the 5th Right? *A.* Yes.
11331. *Q.* And the lower end, which came out of the heading into the travelling road, was driven round the corner? *A.* This is the way of it——[*Interrupted.*]
11332. *Mr. Bruce Smith.*] I begin to describe a state of things to get you to assent to it, or dissent from it; and then you begin to describe another state of things.
11333. *Mr. Robertson.*] Would it not be as well if Mr. Atkinson were to sketch it on a large scale and show it to the witness?
11334. (Mr. Atkinson made a sketch as suggested).
11335. *Q.* Now, there was a canvas across there close to the travelling road? *A.* Yes.
11336. *Q.* And joined on to it was another canvas running right across the travelling road, and up into Morris' place? *A.* Yes.
11337. *Q.* There was a canvas stopping across the cut-through opposite Morris' place; and that was joined on to a long canvas running up into Morris' place; and that long canvas ran right across the travelling road? *A.* Yes.
11338. *Q.* Now, what do you say became of the long canvas that ran up into Morris' place? *A.* A piece of this canvas here was blown up there.
11339. *Q.* A piece of the long canvas, you say, was found where? *A.* On the back heading.
11340. *Q.* Inbye of where it had been? *A.* Yes.
11341. *Q.* What became of the rest of the long canvas? *A.* It was lying up against that rib.
11342. *Mr. Ritchie.*] *Q.* Which rib is that? *A.* Inbye.
11343. *Mr. Bruce Smith.*] *Q.* Portion of it was driven inbye; and the rest of the long canvas was driven up against the northern wall of Morris' place. What became of the canvas that went across the cut-through? *A.* Any canvas that was here—one lot was found in there; and this other lot was found up against that (*indicating on the sketch*).
11344. *Q.* You say the canvas was only found in two parts? *A.* Yes.
11345. *Q.* A part up against the northern wall of Morris' place? *A.* Yes.
11346. *Q.* And the other part lying in the travelling road inbye of the cut-through? *A.* Yes.
11347. *Q.* And you say that those two pieces, put together, constituted the whole of the canvas that you described? *A.* Yes. There is no other canvas here, but what you see: and that is where I found that canvas lying.
11348. *Q.* What reason have you for saying that the pieces of canvas which you found inbye of the cut-through, separate from the long piece was from that cut-through? *A.* Because there was no other canvas about. Some of the canvas was taken to wrap Morris up in.

11349. *Q.* Was not that wrapped round the post? *A.* No. There were pieces wrapped round the post. There are pieces there yet wrapped round the post.
11350. *Q.* Then there were more than two pieces? *A.* Yes.
11351. *Mr. Robertson.*] You see a line of canvas is made up of lots of pieces.
11352. *Mr. Bruce Smith.*] *Q.* Then there were more than two pieces? *A.* The canvas door is split up into strips. There are three strips in the canvas door, and then other pieces on the sides.
11353. *Q.* Then I understand you found more than two pieces? *A.* Yes.
11354. *Q.* Can you tell me how many? *A.* No.
11355. *Q.* Can you tell me where each piece came from? *A.* No.
11356. *Mr. Robertson.*] Mr. Bruce Smith, I think he speaks of canvas in the plural.
11357. *Mr Bruce Smith.*] I think you will admit that I assumed all through, from my examination, that there were two pieces, one lying up against the northern wall and one in the travelling road: and I said, "Where was this one?" and "Where was that one?" And then he breaks upon me suddenly that there were several other pieces of canvas; and now I put to him the question as to how, if there were several other pieces of canvas, he can say which was which. I do not want the Commission to have a piece of evidence put before them as cut and dried which really is not cut and dried.
11358. *Mr. Robertson.*] It did not convey that impression to me.
11359. *Mr. Bruce Smith.*] If you will just read it you will see that he is not asked to describe things at all; and that is why I postponed my cross-examination. Mr. Wade led out to him; and he assented. Mr. Wade asked "From that particular canvas, across that cut-through, the canvas was carried into Morris' working place?" and he said "Yes." Well, that is not his description at all.
11360. *Witness.*] I want to describe to you, your Honor, how the canvas is put up. I think it is fair just to let me explain. Of course I know there are some gentlemen here who know exactly; but still there are some who do not know. Say there are twenty props like that (in line). They take the canvas in 8-yard lengths, generally. When the first piece was taken in, there would be a canvas door made out of the 8 yards; and the remainder would be taken into Morris' place; and the next piece would be nailed on to the same prop as the first piece finished on, and would be tacked down; and that would be continued on afterwards in 8-yard lengths. I think there were two 8-yard lengths altogether. This canvas door had three strips put on, 2 feet broad each.
11361. *Mr. Bruce Smith.*] *Q.* All together there were a good many pieces of canvas tacked together; not sewn, but tacked? *A.* Yes.
11362. *Q.* And after the accident they were found all together; and you could not say which was which? *A.* If I had known as much as I know now, I would not have touched them at all.
11363. *Q.* You could not tell which was which? *A.* Yes; I know the big long piece was lying up against the rib.
11364. *Q.* Apart from that, you cannot tell which was which of the rest? *A.* No.
11365. *Q.* Could you tell me, for instance, could you swear to it, where the piece was that was across the cut-through? If I were to ask you now, could you say where the piece of canvas was that was across the cut-through? *A.* No.
11366. Now, were you not asked this question by Mr. Wade (p. 961)—I just want to show the principle that has been at work—"Now this canvas, which was across this cut-through, opposite Morris' place, did you find that after the disaster?" Your answer was "Yes, it was lying up against the corner." I only want to show that when these questions are led in that way, and a man assents to it, he very often gives information to a tribunal which he could not give himself. I asked him just now, "With regard to the piece of canvas that went across the cut-through, could you say now where that was after the disaster?" He said he could not; but you see, by that form of question, he did say that he found that piece of canvas after the disaster lying up against the corner.
11367. *Witness.*] Your Honor, I would like to explain just how that canvas was. The canvas was like this—I could not swear to any piece of canvas in the mine; but I know where it was; and I know there were a lot of pieces of canvas; and I know that was the only place it could come from; and it was lying there.
11368. *Mr. Bruce Smith.*] *Q.* And that canvas had moved in the direction of the main tunnel, had it not? *A.* Yes.
11369. *Q.* No, it had moved into the travelling road? *A.* Yes, in the direction of the main tunnel.
11370. *Q.* I put it wrongly to you, and you agreed; but you did not mean that. You mean in the travelling road; it had gone from west to east? *A.* It went inbye, into the travelling road.
11371. *Q.* But it went from west to east? You see it was in the cut-through which runs east and west? *A.* Yes; I have described where I found it. I found it in the cut-through on the inbye side of Morris' place.
11372. *Q.* That means that it went to the east, the opposite direction to that in which you found the knife sticking? *A.* Yes; but it did not go exactly in the opposite direction: it blew in the corner across.
11373. *Q.* But it went in the direction of the travelling road? *A.* Yes.
11374. *Q.* From the rope road into the travelling road? *A.* Yes.
11375. *Q.* That is the same direction as that in which those two stoppings were blown? *A.* No.
11376. *Q.* You found other pieces of canvas further inbye, a few yards? *A.* Further inbye.
11377. *Q.* Further inbye of those you have been describing in Morris' place? *A.* There was one piece lying there. One end was higher than the props.
11378. *Q.* Some yards in? *A.* No.
11379. *Q.* Where did that come from? *A.* The thing that was found inbye was the canvas that was flung up to the face.
11380. *Q.* How far was it inbye of Morris' place? *A.* I could not say. I will show you the place here. [*Pointed to the place on the plan.*]
11381. *Q.* How many yards is that? Is it not something like 5 chains distance? That map is 5 chains to the inch. Is it not an inch on the plan? *A.* I am not going to say an inch or a yard.
11382. *Q.* Do not you know an inch when you see it? Is it not an inch from there to there [*indicating on the plan*]? If you look on the plan, you will see it is in the last cut-through. It is just an inch; and the plan is on a scale of 5 chains to the inch. I understand you found a piece of canvas near the last cut-through in the No. 1 heading? *A.* Yes.

11383.

11383. *Q.* Now, will you tell me, Mr. Morrison, generally, quite apart from bits of canvas, and doors, and anything else, how many directions did you see indications of the force having taken up in that part of the mine? *A.* From where?
11384. *Q.* From anywhere. How many directions did you see stuff driven in, whether it is men, or trucks, or skips, or canvas, or doors, or material, or anything, how many directions? *A.* I will just start from the 4th Left and take it right up in the main tunnel, and show it thoroughly.
11385. *Q.* I do not want it in detail. Was it in all directions? *A.* No. At every opening, it seemed to me, at the 4th Left—it went down the 4th Left; and at the back heading it went down the back heading. Of course, you are trying to catch me.
11386. *Mr. Bruce Smith.*] I am not trying to catch you.
11387. *Witness* (continuing).] On the left-hand side it was all driven to the left; and on the right-hand side it was all driven to the right.
11388. *Q.* You know the four points of the compass in that mine, north, south, east, and west? *A.* Yes.
11389. *Q.* Now, did you not find something driven in every direction of the compass? *A.* On the left-hand side it was all driven to the left.
11390. *Q.* I do not want the left-hand side or the right-hand side.
11391. *His Honor.*] That is the answer he gives you.
11392. *Witness.*] Then, as you go up the main tunnel, the first stopping was driven this way (west); and then the corner of the next stopping—I do not know whether it was blown out or fell out—but it fell into the road.
11393. *Q.* And then about the next stopping after that? *A.* It seemed to me that the force went in there and split and then went both ways.
11394. *Q.* Was that third stopping affected in one way or the other? *A.* Never affected.
11395. *Q.* Not affected at all, as far as you could see? *A.* No. And then—the next stopping—the force seemed to go in there, and go both ways.
11396. *Mr. Bruce Smith.*] *Q.* Now, do you admit that you saw things which had gone in these four directions—north, south, east, and west? *A.* Yes.
11397. *Q.* I only want to know it generally? *A.* I am explaining it, your Honor, to the best of my ability.
11398 *His Honor.*] You have been very clear all along, Morrison. Just answer the questions as they are asked you.
11399. *Mr. Bruce Smith.*] You are too anxious not to be caught.
11400. *Q.* Now, up here, towards this, west of No. 1, what do you call this travelling road? *A.* That is the 4th Left rope road.
11401. *Q.* In the 4th Left did you not see some forces in opposite directions to other forces? *A.* It seemed to me that the force travelled down there; and this force that went along here [*indicating on the plan*] came down; and they joined together.
11402. *Q.* Did you not see any forces going east? *A.* None, to my knowledge.
11403. *Q.* Now, have you found out anything else about that pipe which you discovered amongst the *debris* of the fire? *A.* No.
11404. *Q.* Have you the pipe here? *A.* No. I did not find it. It was Hotchkis who found it.
11405. *Q.* Does it throw any light on the fire? *A.* None, to my mind.
11406. *Q.* Now, you say there was some timber lying about inbye of the 4th Left rope road? *A.* Yes.
11407. *Q.* Had that been piled up before the disaster? *A.* Yes.
11408. *Q.* Was it piled up in a heap? *A.* Yes.
11409. *Q.* And I understand that the effect of the disaster was to distribute this all over the place? *A.* Yes.
11410. *Q.* Can you tell the Court in what direction this heap of timber was distributed? *A.* In my opinion—I can only give you my opinion on it, because I never saw it—it was thrown inbye of the 5th Right.
11411. *Q.* But it was scattered all over the place? *A.* Scattered all over—props here and there.
11412. *Q.* Did not you find some of it after the disaster nearer to No. 1 Right than the heap had been? *A.* Not to my knowledge.
11413. *Q.* Do you understand the question? *A.* Yes.
11414. *Q.* Where was it standing before the disaster? *A.* It was inbye, like, of both the 4th Left and the 5th Right; but the timber was stacked especially for the 4th Left, and for these four places.
11415. *Q.* Was it stacked in No. 1 Right? *A.* It was stacked in the main road, No. 1 Right.
11416. (At this stage Mr. W. R. Pratt attended to take shorthand notes of the evidence and proceedings.)

Cross-examined by Mr. Lysaght:—

11417. *Q.* Do you know why that place, at the top of the heading, stopped working? *A.* No, sir.
11418. *Q.* Did you ever ask? *A.* I never asked.
11419. *Q.* And for all you know yourself there may never have been any brattice up there? *A.* There was brattice up there.
11420. *Q.* From all you know yourself there may never have been brattice up there? *A.* I know there was brattice there, I had been up there.
11421. *Q.* You had not been up there for some weeks before the disaster; was the brattice up to the end? *A.* Yes, the brattice was there when I was there; but that was seven weeks before the disaster.
11422. *Q.* From that time up to the day of the disaster you do not know in what condition the brattice was? *A.* No.
11423. *Q.* And the whole of the ventilation for Aitken's, Tost's, Purcell's, and Jones" places, and all the ventilation going down to Gill's Gannon bord, depended on that brattice being good, and in good order? [*No answer.*]
11424. *Q.* Did not the ventilation go to all these working places? *A.* Yes.
11425. *Q.* Was not that ventilation dependent on that brattice being in good order? *A.* I am not going to answer that question until I make it clear.
11426. *Q.* I will put it to you in a better form. Was not the air carried from Morris' place to the top of that heading and down the main level, and through a cut-through, to Purcell's, Jones', and Aitken's places? *A.* It went up the back heading.

11427. *Q.* And, therefore, that air depended on the brattice at the back heading being kept in good order? *A.* No, sir.
11428. *Q.* What did it depend on? *A.* The brattice had nothing to do with it.
11429. *Q.* Can you show me where this brattice was down—from the cut-through to the top of the heading? *A.* There was no brattice there, I am going to show you where it was.
11430. *Q.* From the cut-through opposite Morris' face, to the top of No 89 heading, right up to the top, was not the brattice continued? *A.* The brattice was continued in No. 89 [*referring to the plan.*] There was no brattice from the top side of Morris' place to the cut-through.
11431. *Q.* Was there any brattice from the top of the cut-through to the top of the heading? *A.* Yes.
11432. *Q.* Was there a stopping in the cut-through? *A.* Yes.
11433. *Q.* Where that brattice was, at the top of the cut-through, was it not burnt? *A.* It was singed a little at the corner.
11434. *Q.* Which corner was burnt? *A.* The furthest from the face. A canvas door came half-way across the road.
11435. *Q.* Was it the corner near No. 1 Main level or near the travelling road? *A.* Near Morris' place.
11436. *Q.* The outbye corner? *A.* Yes.
11437. *Q.* Does not that clearly show that flame had been there? *A.* I cannot say.
11438. *Q.* Can you account for the canvas being singed, if a flame had not been there? *A* I am not an expert.
11439. *Q.* Can you account for that particular piece of brattice being singed, if there was no flame there? *A.* I cannot account for the brattice being burnt.
11440. *Q.* Are you of opinion that there was a flame there to singe it? *A.* I will not say anything about it.
11441. *Q.* In your opinion was there a flame that burnt or singed that brattice? *A.* I am not certain.
11442. *Q.* You gave opinions on a lot of other things? *A.* That is where I made a mistake.
11443. *Q.* Can you account for it being singed? *A.* Of course, heat as well as flame would singe it.
11444. *Q.* Was there sufficient heat in your opinion to singe that particular piece of brattice? *A.* There must have been either heat or flame—I cannot say which it was.
11445. *Q.* Can you tell me where the flame or the heat came from? *A.* I cannot tell you.
11446. *Q.* Would not the top of that heading be what you call the face of the coal? *A.* Yes.
11447. *Q.* You know that under Rule 9 of the Special Rules you are to examine the brattice, faces, and ventilating appliances? *A.* My orders were to examine the working places.
11448. *Q.* Do you know what Special Rule No. 9 states what the Deputy shall do. Now it says "He shall also make a true report of, and enter and sign daily, in a book kept at the appointed office for the purpose, the state of the mine roads, doors, stoppings, brattice, faces, and ventilating appliances." You see that you had to make a report and enter it in a book daily. I want to know whether you did make a report and enter it in a book? *A.* I was authorised not to make a report on any place except the working places.
11449. *Q.* Who authorised you? *A.* William Nelson.
11450. When did he authorise you not to make such a report? *A.* When I first started on the job. I was told to examine all the working places; and he went round and showed them to me.
11451. *Q.* When were you authorised not to make a report on faces not being worked? *A.* When I first started.
11452. *Q.* Then from the date of your employment up to the date of the disaster you never examined any face that was not being worked? *A.* Never in the morning.
11453. *Q.* Did you ever at any time? *A.* I never did at any time.
11454. *Q.* About how many faces, not being worked, are there in No. 1 Right District which you did not examine? *A.* Nine or ten.
11455. *Q.* And could not every one of these nine or ten faces have become a magazine of gas? *A.* No, I do not think so.
11456. *Q.* Who examined them? *A.* I did not say that anyone examined them.
11457. *Q.* Will you point out where those nine or ten faces are that were not being worked and were not examined? *A.* Yes. There are two at the top of No. 1 main level—the 2nd and 3rd west of the 17 perches goaf; and there are Nos. 4, 5, 6, and 7 west of the 17 perches goaf.
11458. *Q.* Is that all? *A.* There are two places at the bottom of the 5th Right rope road east.
11459. *Q.* Now, do you not know that since the disaster gas has been found in the vicinity of these places? *A.* Yes, in the vicinity of these places.
11460. *Q.* I take it also that at no time did you examine any of these eight places? *A.* At no time. I was once in the two headings.
11461. *Q.* You have told us about that before? *A.* Yes.
11462. *Q.* Will you admit that you did not carry out the duty imposed on you by Rule 9 by examining all these faces and reporting in a book daily? *A.* No, I will not admit it.
11463. *Q.* Why? *A.* Simply because I examined all the working places.
11464. *His Honor.*] Mr. Morrison does not admit your construction of the Rule.
11465. *Mr. Bruce Smith.*] Whether the witness complied with that section is a matter of law.
11466. *Mr. Lysaght.*] *Q.* Did any other person besides Nelson tell you not to examine the places which were not being worked? *A.* He told me just to examine the working faces?
11467. *Q.* He did not tell you that you had to examine no places not being worked? *A.* I was not supposed to do it.
11468. *Q.* Who was? *A.* I do not know anything about who was.
11469. *Q.* Do you know anybody who was? *A.* No.
11470. *Q.* Cannot we take it that they were left altogether unexamined? *A.* They were, by me.
11471. *Q.* As far as you know, did anyone else examine them? *A.* I have nothing to do with the work done by anyone else.
11472. *Q.* As far as you know, did anyone else examine them? *A.* Not as far I know.
11473. *Mr. Curtiss.*] *Q.* They might have been examined? *A.* They might have been.
11474. *Mr. Lysaght.*] *Q.* What was Mr. Hay, at the time you made the examination with Mr. Nelson? *A.* The weighman.
11475. *Q.* Do you know why he should go and make an examination of a heading? *A.* No, I have nothing to do with it.

11476. *Q.* Did you ever hear of the weighman doing anything like that before? *A.* Yes.
11477. *Q.* That is the check-weighman, outside? *A.* Yes, I have heard of their doing it.
11478. *Q.* Where were you when Nelson told you that he had examined the top heading? *A.* On the outside of the mine.
11479. *Q.* Why should he tell you that? *A.* He was talking about the work; and he told me.
11480. *Q.* Do you know why the furnace was let out? *A.* They were repairing it.
11481. *Q.* How long was it out? *A.* I could not say.
11482. *Q.* For how many days? *A.* I could not say. It started from a Friday night.
11483. *Q.* While the furnace was out, there would be little air passing through the mine? *A.* I have been through the mine and examined it when the furnace was out.
11484. *Q.* While the furnace was out, there would be little air? ——
11485. *Q.* There was plenty of air passing through when the furnace was out? *A.* Yes.
11486. *Q.* There would be a greater probability of gas accumulating when the furnace was out? ——
11487. *Q.* How long was it before the disaster that the furnace was put in working order? *A.* It would be the 19th.
11488. *Q.* You said that Nelson told you on the 21st that he had examined it on the 19th? *A.* I should say that from the Friday night until the Sunday morning it would be out.
11489. *Q.* When did the fire start again! *A.* I cannot say.
11490. *Q.* Did you ever take the measurement of the air? *A.* Never. It was not my business.
11491. *Q.* Do you know how to take it? *A.* I have never done it.
11492. *Q.* I want to know if you know how to take it? *A.* Is it a fair question to ask me, your Honor?
11493. *His Honor.*] *Q.* It is a simple thing to ask? *A.* And it is a simple thing to do.
11494. *Mr Lysaght.*] *Q.* I ask you if you know how to do it? *A.* I have seen it done.
11495. *Q.* Do you know how to do it? *A.* I will say no; because I have never done it.
11496. *Q.* Now, who was it told you of the various positions in which Dungey and your boy, and the brattice cloth, were found? *A.* I saw the brattice cloth.
11497. *Q.* What about Dungey? *A.* I saw him myself.
11498. *Q.* Do I understand that every question which you answered Mr. Wade was something you knew of your own knowlege? *A.* Yes.
11499. *Q.* Everything? *A.* Yes.
11500. *Q.* Can you tell me what became of the props that the canvas was attached to opposite Morris' place? *A.* Yes. They were broken up—4 or 5 yards past Morris' place.
11501. *Q.* Where? *A.* Inbye, on the travelling road.
11502. *Q.* Did you notice whether the props were singed; *A.* No.
11503. *Q.* Did you notice whether the edges of the props were burned? *A.* No.
11504. *Q.* Can you say whether they were or not? *A.* I cannot say.
11505. *Q.* Do you say they were singed? *A.* No.
11506. *Q.* Was the canvas burnt off in the middle? *A.* The props and the canvas had been driven together.
11507. *Q.* Did they not separate? *A.* Some of them had separated. I cannot say exactly how many props were burnt; I did not examine them.
11508. *Q.* Would it not be probable, if the force came from No. 1 main level towards the travelling road, that it would blow the canvas clean off and leave the props there? *A.* No.
11509. *Q.* Then, if the force came out from No. 1 main level, it would blow them up altogether without separating the canvas? *A.* In my opinion it might.
11510 *Q.* If the force came from No. 1 main level, it might have blown the props, or it might have gone the other way? *A.* It all depends.
11511. *Q.* How is the canvas fixed? *A.* The canvas is tacked to the top bar; and it is simply let hang down, one hanging over the other.
11512. *Q.* Is there anything at the bottom to keep it down? *A.* No.
11513. What was there to prevent the air escaping? *A.* This canvas door was there.
11514. *Q.* I am talking about the canvas which was hanging along there to take the air to the working faces? *A.* The skips passed through it.
11515. *Q.* I mean the canvas which takes the air to the men's working-places? *A.* It hangs right along.
11516. What keeps it in position? *A.* There are a few tacks put down the props.
11517. *Q.* How far are the props apart? *A.* Various distances apart—3 or 4 feet, and so on.
11518. *Q.* About what percentage of air leaks through, owing to that system being adopted? *A.* I cannot say.
11519. *Q.* I suppose you admit that the leakage is considerable? *A.* There is a leakage; but I will not admit that it is very considerable.
11520. *Q.* As far as you saw, there was no indication of force down the 5th Right rope road east. *A.* Yes, the door was blown out.
11521. *Q.* From the corner of the 5th Right east, were there any indications of force? *A.* There were three canvas doors there. (*Witness examined the plan.*) The canvas stoppings on the 5th Right rope road were driven easterly.
11522. *Q.* I think you know there was a difficulty about getting lamps to go into the mine with on the evening of the disaster. *A.* Yes.
11523. *Q.* The rescue parties were delayed for a couple or hours for the want of lamps? *A.* Of course I could not say, I was in the mine, but I heard it.
11524. *Q.* I may take it that you are clearly of opinion that, if there had been an adequate supply of lamps there, there might have been more lives saved? *A.* They could have been got out quicker.
11525. *Q.* You mean that other men would probably have lived had the men got in quicker to carry them out? *A.* Yes, if the men had got straight in, they might.
11526. *Q.* Would you approve of the Recommendation (No. 12), that "an extra supply of safety-lamps and their requisites equal to one-third of the number of persons employed below ground, be kept constantly in good order and ready for use?" *A.* Yes; but I would like to give an explanation of how the lamps are used. You might keep that reserve in hand; and if anything went wrong in the colliery they would be of no use. If lamps are used with oil, and laid by, and you start to use them again, they will not burn. There would have to be new lamps there.

11527. *Q.* I am saying, "and their requisites?" *A.* There were lamps there; but they were no good; they should have been boiled first.
11528. *Q.* How many safety-lamps were there belonging to the company? *A.* I cannot say how many.
11529. *Q.* Did you ever clean any of them? *A.* I have nothing to do with them. I should say there would be twenty or thirty lamps. I think there should be a supply of lamps at the mine.
11530. *Q.* Do you know of the following rule, No. 7, relating to the duties of a deputy? "He shall, in the absence of a special officer appointed for the purpose, examine all safety-lamps, and shall have full control of the same, and shall see that the General Rules applying to lamps and shot-firing are at all times strictly observed?" *A.* Yes.
11531. *Q.* Did you examine the safety-lamps? *A.* I did not, it was not my duty.
11532. *Q.* Do you know whether a special officer was appointed to do this work? *A.* Not to my knowledge.
11533. *Q.* How often during a week have you found gas in Kembla since the disaster? *A.* I have never found it yet.
11534. *Q.* And have you still been daily examining No. 1 Right—are you still deputy? *A.* No, the work is being done now by William Livingstone.
11535. *Q.* You are not responsible deputy for Kembla now? *A.* Not unless I am sent for specially.
11536. *Q.* Were you removed immediately after the disaster? *A.* Yes, but not immediately after. I was asked to look after the ventilation.
11537. *Q.* How soon after the disaster? *A.* About three weeks or a month after.
11538. *Q.* Were you asked by Mr. Rogers? *A.* No, I was asked by Mr. Hotchkis.
11539. *Q.* Did he give any reasons? *A.* I was sent to restore the ventilation, such as putting up the doors and so on.
11540. *Q.* That is not so responsible as the office of deputy? *A.* Oh, I do not know that.
11541. *Q.* Now, I suppose that it was a common thing for stoppings in Mount Kembla, built of rubbish, to fall in? *A.* No.
11542. *Q.* They sank down frequently? *A.* Yes, and they would be punched up with a prop.
11543. *Q.* There would be a considerable leakage of air there. Was your punching up with a prop adequate to stop that leakage? *A.* You could stop it with a prop.
11544. *Q.* How often during a week? *A.* No time during a week.
11545. *Q.* Do you not admit that the stopping was down, so that the air would escape for days and days? *A.* I cannot admit it, but if you point to one I can tell you.
11546. *Q.* Is the object of a stopping to make the place absolutely air-tight? *A.* Yes.
11547. *Q.* Do you not admit that those places were very far from being air-tight? *A.* They might be in some places.
11548. *Q.* And, if the ventilation of the whole of No. 1 Right depended on single doors, it might be a reason for the ventilation being bad? *A.* It depends where the doors were.
11549. *Q.* There was a single door on the 4th Left travelling road? *A.* No, not a single door.
11550. *Q.* What was it? *A.* A canvas door. There are two canvas doors.
11551. *Q.* Are there not five doors between there and Stafford's Flat? *A.* There are two doors near the turn to the main level of the 4th Left travelling road, and two doors at the front to drive the air back to Aitken's and Tost's working place.
11552. *Q.* You recognise that there was a leakage on the 4th Left travelling road—at a door on the shunt? *A.* Yes, there was a leakage.
11553. *Q.* Was there not a single door on the 3rd Left? *A.* No, there was no door at the 3rd Left.
11554. *Q.* No door there? *A.* It was a stopping.
11555. *Q.* What sort was it? *A.* It was built of stone and rubbish.
11556. *Q.* Do you know whether it was in good order on the day of the disaster? *A.* I went through there that morning.
11557. *Q.* Did you inspect it? *A.* Yes.
11558. *Q.* What condition was it in? *A.* It was standing there; and a little air was going over it.
11559. *Q.* Was there not a considerable amount of air going over it? *A.* No.
11560. *Q.* It had been built to the top? *A.* Yes.
11561. *Q.* And it had sunk down 18 inches or 2 feet? *A.* No.
11562. *Q.* Was there not a considerable hole on the top of the stopping? *A.* There was not 18 inches or 2 feet.
11563. *Q.* How many inches would there be? *A.* I cannot say whether there was any hole at all. There was a little air going over it; but I am ready to swear that there was not a great hole there.
11564. *Q.* What was the size of this little escape? *A.* There was just a little air escaping.
11565. *Q.* Had not the place sunk down considerably? *A.* I rounded it myself before. It had been rounded up before that.
11566. *Q.* How many months before the disaster? *A.* I was only seven weeks on the job.
11567. *Q.* Will you not admit that there was considerable leakage of air through that 3rd Left? *A.* I will not admit that there was a considerable quantity.
11568. *Q.* I suppose you will admit that the proper sort of stoppings are built with brick? *A.* Yes.
11569. *Q.* And that these dust and rubbish stoppings are practically worthless for good ventilation? *A.* There was good ventilation in the mine; but I admit that brick are the best.
11570. *Q.* Then the system of building stoppings that way is a bad system—you say that as a practical miner? *A.* Yes.
11571. *Q.* Did you do any shot-firing? *A.* I have fired a few shots.
11572. *Q.* As a deputy? *A.* Yes.
11573. *Q.* Why did you fire them as a deputy—I mean before the disaster? *A.* I never fired a shot before the disaster.
11574. *Q.* Did you know that there was danger in an accummulation of dust where a shot was being fired? *A.* I have heard of it.
11575. *Q.* Before the disaster? *A.* No.
11576. *Q.* I am speaking to you now about things which happened before the disaster. Did you know that danger could arise from the accumulation of dust, when shot-firing? *A.* Never in Kembla.
11577. *Q.* I am not talking of Kembla? *A.* I say that I never saw any danger in Kembla. 11578.

11578. *Q.* If you saw an accumulation of dust in a mine, and shot-firing was going on, would you consider that accumulation of dust to be dangerous? *A.* I have read of it, long before the disaster.
11579. *Q.* You knew that an accumulation of dust where shot-firing was going on was dangerous? *A.* I have read it.
11580. *Q.* If shot-firing was going on where there was an accumulation of dust on the floor, you knew that it was dangerous? *A.* Well, I have read about it.
11581. Did you know that it was dangerous? *A.* I never knew that it was dangerous in Kembla.
11582. *Q.* In any mine? *A.* I have read about it.
11583. *Q.* Having read about it, and knowing it was dangerous, did you ever give any orders about watering any particular places in Kembla? *A.* Never.
11584. *Q.* Did you ever inspect the dusty conditions in Mount Kembla? *A.* I went round and inspected.
11585. *Q.* Did you inspect for dusty conditions? *A.* There were none.
11586. *Q.* Did you inspect for them? *A.* Do you mean for shot-firing. I had nothing to do with shot-firing.
11587. *Q.* I say, did you inspect the mine for dusty conditions? *A.* I say it is not a fair question. I was working on the night-shift, where there was no shot-firing.
11588. *Q.* Did you ever inspect for dusty conditions in Mount Kembla? *A.* No, I did not. I had nothing to do with shot-firing.
11589. *Q.* About how often, in your experience, was the air reversed in Mount Kembla? *A.* I cannot say.
11590. *Q.* Roughly speaking? *A.* It may not have been reversed for years.
11591. *Q.* At what time? *A.* I say that the air was reversed a few times since I went to Kembla, fifteen years ago, but not for years.
11592. *Q.* You know that it is caused by the westerly winds? [*No answer.*]
11593. *His Honor.*] *Q.* Since the new shaft has been sunk, has any reversal taken place? *A.* Not to my knowledge.
11594. *Mr. Lysaght.*] *Q.* At no time, for from seven to eight hours, or eight to ten hours, has the air not been reversed to your knowledge? *A.* No.
11595. *Q.* Have you not spoken about the reversal of the air to various men at Kembla? *A.* Never.
11596. *Q.* Never as a working miner? *A.* It may have been reversed; but never as far as I know.
11597. *Q.* Do you not know perfectly well that it has been reversed? *A.* I do not know perfectly well. It may have been, but not to my knowledge.
11598. *Q.* Has the number of deputies been increased in Kembla since the disaster? *A.* Yes.
11599. *Q.* Had you too much work to do when deputy? *A.* We had not shot-firing to do then.
11600. *Q.* Had you too much work to do? *A.* Well, I have done it.
11601. *Q.* Did not the deputies complain to each other of having too much work to do? *A.* Me and my mate never complained.
11602. *Q.* Do you know that they did complain? *A.* Yes, but I never complained.
11603. *Q.* Did one of the deputies complain? *A.* Yes.
11604. *Q.* Will you not admit that you had too much work to do to do it properly? *A.* There was only one way the deputies could complain. The night-deputy would complain about the day-deputy, or the day-deputy about the night-deputy.
11605. *Q.* You have said that you have no idea as to what caused the disaster? *A.* No.
11606. *Q.* Have you got any idea? *A.* I said at the inquest that I thought it was a big fall in the 4th Right.
11607. *Q.* And it forced out—what? *A.* There was a great rush of air.
11608. *Q.* And not gas? *A.* No gas.
11609. *Q.* You have never changed your ideas since? *A.* No.
11610. *Q.* You think gas had no part in it? *A.* No.
11611. What about coal-dust? *A.* I do not know.
11612. *Q.* As far as you do know? *A.* I am no expert in the matter; and you are putting expert questions to me.
11613. *Q.* As far as you know, neither gas nor coal-dust played any part in the explosion? *A.* I cannot say. I believe there was no gas in the 4th Right; and I believe that is where the explosion came from. I believe that in my heart, too.
11614. *Q.* You remember the time that you found black-damp in the 4th Right? *A.* Yes.
11615. You did not report it? *A.* No.
11616. *Q.* The intake air passing the coal would carry through the mine? *A.* You are on the wrong side.
11617. *Q.* The air passing up No. 1 main level. If any black-damp came out of the 4th Right, where would it go? *A.* It would go down the travelling road.
11618. Are there openings on to the 4th Right on the western side of that goaf? *A.* There are three openings on the western side of the goaf; and there are four or five on the east side and the south side.
11619. *Q.* And on the north? *A.* There are five or six, to the best of my knowledge.
11620. *Q.* And no air would circulate through that goaf? *A.* No.
11621. *Q.* So that anything which came out of the openings on the north would go into the intake air? *A.* If anything came out, it would.
11622. *Q.* And would be carried to the men at the working faces? *A.* If anything did come out, it would.
11623. Now, do you approve of Recommendation No. 4: "That all waste workings should be absolutely sealed off"? *A.* I do not know that it is the best idea; but they are better sealed off than left open.
11624. *Q.* The Recommendation is that "All waste workings be absolutely sealed off and surrounded by return airways, for fear of emissions; such return airways not to come in contact with the intake? *A.* I do not believe in this recommendation, as a practical miner. Where there is gas, I believe in them being ventilated—I mean if there is only a little black-damp. I do not believe in piling up the expense, when the mine-owners have to pay it all.
11625. *Q.* Do you approve of waste workings being sealed off? *A.* In some cases it would be better, if there were gas to have the place ventilated.

11626. *Q.* Do you believe in waste workings being surrounded by return airways, so that any emissions shall not come in contact with the intake? *A.* I do not quite understand you.
11627. *Q.* You see that there is danger from the emissions, from the wastes? *A.* In some collieries there is a great danger; and in others there is not so much.
11628. *Q.* Is it not better to have wastes surrounded by return airways? *A.* In gassy mines it would be better; but in mines like Mount Kembla it does not matter whether the intake air passes or not.
11629. *Q.* Do you not admit that the air coming down the 4th Right would meet the air coming from these wastes through these openings? *A.* There is nothing coming out of these openings into the mine. There was nothing coming out of the openings on the 4th Right; we have had no gas there since the ventilation has been restored.
11630. *Q.* How do you know? *A.* I was there at the time.
11631. *Q.* Would not the air carry the gas away;—how can you swear that there was nothing being emitted from those openings in the wastes? *A.* Because I was there every night when the ventilation was not travelling, and if there had been any gas I would have found it then.
11632. *Q.* Now, I want to ask you with regard to Recommendation No. 1, which is as follows:—"Managers, under-managers, deputies, and shot-firers, to hold certificates of competency by examination, and to have had five years' practical mining experience, before being eligible for their respective positions." Do you believe in that recommendation? *A.* I believe that Managers should have certificates. I do not believe that deputies or shot-firers should undergo an examination. If the Manager is not competent to examine them, he is not efficient himself.
11633. *Q.* Did the Manager ever examine you? *A.* He had a very fair examination of me.
11634. *Q.* Did he ask you a single question? *A.* He told me that he knew all I knew.
11635. *Q.* And I suppose you knew all he knew? Did you ever hear him say he knew nothing about gas, that he did not know what carburetted hydrogen was;—now, did you consider, in view of the disaster, that you had made a thorough examination of the mine for gas? *A.* Yes.
11636. *Q.* Do you consider yourself thoroughly competent to be a deputy, having violated three or four rules? *A.* Yes.
11637. *Mr. Bruce Smith.*] I hope that question will not be taken down in that way—"Having violated three or four rules."
11638. *Mr. Lysaght.*] *Q.* You did violate the rules? *A.* I did not violate them. I did everything I was told to do.
11639. *Q.* Well, you would rely on a deputy's practical experience only? *A.* I do not wish to go into that question.
11640. *Q.* You do not approve of this recommendation; and I want to know what you think a deputy ought to learn, if he should not be examined? *A.* He should know gas when he sees it in the lamp; he should know the way to brattice a place properly; he should know the rules of the mine.
11641. *Q.* Is that all? *A.* That is pretty well all you can know.
11642. *Q.* Is that all you know? *A.* He should know fire-damp when he sees it ignited in the lamp—he should know how to fix up bratticing—and he should know the rules of the mine.
11643. *Q.* He should know all that, and know no more? *A.* He should know all that he can know—if he is a practical man.
11644. *Q.* What else should he know;—I want your ideas as to what is a practical man? *A.* That is a big question.
11645. *Q.* What else should he know in addition to these three things?
11646. *Mr. Bruce Smith.*] *Q.* Is Mr. Morrison an expert on what a deputy should know?
11647. *His Honor.*] It is useless to ask these questions; and most of them are a mere waste of time.
11648. *Mr Lysaght.*] My object is to show that he was absolutely incompetent to be a deputy himself, in view of several rules which he violated.
11649. *His Honor.*] Hardly anybody can give an exhaustive definition about anything. Out of a number of persons who know a great deal about things, the number who would be able to define the duties which they ought to be able to perform is very small.
11650. *Mr. Bruce Smith.*] I do not think this kind of examination really comes within the province of the Commission.
11651. *Mr. Lysaght.*] May I ask this witness a few questions with regard to his knowledge of gas?
11652. *His Honor.*] It would only be of use with a view of showing that he was to blame, and the questions must be kept within reasonable limits.
11653. *Mr. Lysaght.*] *Q.* Can you tell me what proportion of fire-damp becomes inflammable? *A.* 6½ per cent.
11654. *Q.* Of what? *A.* 6½ per cent. in the lamp. Wait a minute. Yes, 6½ per cent. explodes.
11655. *Q.* Of what? *A.* Gas.
11656. *Q.* Where? *A.* Anywhere. In the mine; if that is the question you are asking.
11657. *Q.* And the answer is that 6½ per cent. will explode anywhere? *A.* Feebly in the lamp.
11658. *Q.* Do you say that 6½ per cent. will explode anywhere; or that it will explode chiefly in the safety-lamp? *A.* Yes, that is what I mean, feebly in the safety-lamp.
11659. *Q.* Now, will you tell me how you can tell what percentage of gas there is in the safety-lamp? *A.* Yes.
11660. *Q.* I want to know how you can tell what percentage of gas there is in a safety-lamp? *A.* 6 per cent. fills it to the top of the glass. I have the table at home.
11661. *Q.* I am speaking of the time before the disaster;—can you tell me what percentage of gas could be discovered in the lamp before the disaster? *A.* If there is 2½ per cent. of gas, you know it by the lamp.
11662. *Q.* I thought with the lamp you only knew 6½ per cent.? *A.* You do not understand me.
11663. *Q.* Do you say that 6½ per cent. will explode feebly in the safety-lamp? *A.* Yes?
11664. *Q.* That is all you mean? *A.* Yes.
11665. *Q.* You do not know how much will explode in the mine? Six and a half will explode feebly with a naked light.

11666. *Q.* Would it matter whether there was any air there or not;—what percentage of air should there be, if there should be any? *A.* Yes, there should be air there.
11667. *Q.* How much?
11668. *Mr. Bruce Smith.*] This is a question on chemistry.
11669. *His Honor.*] It is confusing the witness altogether.
11670. *Mr. Lysaght.*] *Q.* Have you read the matter up? *A.* I have read plenty of books about it.
11671. *Mr. Bruce Smith.*] I submit that Mr. Morrison is not an expert on chemistry or on gas. The only value of his evidence in this direction would be to show that he could not understand the elementary questions relating to gas, a knowledge of which are required by a deputy. This is taking him beyond that. My friend is trying to set Morrison up as an expert, outside of his province.
11672. *His Honor.*] His province was to test whether there was a dangerous quantity of gas present; and these questions are not directed to that.
11673. *Mr. Bruce Smith.*] I think Mr. Lysaght is trying to get facts out with ulterior motives.
11674. *Mr. Lysaght.*] My friend should not say anything of the kind. I am not here with ulterior motives.
11675. *Q.* If you had not discovered, say, more than 6 per cent. of gas, you would not have cousidered it dangerous? *A.* No.
11676. *Q.* Is that what you mean—"No"? *A.* No, that is not what I mean. If I found any gas at all, I should have considered it dangerous.
11677. *Q.* Do you say now that you would have considered any quantity of gas dangerous? *A.* I should have considered any quantity dangerous, if I had discovered it.
11678. *Q.* You would not consider any quantity of dust dangerous? *A.* I have nothing to do with dust.
11679. *Q.* You would not consider any quantity of dust dangerous as far as you know? *A.* I had nothing to do with dust. There are some dusts more dangerous than others.
11680. *Q.* What quantity do you consider dangerous? *A.* Of course, that is the next question. I am not going to tell you all about that.
11681. *Mr. Bruce Smith.*] If every deputy is to be made an authority on coal-dust, we should never be done with this inquiry.
11682. *Mr. Lysaght.*] *Q.* Do you approve of Recommendation No. 5—"That all places, except prospecting drives, should have cut-throughs not more than 30 yards apart"? *A.* I think it is unnecessary.
11683. *Q.* What distance do you think it is necessary to have them? *A.* I should say about 50 yards apart.
11684. *Q.* What do you say with regard to Recommendation No. 18—that "Instructions shall be given to employees regularly on the means of escape." Do you approve of that? *A.* Yes.
11685. *Q.* Who should give it? *A.* The deputy.
11686. *Q.* When would you have it given? *A.* He could take them out at night.
11687. *Q.* About once a quarter—at each cavil? *A.* Yes.
11688. *Q.* Do you think it would work satisfactorily? *A.* It would be a good thing to try it; but the men shift a lot in their work.

Examined by Mr. Curtiss :—

11689. *Q.* With regard to Rule 9, what is your idea as to your duties under that rule?
11690. *Mr. Lysaght.*] The duties are defined in the rule.
11691. *His Honor.*] He says he thinks the rule should apply to the working faces only.
11692. *Mr. Curtiss.*] *Q.* About the stoppages, as carried out at Mount Kembla. As far as your knowledge goes, are they satisfactory? *A.* They are; but brick stoppings would be better.
11693. *Q.* Brick stoppings would be better? *A.* Yes.
11694. *A.* But these carry out their work? *A.* Yes.
11695. *Mr. Bruce Smith.*] *Q.* You said in answer to Mr. Lysaght that a certain kind of stopping, which he described as being made up of rubbish, would be very bad. Do I understand you that that kind of stopping is used in Mount Kembla? *A.* I do not know what you mean.
11696. *Q.* Did not Mr. Lysaght describe some stopping as being made up of loose stone and rubbish? *A.* Those which he said were 2 feet down from the roof.
11697. *Q.* Yes. Is there anything of that kind in Mount Kembla? *A* There is nothing like that in Mount Kembla.
11698. *His Honor.*] *Q.* There are no brick stoppings there? *A.* None before the disaster.
11699. *Q.* These stoppings which have been described, how are they built? *A.* There are stone walls; and they are filled up with fine stuff, and built up. Then they are built up from the other side
11700. *Q.* What is the general thickness from wall to wall? *A.* From 4 to 5 feet. Four feet would be about the smallest; it would depend upon whether there was plenty of fine stuff.

Examined by Mr. Robertson :—

11701. *Q.* What is the object of stoppings? *A.* To keep the air travelling in one direction.
11702. *Q.* To carry it to the working face? *A.* Yes.
11703. *Q.* If sufficient air is carried, with stoppings of the character which have been described, you have nothing to grumble about. It does not matter very much what is the nature of the stoppings? *A.* It does not matter, so long as the air is carried.
11704. *Q.* In the event of an explosion, which would stand best—the rubbish ones or the brick ones? *A.* They would all go the same as each other.
11705. *Q.* Would not thick rubbish stoppings be more likely to stand a shock than a thin brick wall? *A.* Yes, perhaps they would.
11706. *Q.* You said that the air was good at Kembla? *A.* Yes.
11707. *Q.* Therefore, these dirt stoppings effected their purpose? *A.* Yes.
11708. *Q.* With reference to the air passing over the stopping in No. 3 Left, do you remember Mr. Lysaght suggesting that there was 18 inches of space over the top of a stopping? *A.* There was no space, so far as I saw; but there might have been a little air going over. There was no hole there.
11709. *Q.* Where would that hole lead to—be it little or great? *A.* It would go right into the return.
11710. *Q.* Are you sure? Will you look at the plan? *A.* [*After looking at the plan*] I see that it would go through the goaf, if it went anywhere

11711. *Q.* If it went through a goaf, would it not be effecting a good purpose? *A.* Yes.
11712. *Q.* By helping to keep the goaf clear of gas? *A.* Yes.
11713. *Q.* As a matter of fact, are not leakages necessary, in order to ventilate the whole of the mine properly? *A.* Yes, to ventilate the roads.
11714. *Q.* If you attempted to force all the air into the working faces, what would be the result? *A.* We never attempt to do it.
11715. *Q.* Would you not reduce the total volume of air? *A.* Yes.
11716. *Q.* Would not the old workings and the wastes suffer? *A.* Yes.
11717. *Q.* So that it is not good mining practice to have a mine absolutely without leakages? *A.* No, it is a bad practice to have it without leakages.
11718. *Q.* Now, on the 5th Right rope road, I think the first door had stone walls? *A.* Yes.
11719. *Q.* Where were they driven? *A.* To the east.
11720. *Q.* And the door in the travelling road, inbye of the 5th Right, that was driven south towards the 5th Right—it also had stone walls? *A.* Yes.
11721. *Q.* It does not take very much force to drive them, does it? *A.* No.
11722. *Q.* Did you notice, in the 5th Right, on the rope road, lots of canvas and dust thrown on to the skips? *A.* Yes.
11723. *Q.* Driven up against the end? *A.* Yes; and some of the canvas in the 5th Right appeared to be driven inbye.
11724. With reference to the canvas at Morris' place, which was placed in the mouth of the cut-through; it would be in smaller pieces than the other canvas in the place? *A.* Yes.
11725. *Q.* Could you not identify these small pieces—the pieces cut for the door? *A.* I did not look at the time. If they had been left there, I could have identified them.
11726. *Q.* You said that some of the props had been blown there with the canvas attached to them—would not that help you? *A.* I could identify the frames of the doors. The men came to take away the stuff; and they took the door with them.
11727. *Q.* The canvas being attached to the props, they must have come from that place? *A.* I am certain as to where it all came from. There was no other canvas there.
11728. *Q.* Did you observe the canvas in No. 1 back heading after the explosion; in the last cut-through up to the face? *A.* Yes, I observed that.
11729. *Q.* Was it not in position, excepting what was burnt? *A.* The tail end of one length was down.
11730. *Q.* Was that the only part missing? *A.* There was none missing.
11731. *Q.* How was it burnt? *A.* It was not properly burnt; it was only singed.
11732. *Q.* In view of the canvas being there, and being intact, excepting one short length hanging down, do you not think it was in position before the explosion? *A.* I think it was in position, of course, these gentlemen here say —— [*Interrupted.*]
11733. *Q.* Never mind what they say. You have no reason to think that the canvas was not in position before the explosion? *A.* I have no reason to suppose that it was not in position.
11734. *Q.* Now, with regard to an examination of these standing places. Do you know whether they were included in the weekly or the monthly examination? *A.* Those places would not be examined when I examined the old workings.
11735. *Q.* Would you not, if a place was abandoned, and you did not examine it daily—would you not examine it when you examined the old workings? *A.* I was told what to examine.
11736. *Q.* Now, here are some standing places—if they were not examined in the daily examination, would it not be necessary to examine them weekly, the same as you do the old workings. Would they not be old workings? *A.* Yes.
11737. *Q.* Did you examine them? *A.* No.
11738. *Q.* Did Nelson? *A.* Whether Nelson examined them I cannot say.
11739. *Q.* I think you examined the waste workings? *A.* I never examined those places.
11740. *Q.* Had you any instructions? *A.* None to examine those places.
11741. *Q.* In making an examination at night, for the morning shift, what time did you start? *A.* When I came out from the mine, I would come out at the main tunnel; and I would have a bit of bread, and go back. I would come out of the main tunnel first about 2 o'clock.
11742. *Q.* When did you start to make the examination? *A.* Of course, I went back again. It would be between 2 and 3 o'clock.
11743. *Q.* Were you in the habit of examining places contiguous to where the stone men were? *A.* Yes, I examined them.
11744. *Q.* Did you examine the places near by where they were? *A.* No.
11745. *Q.* From the beginning of your visit, you went right through? *A.* Yes.
11746. *Q.* No matter what places you examined for the stone men? *A.* Yes.
11747. *Q.* If you examined places for the stone men, you would also examine them again on making your inspection for the day? *A.* Yes.
11748. *Q.* Will you explain how you examined the waste workings? *A.* Yes.
11749. *Q.* What do you understand by waste workings? *A.* That is a monthly inspection. We reported everything we saw. We came right down.
11750. *Q.* Did you, in making the examination, go into every place accessible? *A.* Yes, as far as safe.
11751. *Q.* You did not leave any bord which you could get into? *A.* We went into every place.
11752. *Q.* You went with naked lights? *A.* Yes.
11753. *Q.* Did you not think it necessary to have safety-lamps? *A.* The first time that I took a safety-lamp Nelson laughed at me, and said that he always went with a naked light.
11754. *Q.* Do you not think it probable that these were likely places in which to find gas? *A.* I would think that the most likely place to find gas would be in the highest place in the mine. I followed out what Mr. Nelson told me.

[The Commission, at 5·10 p.m., adjourned until 10·15 a.m. the following morning.]

TUESDAY,

TUESDAY, 3 FEBRUARY, 1903.

[*The Commission met at the Court House, Darlinghurst.*]

Present:—

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq., Commissioner. | D. RITCHIE, Esq., Commissioner.

Mr. Bruce Smith, Barrister-at-Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf of the Crown.

Mr. A. A. Atkinson, Chief Inspector of Coal-mines, assisted Mr. Bruce Smith.

Mr. A. A. Lysaght, Solicitor, appeared on behalf of—

(*a*) the representatives of deceased miners, wheelers, &c., (victims of the explosion);

(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.); and

(*c*) the Illawarra Colliery Employees' Association (the Southern Miners' Union).

Mr. F. Curtiss, Solicitor, appeared on behalf of the Mount Kembla Coal and Oil Company (Proprietors of Mount Kembla Mine).

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings.)

Mr. JOHN MORRISON, previously sworn, was recalled, and further examined as under:—

Examination by Mr. Robertson:—

11755. *Q.* Do you positively state that you examined every accessible place when you were making your examination of the old workings? *A.* Every accessible place inside of these places [*indicating on the plan*].

11756. *Q.* But, in going round, if you found a bord open, an old bord, did you go into it? *A.* Yes.

11757. *Q.* And, if there was any place that you did not inspect, for what reason did you not inspect it? *A.* There were only the two inspections altogether. Of course I was not very well acquainted —— [*Interrupted*].

11758. *Q.* If you passed any place, can you give your reason for passing it? *A.* I did not pass any place.

11759. *Q.* But you must have passed lots of places that were not accessible? *A.* I did not pass any place without going in if I could get in. Of course there are places there that you cannot get in.

11760. *Q.* By reason of broken timber? *A.* By reason of the roof being in.

11761. *Q.* Then you left no place unvisited that could safely be inspected? *A.* No.

11762. *Q.* Now, when you came to a waste where there had been falls, where the pillars had been drawn and the roof was falling, how far did you examine that? *A.* As far as it was safe to go.

11763. *Q.* Did you go on top of the falls? *A.* Well, if it was not safe I did not go. I have been on top of falls in Mount Kembla many times.

11764. *Q.* In making your inspections? *A.* Is this the inspection of the 19th that you speak of?

11765. *Q.* I am asking about your inspections? *A.* Oh, yes; I have been on the top of falls—where it was safe to go.

11766. *Q.* You did not step at the tail of the fall? *A.* If it was not safe I stopped at the tail of the fall.

11767. *Q.* Of course, there are degrees of safety; going on top of a fall at any time is dangerous; a zealous officer, if he is anxious to know the condition of a mine, will take a little risk? *A.* Yes; I believe I have taken too many risks in going where it was dangerous.

11768. *Q.* Well, there were heaps of falls that I, myself, saw in Mount Kembla, that were not too bad to get on top of? *A.* Yes, there were some you could get on top of; and some you could not. Some you would go up against, and they would be the same as a stone wall.

11769. *Q.* Did you go on top of the falls only occasionally, or did you take every opportunity? *A.* Yes; if I could get up in safety. If I considered it was not safe I did not get on top of the fall.

11770. *Q.* But, under any circumstances, I take it, you would hold your lamp up as far as you could reach it? *A.* Yes, always.

11771. *Q.* Now, was this black-damp, which you found in the 4th Right, and did not think it worth while reporting to the Manager, much in quantity? Will you describe how much there was of it; or how it affected your light? *A.* It dimmed the light, right in at the tail of the fall.

11772. *Q.* That is where the roof had fallen 2 feet? *A.* Yes.

11773. *Q.* And would it have extinguished the light? *A.* No; I never went in far enough to see. The timber was all drawn, and there was a great wide open space.

11774. *Q.* Were you with me and Mr. Atkinson when we went in, about a week after the explosion? *A.* Yes.

11775. *Q.* Do you remember the black-damp extinguished a lamp then? *A.* Yes.

11776. *Q.* Was not it as bad as that? *A.* No; nothing like it.

11777. *Q.* Now, would you have reported that? *A.* Yes; if it had been the same when I saw it, I would have reported it.

11778. *Q.* Do you remember the date Mr. Atkinson and others, and myself, visited the 4th Right after the explosion? *A.* Yes.

11779. *Q.* Do you remember seeing some props about 5 yards back from the fall? *A.* Yes.

11780. *Q.* In which direction were these props blown? *A.* Well, these particular props, I could not say.

11781. *Q.* Do not you recollect? Were you not up with us? *A.* Yes, I was up with you; but still I cannot remember just exactly these props.

11782. Do not you remember they were buried in slack at the bottom end, 2 feet or so deep? *A.* Well, I do not recollect that. I was not up just exactly along with you; but still I have been up there four or five times. I have been up many times.

11783. Would not you take notice of these things *A.* I believe I was up the time that you speak of; and I believe there were props there that were partly buried in slack.

11784. *Q.* The slack had been half-way up? Yes. 11785.

11785. *Q.* If you found the heads of these props driven towards the fall which way would you say the force was? *A.* I would say the force went in.
11786. *Q.* Did you notice that chock there, or a pig-sty? *A.* There were two pig stys just inside the fall.
11787. *Q.* No; this side of the fall, outside the fall? Do you recollect the condition of that pig-sty? *A.* No, I do not recollect the exact condition.
11788. *Q.* This is so important. You seem to have been taking notice ——[*Interrupted*]? *A.* Yes, I would have taken notice if it had been ——[*Interrupted*].
11789. *Q.* You seem to have a fair knowledge of the mine afterwards, whereas this is the one spot of more interest than all others? *A.* I know all about the timber that was further out; but I cannot recollect just exactly. I have seen it; but I cannot just recollect where that chock was.
11790. *Q.* Do you not recollect my drawing the attention of the gentlemen who were present to these props? *A.* I was not along just exactly at the same time as you.
11791. *Q.* Do you recollect a large flat stone lying on the 4th Right? *A.* Yes.
11792. *Q.* Do you recollect if that stone had been traced to the back-heading, having fallen from the back-heading and been driven in? *A.* I do not know. The stone was lying there; but whether it was driven in or driven out I could not say.
11793. *Q.* It was a black stone? *A.* It was a flat stone.
11794. *Q.* It was a big flat stone; but it was a black stone, from just over the coal? *A.* Yes.
11795. *Q.* And did you not see where that stone had come from, right on the travelling road on the back heading? *A.* No; I did not see the exact spot where it came from.
11796. *Q.* Did you notice whether, inbye of that, there was any cavity in the roof from which it could have come? *A.* Not unless it was thrown out from a fall, or thrown in from the back-heading as you say.
11797. *Q.* It was about 30 odd yards from the fall? *A.* Yes.
11798. *Q.* Do you not think it more probable that it would come from the back-heading, assuming that there was a hole in the roof? *A.* Yes; of course there were any amount of stones fallen there; but how that particular stone got there I could not say.
11799. *Q.* There were not any amount of stones fallen? *A.* There were any amount of stones fallen at the back heading.
11800. *Q.* Oh, yes. How many years' practical experience have you had in mines? *A.* About thirty-five years.
11801. *Q.* And have you a knowledge of the different systems of working coal? *A.* Long-wall, and bord and pillar.
11802. *Q.* Do you know all about extracting pillars? *A.* Yes; I understand all about extracting pillars.
11803. *Q.* And timbering? *A.* Yes.
11804. *Q.* And may I take it that you have a thorough practical knowledge of mining? *A.* Yes.
11805. *Q.* And what is your experience with gas? *A.* Well, of course, I have had experience in the old country. I have never come near it in this country.
11806. *Q.* That is what I mean? *A.* I have held the same position in the old country as I hold in Mount Kembla.
11807. *Q.* Where? *A.* In Jordan Hill.
11808. *Q.* That is a large ironstone mine? *A.* Yes, ironstone and coal.
11809. *Q.* There was plenty of gas there? *A.* Yes, there was gas there.

Examination by Mr. Ritchie:—

11810. *Q.* I want to get one matter cleared that is not clear at present to my mind. Were you the examining deputy for the No. 1 section *A.* Yes.
11811. *Q.* The examining deputy for the workmen during the day, and the waste examining deputy for that section? *A.* Yes.
11812. *Q.* Now, in connection with the waste, were you the only examining deputy in connection with the waste workings? *A.* I cannot say. Of course I examined wastes; but I cannot say whether any other deputy examined them.
11813. *Q.* Do you know of any other whose duty it was to examine the wastes? *A.* I do not know.
11814. *Q.* You never heard of any other? *A.* I never made any inquiries.
11815. *Q.* I suppose you report in a book? *A.* Yes.
11816. *Q.* Did you ever see the name of any other person who had reported the examination of waste workings? *A.* In No. 1?
11817. *Q.* Yes? *A.* No.
11818. *Q.* And you never heard of any other? *A.* No.
11819. *Q.* Now, what do you call those workings? *A.* Workings where the pillars have been taken out and the roof has fallen.
11820. *Q.* And what do you call a goaf? *A.* Goaves and waste workings are the same. A real goaf, as far as I take it, is in the long-wall workings. The goaf is between two buildings in a long-wall face?
11821. *Q.* Where the coal has been all worked out? *A.* Yes.
11822. *Q.* And, in the pillar and stall system, where the coal has been all worked out, what do you call that? *A.* A waste.
11823. *Q.* You would call it a waste in the case of pillar and stall? *A.* Yes.
11824. *Q.* And a goaf in the case of the long-wall system? *A.* Yes.
11825. *Q.* The condition would be exactly the same? *A.* Yes.
11826. *Q.* And what do you call places where bords have been worked, and the pillars are all standing unworked? *A.* I would say the bords were driven up—[*Interrupted.*]
11827. *Q.* And what would you call a section of the workings where the bords had been completed and the pillars had not been commenced? *A.* We would generally say, "The old bords," until we began to take out the pillars.
11828. *Q.* Now, in the case of pillars standing like that, and headings which have been driven up sufficiently far for the time being and are not working, what part of your examining duties would they come under—the day examination or the waste examination? *Q.* I do not know what part these places would come under.

11829. *Q.* I will put it to you this way—when did you examine these places; in your daily examination, or in your waste examination? *A.* You mean the morning inspection?
11830. *Q.* Yes, the daily examination? *A.* Well, I did not examine these places at all.
11831. *Q.* You did not do them at all? *A.* No.
11832. *Q.* In neither one examination nor the other? *A.* Neither one nor the other.
11833. *Q.* So that whatever part of the workings was standing, pillar workings, or headings, or bords which may be standing driven up sufficiently far for the time being, those were never examined at all? *A.* Of course you mean they were driven up the distance, and cut off by the line of cut-throughs further up.
11834. *Q.* I understand these were never examined by you? *Q.* Not by me.
11835. *Q.* What was the object of examining what you call the waste workings, where the coal had been all extracted, and refusing to examine these places which were likely to be working? *A.* In any examinations I made I went according to what I was told. I was told the way to examine the places, as I stated before. Of course, it is no use my going into the subject to say what should have been done or what should not. I had only to do what I was told.
11836. *Q.* I will put it to you this way: were there any other sections of the workings in No. 1 which were likely to be worked and not in actual operation, other than those which you have mentioned? I think there were eight or ten you mentioned yesterday; that is, I think you mentioned six or seven apart from those two headings. Were there any other parts in your section standing which were not examined, which were likely to be worked? *A.* Well, of course, I never knew they were likely to be worked. I would only be told that they were going to start the day before they were to be started. I would be told the day before to examine in the morning.
11837. *Q.* Were there any other parts of that section with pillars standing intact? *A.* In the 4th Left there was a place.
11838. *Q.* How many places were there there? *A.* Altogether?
11839. *Q.* Yes, where the bords had been worked out, and the pillars left standing? *A.* These places were all driven up the distance [*pointing to the bords numbered from eighty to ninety.*]
11840. *Q.* How many would there be apart from those you mentioned yesterday? *A.* That is the only place that I can think of.
11841. *Q.* These are the ones that you described yesterday? *A.* Yes. These two headings you described yesterday (the No. 1 Main heading and No. 1 back heading), and these places along here? *A.* Yes.
11842. *Q.* Your examining district ended about here (2nd Left rope road)? *A.* Yes.
11843. *Q.* What about these places here (between the 4th Left and the 15½ acre goaf)? *A.* That is just into the goaf.
11844. *Q.* And these are all pillars here? *A.* Yes; that is finished.
11845. *Q.* Are they built up at the opening here? *A.* Most of them are. They were before.
11846. *Q.* Are there some of them open? *A.* They are open now; but I do not think there was one of them open before.
11847. (The bords referred to are those on the northern side of the 15½ acre goaf, between the goaf and the 4th Left rope road.)
11848. *Q.* What about these places in here, between the 35 acre goaf and the 9 acre goaf—were these all closed up thoroughly? *A.* Yes.
11849. *Q.* Right along the 2nd Right, to the very end there, were they closed up? *A.* I think there was one place there that was open in that 2nd Left.
11850. *Q.* Whereabouts was that? *A.* I think it was about the middle.
11851. *Q.* That is in the middle of the north side of the 9 acre goaf. [*No answer.*]
11852. *Q.* Was that place examined daily or in your waste examination? *A.* That was examined in the morning, since the 19th.
11853. *Q.* Every morning since the 19th? *A.* Every morning since the 19th. I think there was just one place that I can remember. Of course it is all knocked open now.
11854. *Q.* What about these roads leading up here (the bords on the north side of the 4th Left)? Are these open? *A.* Yes.
11855. *Q.* Did you examine those also during your daily examination? *A.* No.
11856. *Q.* These were not examined at all? *A.* I cannot say.
11857. *Q.* Not by you? *A.* No.
11858. *Q.* Putting it shortly, I take it that this is the position as far as you are concerned: that you were the examining deputy, both for the daily examination, and for the waste examination of No. 1 section; and that you never did examine places which were standing or were abandoned for the time being? *A.* No, I never examined them.
11859. *Q.* Now, you have said here, in answer to Mr. Robertson, I think it was, that you went into the waste workings as far as you could get? *A.* Yes, as far as it was safe to go.
11860. Now, how do you reconcile that with this in your former evidence here on page 15 of the evidence taken at the inquest? You said "I never did anything to see whether gas had accumulated in that waste." You were talking then, I think, of the 35 acre goaf; and further on you say "I never went into the waste in my life"? *A.* Well, I was speaking about some particular waste. These waste workings that I spoke about in that evidence, the waste examination in Mount Kembla, that is when I was examining in the morning. Say I was going down examining for the morning shift, if it was a waste examination, I would be told in the morning to go and examine certain parts, say the 2nd Right.
11861. *Q.* Do I understand that, when a waste examination had to be made, you were told in the morning what part of the waste you had to examine? *A.* Yes; I was told that this would be the monthly examination of the waste. Of course I only examined twice.
11862. *Q.* Were you told the particular parts of the waste that you had to examine? *A.* Yes—say to examine the 1st Right.
11863. *Q.* You need not describe the parts; but do I understand that, after you had received instructions to examine certain parts of the waste, you did not examine any other parts? *A.* I examined the parts I was instructed to examine.
11864. *Q.* Would there be any parts of the wastes left after you had examined in that way? *A.* These workings going in the main roads were not examined at the time I made the monthly examination.

11865. *Q.* The waste workings going in the main roads? *A.* Off the main roads. These were not examined, only on the 2nd Right and the 2nd Left.
11866. *Q.* On the occasions when you went to make your waste examination, these waste workings you have now described were not examined? *A.* No.
11867. *Q.* When were they examined? *A.* They were examined every night. I went into these places every night.
11868. *Q.* They were examined every night? *A.* Yes; those were the instructions I got.
11869. *Q.* Now, taking it that you examined part of the waste workings every night, and another part when you were told to examine, when you were making your monthly examination, were there any other parts left that you did not examine? *A.* None, to my knowledge. Of course, I was only going with another man, learning the waste workings, at the time.
11870. *Q.* You were not familiar with them yourself? *A.* No, I was not intimate with them myself.
11871. *Q.* And you were only going over the ground? *A.* Of course, I knew a lot of Mount Kembla; but I was only learning these places. Another man went along with me.
11872. *Q.* I think on page 16 of your evidence at the Coroner's inquest you described the places you went to. The places were inspected on the 19th. That is the last waste examination you made? *A.* Yes.
11873. *Q.* "The places we inspected on the 19th were the two headings where the fresh air came straight in from the travelling road"——[*Interrupted*]? *A.* The daylight heading.
11874. *Q.* "We inspected just air-courses on that date." You know that air-courses are not waste workings? *A.* Well, I made it very clear that we went into all the openings off these headings; but there are scarcely any that you can get any length into—just a few yards. They have fallen right in for years.
11875. *Q.* I think you told us that, in your opinion, the disaster was caused by a fall sending out a blast of air? *A.* Yes.
11876. *Q.* You said that you believed that there was no gas mixed with that air? *A.* Yes.
11877. *Q.* How do you come to arrive at that conclusion? *A.* Well, by the direction of the forces, that is all.
11878. *Q.* Does the direction of the forces tell you whether there has been any gas mixed with the air or not? *A.* Well, I had not previously found it.
11879. *Q.* Do you not know that you have previously told us that you never looked for it? *A.* No, I have not told you that I never looked for it.
11880. *Q.* But you told us you simply went with your flare-light? *A.* But I did not go in the 4th Right with my flare-light.
11881. *Q.* Is that where you say the blast came from? *A.* Yes.
11882. *Q.* And is that the only reason you have got for arriving at the conclusion that there was no gas, because you yourself have never found any? *A.* Never found any; that is the only reason.
11883. *Q.* Well, can you tell us what caused the after-damp arising out of that disaster? *A.* I cannot go into those questions.
11884. *Q.* You have already told us that you have read scientific works, and you have had thirty-five years' experience, and have had considerable experience in gassy mines. In thinking about whether there was gas in that blast or not, did that question never occur to you, as to what caused the after-damp? Did not you take that into consideration when you were trying to fix in your mind whether there was gas or not? *A.* Yes, I took it into consideration; but still I am not an expert witness.
11885. *Q.* Do you think you are competent, now, to say that there was no gas with the blast of air? *A.* I never found any gas.
11886. *Q.* Do you think you are competent now to say there was no gas mixed with the blast of air which, you say, came out of the 35-acre goaf? *A.* I do not think there was any gas. That is all I can say.
11887. *Q.* It is a matter of opinion, and you are not competent to say what caused the after damp? *A.* No.
11888. *Q.* Is that it? *A.* That is so.
11889. *Q.* Now, as a practical man, I will just put these questions to you: Do you think that an inspection which neglected so many places was likely to be effective? *A.* The places I inspected were all free from gas.
11890. *Q.* I am not asking you that. I am asking your opinion, as a practical man of over thirty years' standing, and with a knowledge of some scientific works, do you think the inspection was of any use whatever, when you knew that other parts were not inspected? *A.* But there was nobody else to go; and I was not supposed to go there.
11891. *Q.* I did not ask whether you were supposed to go there. I asked whether, in your opinion, as a practical man, it was of any practical use to have such an examination when so many places were left untouched? *A.* I am of the opinion that it would be better to examine them all.
11892. *Q.* Do you think an examination without examining the whole is complete? *A.* Well, it is more complete if they are all examined.
11893. *Q.* Is it of any practical use if some of them are not examined? Would it be any use to certify that ninety-nine places were free from gas and one was lying chock full of gas? Would a certificate of that kind be of any use for the safety of the men? *A.* Well, of course, I do not know anything about one being full of gas.

Further examination by Mr. Robertson:—

11894. *Q.* In the event of a number of places not being examined, your only safety lies in the probability of no men entering there? *A.* Yes.
11895. *Q.* I would like you to explain a little more clearly what you meant when you gave this evidence at the inquest—"I do not know whether gas could accumulate inside those waste workings where I never got; I never did anything to see whether gas had accumulated in that waste; I never went into the waste in my life"? *A.* Mr. Lysaght wanted me to go into the middle of the 35-acre goaf. That is the place we were speaking of.
11896. *Q.* You mean to say, of course, that it was impossible to go in there? *A.* Yes.
11897. *His Honor.*] *Q.* You did not mean to say that Mr. Lysaght wanted you to go in there; but he asked you whether you had been in there? *A.* He wanted me to go; and he would not go himself.
11898. *Mr. Robertson.*] *Q.* I want you to say now whether you examined the waste as far as it was practicable for a deputy to go? *A.* Yes.
11899. *Q.* Did you examine along the edges? *A.* Yes.
11900. *Q.* Did you go on the top of the falls? *A.* If it was safe.

11901. *Q.* Then, this rather misleading statement here wants qualification to that extent? *A.* Yes.
11902. *Q.* Because it looks as if you never had made an inspection, and had never tried to find out whether there was gas there or not? *A.* Well, that was the place where I was to find it, in the centre of that 35 acre goaf.
11903. *Q.* You cannot, of course, go into a waste where the roof has fallen in, and there is no place for a man to go; but, where the roof had fallen down, and it was practicable for a man to climb on the top of the falls, did you go? *A.* Yes.
11904. *Q.* Did you go where it was practicable? *A.* Yes, as far as it was safe to go.
11905. *Q.* In your evidence, you speak about a fall 2½ feet thick in the 4th Right? *A.* Yes.
11906. *Q.* Now, do you mean that 2½ feet of the roof had fallen; or was the fall 2½ feet thick? *A.* Two and a half feet of the roof had fallen.
11907. *Q.* If there were 2½ feet of the roof fallen, that would bulk very largely? *A.* Yes.
11908. *Q.* It would be pretty nearly up to the roof? *A.* No. Well, of course, at Mount Kembla there is no slack; and it falls flat on the floor.
11909. *Q.* It depends on how it falls; because you know that a roof, after it has fallen, occupies a great deal larger space than in the solid? *A.* Oh, yes, it takes a larger space; but still there was plenty of room. It was not nearly up to the roof.
11910. *Q.* How much might it be from the top of the fall to the roof? *A.* About 4 feet.
11911. *Q.* I think you said there were about 2 chains square? *A.* That was what was fallen.
11912. *Q.* Well, that is nothing very extraordinary? *A.* No, that is nothing extraordinary.
11913. *Q.* Then a fall 2 chains square would not be a very remarkable event? *A.* It would depend.
11914. *Q.* But have you not repeatedly seen falls over an area of 2 chains square? *A.* I cannot remember seeing falls 2 chains square generally.
11915. *Q.* Do you not recollect saying to me that that was a common occurrence? *A.* There are always falls; but it perhaps breaks up more sometimes than that.
11916. *Q.* But with 2½ feet fallen, and only about 4 feet to the roof, do you think that the whole 2 chains square, if it had fallen at the one time, would create a very great commotion? *A.* Yes, I think it would.
11917. *Mr. Bruce Smith.*] *Q.* Does he means that it was 2½ feet deep after it had fallen?
11918. *Mr. Robertson.*] I have just asked him.
11919. *Mr. Ritchie.*] I think he means it was 2½ feet thick on the floor.
11920. *Witness.*] That is what I mean.
11921. *Mr. Robertson.*] I asked you that.
11922. *Witness.*] You asked me what height it would be; and I said about 4 feet from the top of the fall up.
11923. *Mr. Robertson.*] *Q.* Then, do you wish to withdraw your statement to me when you were in the mine with the Commissioners—in answer to my question you said that a fall of that extent was nothing uncommon? *A.* A fall 2 chains square was nothing uncommon?
11924. *Q.* Yes? *A.* I never said that, to my knowledge. I might have said it; but I could not have been paying any attention to what you were saying.
11925. *Q.* It seems to me nothing at all extraordinary. However, if you wish, you may qualify it now? *A.* Two chains square is a large fall at Kembla.
11926. *Q.* At Kembla? *A.* Yes. When the slack was left in Kembla you scarcely knew that there was a fall.
11927. *His Honor.*] *Q.* Because the slack took the shock? *A.* Yes, it gradually came down and rested on the slack; but it makes a difference when it comes on the hard.
11928. *Mr. Robertson.*] *Q.* What damage do you think a fall 2 chains square would do, with only 4 feet of space to fill up? *A.* I could not say. Of course I have read about damage being done by a fall.
11929. *Q.* Have you ever worked in the Hamilton District? *A.* Yes, but not very long. I was very young when I was working there.
11930. *Q.* Did you ever work in the Ell coal? *A.* In the little coal.
11931. *His Honor.*] *Q.* What was the height of the seam before it had fallen? *A.* The seam was nearly 6 feet high there. Of course in my evidence I did not say 2 feet thick.
11932. *Q.* I am asking you now what was the average thickness of the seam there at the 4th Right? *A.* About 6 feet.
11933. *Mr. Bruce Smith.*] *Q.* That is before the fall? *A.* Yes.
11934. *Mr. Robertson.*] *Q.* When you inspected the old workings did you mark the places you inspected? *A.* Yes.
11935. *Q.* With the date? *A.* Yes.
11936. *Q.* Are the marks there now? *A.* I cannot say. You cannot find any marks in any places near—there are any amount of marks in the old workings; but of course you cannot depend on any next to the main road, because of the dust.

Further examination by Mr. Ritchie:—

11937. *Q.* You have told us, I think, that there was very little black-damp on the first occasion you went through after the explosion? *A.* Yes, very little.
11938. *Q.* Not worth reporting? *A.* There was very little.
11939. *Q.* You have said that your light did not go out? *A.* No.
11940. *Q.* Do you think that there was sufficient to put your light out if you went further in? *A.* I could not say. It was dimmed, at the distance I went. I went the distance I wanted to go.
11941. *Q.* That is to the face of the fall? *A.* Yes; I went in to see if it had fallen that night.
11942. *Q.* And you told Mr. Robertson that you examined as far as practicable—you went on top of the falls, if it was safe to go.
11943. *Q.* Now, you have told us that your light was not put out by the black damp? *A.* Yes.
11944. *Q.* And that it was so insignificant a quantity that you did not think it worth reporting. Now, did you not think it was quite safe to go on the top of the fall and examine? *A.* No.
11945. *Q.* Why? *A.* The timber was all out.
11946. *Q.* We know that, because the roof was down? *A.* Yes, but there was plenty of it higher up. If there was 2 ft. or 2 ft. 6 in. down, there was plenty up above.

11947. *Q.* What was the state of the roof? *A.* It was very rough. It was all working while I was there.
11948. *Q.* From what you could see, had that 2½ feet fallen all across that area? *A.* I do not think it had. In some places it was not down. Where I went it was down, and further along it was broken and not fallen. Of course you can walk along under and not see it, but you can see it when you look back.
11949. *Q.* But had that fall, 2½ feet thick, extended across the whole of that 2 chains? *A.* There were some parts of it not down.
11950. *Q.* What was the extent of the area not down? *A.* I could not say.
11951. *Q.* Was it nearly all down? *A.* There were some places on the right hand side going in where there was some up; but I could not say exactly the amount.
11952. *Q.* Was there a small part or a large part of that which was not down? *A.* A small part.
11953. *Q.* Now, which, in your opinion, would be likely to cause the greatest commotion—the first fall which took place in that waste, when it had all the dust on it; or the second fall, when there would probably be no dust at all? *A.* If there had been a big fall at the first, that 2 feet would do very little damage.
11954. *Q.* What? *A.* I say the 2 feet, if it had been a very large fall, would have driven all the dust out. Of course I was not there when it fell.
11955. *Mr. Bruce Smith.*] *Q.* You said 2 ft. 6 in.? *A.* 2 ft. or 2 ft. 6 in.
11956. *Mr. Ritchie.*] *Q.* What do you say? *A.* The first fall, if it was big enough, would make more commotion than the second fall.
11957. *Q.* Do you now think that the first fall would be likely to be more dangerous than the second fall? *A.* If it was big enough. Well, now, it has fallen, now, as high as this hall, as far as I know.
11958. *Q.* Did you see any results after the first fall at all, or did you not know that it had fallen until you went to look? *A.* I did not know until I went to look.
11959. *Q.* So that this fall of 2 feet 6 inches left no evident result at all, although it had all the dust which had accumulated to work on? *A.* Not to my knowledge.
11960. *Q.* Then, how do you account for the second fall, which had less dust to work on, making all this commotion?
11961. *Mr. Bruce Smith.*] Only 18 inches more.
11962. *Witness.* I will tell you. One Saturday I was working here, laying a turn at the 4th Right; and there was a great rush of air came and put my light out—one of my sons and me—and I came out, and made inquiries of William Nelson, who was the deputy then, what was the cause of it. So he told me the next morning that it was a fall on the top of the 5th Right.
11963. *Q.* Was that a large fall? *A.* I could not say. I never made any inquiries.
11964. *Q.* How long was that before the disaster? *A.* That was years before, just when they started this road.
11965. *Q.* Can you explain now, after having had a little time to think about the matter, what caused you to arrive at the conclusion that the second fall had done any damage? *A.* Well, in the papers I read—it was through seeing an account in the papers, and from the direction of the forces in Mount Kembla—that I came to that conclusion.
11966. *Q.* It was through reading something in the papers about Mount Kembla mine? *A.* No; through reading something in the papers about a fall at Broken Hill. I cannot tell you the exact date. I think there were nine men in it—I could not say the number of men.
11967. *Q.* I think we have all got a knowledge of that. Just tell us what conclusions you arrived at out of that? *A.* Well, with the force that was there, I am of the opinion that it was caused there (by the fall). Of course I am not an expert; and it is best to leave that question for the experts.
11968. *Q.* Well, you see, you have already given your opinion that this disaster was caused by a fall in the 35-acre goaf having caused a blast? *A.* Yes.
11969. *Q.* And you have said that, in your opinion, there was no gas in that blast? *A.* Yes.
11970. *Q.* What, in your opinion, would cause the trouble? You know that trouble has been caused: a great many lives have been lost, and the mine ruined. Would that come by a puff of wind? *A.* Of course I cannot describe it to you.
11971. *Q.* Do you think it would be done by a puff of wind? *A.* If the wind was strong enough it would do a lot of harm.
11972. Do you think the first fall would be likely to cause more dust than the second fall? *A.* I cannot say. No, I do not think so. I have told you before that it would not cause as much dust as the second fall. It fell on top of the dust, which it covered.
11973. *Mr. Robertson.*] I think that is quite the contrary to what you did say.
11973½. *Mr. Ritchie.*] Yes.
11974. *Q.* I will ask you, further, was that section of the roadway at the entrance to this 30-acre goaf damp or dry? *A.* There was a little water running at the side; but it was, generally, dry.
11975. *Q.* Was it dusty? *A.* Yes, there was dust lying there.
11976. *Q.* Is it not a fact that it was naturally damp and soldden, the whole of that roadway? *A.* No.
11977. *Q.* The roadway leading into the 35-acre goaf, on the 4th Right? *A.* In the 4th Right, it was dusty; but there was a gutter cut there on the bottom. A lot of dust came out of the 4th Right always. It was a dusty place when it was worked.
11978. *Q.* Now, can you recollect the state of the hauling road immediately at the mouth of the 4th Right? *A.* It was damp.
11979. *Q.* Was it damp for some considerable distance on each side of the road leading to the 4th Right? *A.* Yes.
11980. *Q.* There was very little dust there? *A.* No dust there. Of course it is nearly all wet.
11981. *Q.* Where do you think the dust was likely to have come from that caused this trouble? *A.* In my opinion most of it came out of the stoppings.
11982. *Q.* What stoppings? *A.* The stoppings between the two headings.
11983. *Q.* Were there many of them disarranged there? *A.* They were all disarranged. There were some of them that, to look at, you would think there had never been a stopping there at all.
11984. *Q.* Was the stuff that was between these cut-throughs all dust? Was it all dust that the stoppings were packed up with? *A.* All fine stuff. I cannot say what it really was, because I never put the stoppings in; but they put in their stoppings with fine stuff, the finest stuff they could get.

11985. *Q.* They built the stoppings up with the finest dust they could get? *A.* The finest stuff they could get.
11986. *Q.* Do you regard that, as a practical man, as a satisfactory way of building these stoppings? *A.* Well, it was the way it was done at Mount Kembla.
11987. *Q.* Are you prepared to give an opinion on that? *A.* It acted well enough at Mount Kembla.
11988. *Q.* As a practical man, are you prepared to give an opinion, or not, as to whether you think it was safe to do it? *A.* Yes, it was quite safe at Mount Kembla. There is plenty of ventilation at Mount Kembla.
11989. *Q.* I want to know how you arrived at that conclusion, in view of what you told us just a minute or two ago? *A.* What was that?
11990. *Q.* You told us that the dust, in your opinion, came from these stoppings; and now you tell me it was perfectly safe to put them there? *A.* When I talk about these stoppings, I mean it acted well for carrying the air.
11991. *Q.* I have been putting the matter to you in quite a different way altogether. Do you think it was a safe way of doing it. We have got to regard safety in mining operations? *A.* Of course I understand your question now. In no mine that ever I knew did they start to put anything in with the expectation of having any disaster.
11992. *Q.* You mean that they never expect, or take precautions to prevent, disasters? *A.* I mean, when they start to put in stoppings at any time, they do not put stoppings in with the intention of anything happening.
11993. *His Honor.*] They do not put them in with the intention—you mean anticipation—of their being blown out? *A.* No.
11994. *Mr. Robertson.*] He means that they do not expect that there will be an explosion at all.
11995. *Mr. Ritchie.*] *Q.* What do I understand you to mean, when you say that nobody expects to do it when they start? Do you mean when they commence a colliery? *A.* Of course you are attributing there their being blown out.
19996. *Q.* I want an expression of opinion from you, as a practical man, whether you thought building these stoppings up with this very fine dust, the very finest dust they could get, was a fairly safe practice? *A.* It was a fairly safe practice for carrying the ventilation.
11997. *Q.* That is really no answer to the question in the way I put it to you. From your way of looking at it now, do you think it would be quite safe to build these stoppings of gunpowder? *A.* No.
11998. *Q.* Well, if dust was known to be dangerous, would you regard it as safe? *A.* I would not think it would be safe with gunpowder.
11999. *Q.* Well, if dust was known to be dangerous—only, perhaps, in a lesser degree than gunpowder—would you regard it as safe? *A.* I never knew anything about the dust being dangerous.
12000. *Q.* I do not say you did. It was known to almost everyone, except yourself.
12001. *Mr. Bruce Smith.*] *Q.* With your present knowledge, do you think so? *A.* Well, of course, as far as I am concerned, I did not think these stoppings had anything—the dust was blown out into the road, there is no doubt about that—anything more about it I am not prepared to say. I think that is a question for the expert.
12002. *Mr. Ritchie.*] *Q.* Then, how do you come to be able to give such a definite opinion as to what caused it? *A.* When I gave my opinion, I told you I could not say anything more.
12003. *Q.* And I am trying to ask you more? *A.* The more I give the more I am asked.
12004. *Mr. Robertson.*] *Q.* About those stoppings? Mr. Morrison, if you are going to build a dirt stopping, which would be the tighter—one built with rough stone, or one built with fine stone? *A.* Fine slack.
12005. *Q.* Is not that the most suitable? *A.* Yes.
12006. *Q.* And is not that the reason why it is used for this purpose? *A.* Yes.
12007. *Q.* Now, are you quite sure about this 4th Right being dry and dusty? *A.* It was dry; and there was a gutter along the floor.
12008. *Q.* I am referring now to the road from the back heading to the fall? *A.* There was dust there.
12009. *Q.* Well, the impression on my mind was that it was distinctly sloppy? *A.* Yes, when it was filled up; the water accumulated in the middle of the road when you were travelling there.

Further examination by Mr. Bruce Smith:—

12010. *Q.* You told Mr. Ritchie that your only reason for saying that gas was not an element in this explosion was that you had never found it? *A.* Yes.
12011. *Q.* If you had found it? *A.* I would have said I found it.
12012. *Q.* Would you then have thought that gas had anything to do with it? *A.* I do not know. I would have needed to have seen gas in the 4th Right; but I never found anything.
12013. *Q.* If you had found gas, would you then believe that gas had something to do with the explosion? *A.* I could not say. It would depend on the position of the place where I found it.
12014. *Q.* Did you not say that your only reason for saying that it was an explosion in which gas was not involved was that you had never found it? *A.* Yes.
12015. *Q.* Then I ask you, if you had found gas, would you have thought gas had anything to do with it? *A.* If I had found gas, it would alter my opinion.
12016. *Q.* If other people had found gas, to your knowledge, would you then think that gas had anything to do with it? *A.* Yes, if it had been found to my knowledge.
12017. *Q.* Do you know that Mr. Atkinson found hundreds of feet of gas up in the back heading? *A.* Yes, I believe that.
12018. *Q.* You believe that. Now, do you think gas had anything to do with the explosion? *A.* Of course that is a different place. I do not believe there was any gas in there.
12019. *Q.* If you believe that Mr. Atkinson found hundreds of feet of gas up there four days after the explosion, do you still think that gas had nothing to do with the explosion? *A.* Yes. My reason is that, at the time that Mr. Atkinson found this gas, the ventilation was cut clean off.
12020. *Q.* But that shows that there was gas generating in this mine? *A.* Oh yes.
12021. *Q.* Then, does not that alter your conclusion as to the probability of gas being an element in that explosion? *A.* No, it does not. If Mr. Atkinson had found as many feet or yards of gas in the 4th Right, then it would alter it

12022. *Q.* You said something about the Broken Hill fall. When did you read about that? *A.* I cannot say.
12023. *Q.* Did you read about it before the explosion? *A.* Yes.
12024. *Q.* Of your own accord? *A.* My attention was drawn to it by Mr. McMurray.
12025. *Q.* Before the explosion? *A.* Yes.
12026. *Q.* Do you know how deep that fall was? *A.* I do not know.
12027. *Q.* Do you know that it was 40 feet deep? *A.* I could not say. I forget much about it.
12028. *Q.* What did you read about it? *A.* I remember the thing happened; but of course it has certainly gone out of my head. I cannot tell you the dates or anything about it.
12029. *Q.* You do not know that fact about it, at all events? *A.* —— [*Witness did not answer.*]

Further cross examination by Mr. Lysaght:—

12030. *Q.* You told Mr. Robertson that you examined the wastes as far as practicable? *A.* Yes.
12031. *Q.* Did not you say at the inquest, "My duties do not at any time take me beyond any fence of a waste"? *A.* What was said at the inquest was—— [*Interrupted*].
12032. *Q.* Did you say it? *A.* I do not know whether I said it or not. I do not know one word I said at the inquest.
12033. *Q.* Did not you say this at the inquest, "I never crossed the fences to the waste workings to look for gas at any time"? *A.* I cannot say, because I was worried to death at the inquest. That is true. You know. You did it.
12034. *Q.* Did you, as a matter of fact, cross any fence of any waste to inspect as a deputy? *A.* Yes.
12035. *Q.* Now, tell me what fence it was you crossed? *A.* If there was a fence —— [*Interrupted*].
12036. *Q.* No "if," Mr. Morrison; you said at the inquest that you never crossed any fence to look for gas. Now, I want to know, if you say you did cross a fence, what fence was it, and where did you cross as a deputy? *A.* The fences in all these —— [*Interrupted*].
12037. *Q.* That is not an answer. Where did you cross a fence? Show me what particular fences you crossed, and in what particular waste? Now, you think carefully. *A.* Well, I crossed a fence—you just want to know one fence?
12038. *Q.* Did you only cross one fence? *A.* No, I did not say that.
12039. *His Honor.*] Mr. Lysaght, he is just going to tell us some one fence.
12040. *Witness.*] There, in the heading off the 1st Right. I went in through there [*indicating*]; and I crossed a fence there I am getting a bit mixed; and I cannot think clearly.
12041. *Mr. Lysaght*]. *Q.* You have told us of that one fence that you crossed? *A.* Yes.
12042. *Q.* About how long was that before the disaster? *A.* On the 31st. Of course I have not got my book the same as you have.
12043. *Q.* Now, can you remember any other fence you crossed as deputy! *A.* This is the way it is at Kembla, say there was a fall —— [*Interrupted*].
12044. *Q.* I do not want that? *A.* I must explain it.
12045. *His Honor*: You can simply answer that question of Mr. Lysaght's.
12046. *Mr. Lysaght.*] *Q.* Can you remember that you crossed any other fence than the one you mentioned on the 31st? *A.* I cannot remember whether I crossed exactly just one fence on that occasion.
12047. *Q.* You cannot remember whether you crossed any other fence but this one that you told us of? *A.* I cannot remember.
12048. *Mr. Bruce Smith.*] It is fair to point out that on pages 15 and 16 of the evidence taken at the Coroner's Inquest he speaks two or three times over of going inside the fence of the waste, and going up on the waste.
12049. *Mr. Lysaght.*] And on page 17 he says he never crossed one fence.
12050. *Mr. Robertson.*] *Q.* When you said that it was not true that you did not cross the fences into the waste workings? *A.* Yes. If you had been at the inquest, and heard the way it was carried on—they were saying things, and putting them down, that I did not say at all.
12051. *Q.* Now, there are a number of fences at Kembla? *A.* Yes.
12052. *Q.* When you were making your examination, do you cross those fences and go as far as you can? *A.* Yes; I cross the fences and go as far as I can. That is, if there are fences. There are only a few of them with fences.
12053. *Q.* Of course the two statements are so very different? *A.* Yes. Well, perhaps I said it.
12054. *Mr. Ritchie.*] *A.* Did you have the depositions read over to you at the inquest? *A.* Yes, I believe I had.
12055. *Q.* Did you sign those depositions? *Q.* Yes, I believe I signed them.
12056. *Mr. Bruce Smith.*] It is only fair to say that it was within a few days of the death of his two sons, and he did appear to be in a very confused state when he was examined.

[*Witness left.*]

12057. *Mr. Curtiss.*] Will your Honor kindly allow Mr. Barry to take my place?
22058. *His Honor.*] Certainly.
12059. (Mr. G. J. Barry then appeared on behalf of the Mount Kembla Coal Company.)

Mr. JOHN HERON was sworn, and examined, as under:—

Examination.in-chief by Mr. Lysaght:—

12060. *Q.* What is your name? *A.* John Heron.
12061. *Q.* What are you? *A.* A miner.
12062. *Q.* Where are you at present employed? *A.* Cataract Dam.
12063. *Q.* Were you employed at the Mount Kembla Colliery? *A.* I was.
12064. *Q.* For how long? *A.* For two years.
12065. *Q.* During what period? *A.* I left there about, I think it was, sixteen or seventeen months ago.
12066. *Q.* And what were you doing there? *A.* I was taking the stone up, and shooting the bottom of the road.
12067. *Q.* That is, you were making the road level for laying the rails, to take the skips into the working places? *A.* Yes.
12068. *Q.* Was that daytime or night-time? *A.* Night.
12069. Were you working as a stone-man in the No. 1 District? *A.* I was 12070.

Witness—J. Heron, 3 February, 1903.

12070. *Q.* And how long were you working there? *A.* For two years, or somewhere as nigh two years as I could possibly remember.
12071. *Q.* Now, during that time, who was the night deputy? *A.* Mr. Frank Dungey.
12072. *Q.* And was it his duty to inspect places where you had to lay the stone? *A.* Yes.
12073. *Q.* And did you take your orders from him? *A.* No; I did not take orders from him.
12074. *Q.* Who pointed out the places where you had to make the road level? *A.* I did, myself, to him. I told him every number I had to go to. Every place is numbered, and it is put on the board with chalk; and, every number that was placed on the board, I told him when I went down that I had to go to those places.
12075. *Q.* You saw certain places marked on a board as requiring attention from you; and you told Dungey those places; and his duty would be to examine them before you went there? *A.* Yes.
12076. *Q.* Now, has it happened that you have been to such a place before Dungey had been there to examine it? *A.* Many a time.
12077. *Q.* And can you tell me of any occasion that you yourself discovered any gas in any of these places; *A.* Yes, I have.
12078. *Q.* Now, can you tell me where? *A.* In the 4th Left; a very small quantity.
12079. *Q.* When you say the 4th Left, do you mean the haulage road or the travelling road? *A.* I mean in the working places in the 4th Left.
12080. *Q.* Can you tell me who was working in the place at the time you discovered the gas? *A.* I think John Oakes. I would not swear. I think it was John Oakes and James—I forget his other name.
12081. *Q.* How long was that before the disaster? *A.* A good bit before the disaster.
12082. *Q.* I do not know what a good bit is—months? *A.* It was a few months before that.
12083. *Q.* What is your idea of a few months; *A.* I left Mount Kembla about eight months before the disaster.
12084. *Q.* Then, do I understand that it was about eight months before the disaster that you found this gas? *A.* No; it was more than that.
12085. How long? *A.* It might have been about twelve or fifteen months before I left Mount Kembla.
12086. *Q.* Now, I want you to tell us exactly how you came to find it, and what happened? *A.* When I went to put a hole in what they call the false bottom in the 4th Left I chucked my hat down—my lamp was on my hat.
12087. *Q.* You threw your hat down with your hat on the lamp? *A.* Yes, a naked light. And I could tell the gas on the lamp.
12088. *Q.* The gas lit on the lamp? *A.* Yes.
12089. *Q.* Is that what you say? *A.* Yes, the gas lit on the flare-light.
12090. *Q.* How far up did it burn? *A.* Just a small proportion of it. Only a small proportion of it.
12091. *Q.* You point in that way [*imitating*]. Do you mean that height from the floor where you are? *A.* Just a flare up; a little over the lamp.
12092. *Q.* How far back? *A.* Just about a foot off the flare-light.
12093. *Q.* Did you report that to anyone? *A.* I did not.
12094. *Q.* Have you any reason for not reporting it? *A.* Yes; I did not think that small quantity was dangerous.
12095. *Q.* Had you discovered other small quantities? *A.* Yes. I have seen it more than once in the same place.
12096. *Q.* Now, about how many times altogether have you seen gas like that? *A.* Only about twice, I think.
12097. *Q.* Now, apart from seeing it in that way, have you seen it in any other way before the disaster? No; but I was told about it.
12098. *Q.* Were you told by any officials of the mine? *A.* Yes, by the night-shift fireman.
12099. *Q.* Who is that? *A.* Frank Dungey.
12100. *Q.* Now, I want you to tell us when it was that Dungey told you about gas? *A.* Well, I think it would be about a month or two, I could not say to a few days, before I left Mount Kembla.
12101. *Q.* How long was that before the disaster? *A.* About nine or ten months.
12102. *His Honor.*] *Q.* He says he left about eight months before? *Q.* I could not say exactly to a few days.
12103. *Mr. Lysaght.*] *Q.* What did Dungey tell you? *A.* I met him going down the No. 1 main heading, where this explosion took place: It is rising; just like that, you know.
12104. *Q.* You met Dungey coming down the main heading, where the heading was rising? *A.* Yes.
12105. *Q.* How far was it from the top of the main heading? *A.* It must have been about 100 yards from the face where I met him.
12106. *Q.* What took place? *A.* He just said to me, "Jack, if you had been here before me, you would have got your head blown off."
12107. *Q.* What else? *A.* He said, "She was standing full of gas for 10 or 15 yards back. The brattice was all down."
12108. *Q.* Anything else? *A.* No.
12109. *Q.* Did he say that he had done anything? *A.* He cleaned it out, you know; because I went in after he had been there. He told me I could get in, then, and get the stone up.
12110. *Q.* Did he tell you that he had cleaned it out? *A.* Yes.
12111. *Q.* Did he tell you how? *A.* No, he did not say how.
12112. *Q.* Now, do you know where it was exactly that he referred to as having 10 or 15 yards of gas? *A.* It was in No. 1 main heading.
12113. *Q.* Where was the place that you afterwards went into that he had cleaned out? *A.* No. 1 main heading.
12114. *Q.* But what part of it? *A.* I do not suppose that, when I was there, that could have been driven far past the place of the explosion.
12115. *Q.* You mean in the face of No. 1 main heading? *A.* Yes, the face of No. 1 main heading then.
12116. *Q.* Do you know whether there were any men working there at that time? *A.* I think they were Anderson and Mathison; I am not quite sure. It is a long time ago. I could tell you who were working in the back heading.

12117. *Q.* Who were working in the back heading? *A.* John Murphy and Paddy McCann.
12118. *Q.* They are both dead. *A.* Yes.
12119. *Q.* And what about the other two men that you say were working in the main heading? *A.* I think one is in Maitland, at Stanford Merthyr.
12120. *Q.* And the other? *A.* I think he is at Kembla.
12121. *Q.* Which one is at Stanford Merthyr? *A.* Anderson.
12122. *Q.* Now, has any official besides Dungey told you anything about gas? *A.* No.
12123. *Q.* Has Dungey told you anything else about gas? *A.* No; he never said anything but just that night.
12124. *Q.* Did you work in Kembla as a miner? *A.* I did not the last time I was in.
12125. *Q.* Did you ever work there as a miner? *A.* Oh yes, more than once.
12126. *Q.* How long ago? *A.* About fifteen years ago, and eighteen years ago, I worked there.
12127. *Q.* At any time, when you were working in Kembla as a miner, did you ever discover gas? *A.* Yes.
12128. *A.* Where? *A.* In old No. 4.
12129. *Q.* How long ago is that? *A.* Between seventeen and eighteen years ago.
12130. *Q.* Who was manager at that time? *A.* Mr. William Green.
11131. *Q.* Was it any large quantity you found there? *A.* When I fired a shot, it hung; and, when I looked over it, it flashed over; yards back.
12132. *Q.* How many yards back? *A.* It must have been 4 or 5 yards back.
12133. *Q.* Did you report that? *A.* No.
12134. *Q.* Did you know whether the management knew of that? *A.* I could not say.
12135. *Q.* Why did you not report gas at any time when you found it? *A.* If it was a very small quantity, I did not think it was any use to report it—not when I was using a naked light.
12136. *Q.* Now, in addition to your seeing this gas yourself, do you know, of your own knowledge, of other men having found gas, by either seeing them light it, or anything else like that? *A.* No. I was working always at night time, alone.
12137. *Q.* Do you know whether Dungey inspected the places within four hours of the commencement of the shift? *A.* I can swear that he never inspected half the places, not twice in the shift. That is what he should have done: but the man had not time. He told me himself he could not do it.
12138. *Q.* I want you to tell us exactly what Dungey told you about not having time to inspect! *A.* I know for a fact that he did not inspect twice in the night; that is, that he did not inspect in the night before they went in, and then come back again while they were in; which is what he should have done.
12139. *Q.* What did he say to you? *A.* He said he could not do it. He had not time to do it: which I know for a fact. He never did either.
12140. *Q.* Can you tell me whether any of those places on the 4th Left were left uninspected by Dungey, to your own knowledge? *A.* Yes, I could swear that; but I could not tell you the numbers of the places now. I can swear there were places that never were inspected twice.
12141. *Q.* How often, to your knowledge, has that occurred? *A.* Any amount of times.
12142. *Q.* Well, how often? *A.* I could not tell you exactly the number; but a good few times, any way.
12143. *Q.* I do not understand what you mean by "inspected twice." Let me put this to you: Dungey should have inspected within four hours of the men starting work at 6 o'clock. You understand that? *A.* Yes.
12144. *Q.* Now, I want to know do you say that, to your knowledge, he never inspected some places during that period of four hours before 6 o'clock? *A.* Yes, some places he never did. I could swear to that, too.
12145. *Q.* How do you know that? *A.* I am sure.
12146. *Q.* How do you know it? *A.* Because I have been working in places where he never came.
12147. *Q.* Do you mean that you have worked from about 2 to 6 o'clock in certain places, and he has never came there all the time you were working there? *A.* Not after he inspected the first time.
12148. *Q.* And what time did he inspect the first time? *A.* He would start at 9 o'clock, and would be supposed to go along every place.
12149. *Q.* But, after 9 o'clock at night, you know there were places which he never came to again before the men went to work? *A.* Yes, I can swear that he did not.
12150. *Q.* And you know that men did come to work in those places afterwards? *A.* Yes.
12151. *Q.* Now, about how many places were there, to your knowledge, left uninspected like that? *A.* I could not say, exactly. I have seen a few, anyway; but I could not say how many.
12152. *Q.* I will fix it? —— [*Interrupted.*] *A.* I will say two or three. I have seen them myself.
12153. *Q.* And are those the places that Dungey told you he had not time to inspect? *A.* He said he had not time to go round them twice.
12154. *Q.* Did you point out to him that he was not inspecting twice? *A.* He said he was not.
12155. *Q.* Did you say anything to him about it? *A.* No. I had nothing to do with saying anything to him. He was above me.
12156. *Q.* Is there anything else you want to tell the Commission? *A.* No. I think I have told them all I know.
12157. *Q.* Did you go to Kembla the evening of the disaster? *A.* I did.
12158. *Q.* Were you one af any rescue party? *A.* Yes, I went in along with Mr. Sellers and Mr. Kater
12159. *Q.* What time did you get there? *A.* About half-past 5.
12160. *Q.* At that time was there an adequate supply of safety-lamps for the rescuers? *A.* I got one. I could not say for the rest.
12161. *Q.* What part of the mine did you go into? *A.* Straight through No. 1 Travelling Road.
12162. *Q.* Were you in the No. 1 Right district at all? *A.* That is No. 1.
12163. *Q.* That is what you mean? *A.* Yes.
12164. *Q.* What road did you take to get in? *A.* I went into the travelling road from the outside, and then across over the main road, down a ladder, and up another ladder the other side, and straight on; and I met them carrying Mr. Nelson out.
12165. *Q.* Now, can you tell us anything as to the indications of burning anywhere? *A.* Yes.
12166. *Q.* What can you tell us? *A.* The next thing I came across was Mr. Thomas Purcell. He was sitting between ten and twenty yards below the water level; and all his hair was burnt off, and his whiskers too. He had not a bit of hair left on him at all; and I could not recognise him. 12167.

12167. *Q.* Well, who did recognise him? *A.* He was not recognised until we came back again; and then we carried him out.
12168. *Q.* Anything else about the burning? *A.* Yes, I have seen more than him burnt. I saw Mr. John Aitken burnt about the face, too.
12169. *Q.* Anyone else? *A.* Well, I saw young Morrison—the skin was hanging off the face, you know.
12170. *Q.* I do not know that I need trouble you about the men who were burnt. I want you particularly to tell me whether you noticed the brattice burnt? *A.* I was not in the face.
12171. *Q.* Did you notice burnt brattice anywhere? *A.* There was no brattice where I was.
12172. *Q.* Did you notice any of the props singed or burnt? *A.* No, I did not take any notice.
12173. *Q.* Did you notice where the greater evidences of force appeared to be? *Q.* I think they seemed to be in No. 1 travelling road, and on the engine road. That was where the biggest falls were that I could see. There were some places you had to crawl through on your hands and knees.
12174. *Q.* Did you notice whether the forces were all in one direction, or in different directions? *A.* I did not take much notice of that.
12175. *Q.* Have you any theory as to the cause of the disaster? *A.* Well, I think it was gas—that is the only thing I can tell you.
12176. *Q.* Where did you think it originated? *A.* Not being working there, I could not say.
12177. *His Honor.*] The witness has already said that he did not notice the various directions of force; because he was too intent on doing what he could to save life, I suppose.
12178. *Mr. Lysaght.*] Very well, your Honor.
12179. *Q.* Is there anything else you desire to tell the Commission? *A.* I think I have told you what I can.

Examination by Mr. Bruce Smith:—

12180. *Q.* Did you form an opinion as to whether these men whom you saw were burnt, or not? *A.* Some were, and some not.
12181. *Q.* What evidences of burning did you see? *A.* Some were all burnt about the face; and some were not.
12182. You spoke of Purcell's whiskers? *A.* And his hair too. Everything was burnt off his head. I took him to be an old man. I took him to be about 60; and I do not suppose he was more than 45.
12183. *Q.* What happened to the hair? *A.* All burnt.
12184. *Q.* All shrivelled up? *A.* All curled up like a darkie's.
12185. *Q.* Did you notice anything else? *A.* No. I just turned up his pants; I thought that he was a young man that I knew.
12186. *Q.* Was there anything else about others to show burning except the skin in strips? *A.* On Morrison's son's face, and another wheeler along with him.
12187. *Q.* Did you see more than one of Morrison's sons? *A.* Just one. I fetched him out.
12188. *Q.* Was he burnt? *A.* He must have been burnt; because the skin was hanging off his face.
12189. *Q.* You had no doubt at all that there had been flame? *A.* Oh, there had been flame; that is a sure thing.

Cross-examination by Mr. Barry:—

12190. *Q.* I think you said it was some seventeen or eighteen years ago since you worked as a miner in Mount Kembla? *A.* The first time.
12191. *Q.* And then you went back and worked as a road-maker? *A.* I was back since then.
12192. *Q.* How long ago were you back? *A.* Fifteen years ago.
12193. *Q.* I think you said that Dungey told you that, after the first inspection, he never inspected some of the places twice? *A.* He never told me that; I have not seen him since.
12194. *Q.* Did you follow him through the mine? *A.* Yes, every night.
12195. *Q.* You went with him? *A.* No, he went before me.
12196. *Q.* And you saw every place he inspected? *A.* Yes.
12197. *Q.* Was that portion of your duty? *A.* Yes, every place that I had to go to.
12198. *Q.* And you say that there were two or three places that he did not inspect? *A.* Yes, not twice.
12199. *Q.* He inspected them once only? *A.* Yes.
12200. *Q.* What reason had you to follow the fireman? *A.* I had to follow him: it was my duty.
12201. *Q.* What for? *A.* He had to inspect the place before I could go in to take the stone up.
12202. *Q.* And these two or three places; he had not been there? *A.* He inspected them once, but not twice.
12203. *Q.* But did you go into those two or three places? *A.* Yes.
12204. *Q.* And were they all right? *A.* Yes, but they were not inspected the second time.
12205. *Q.* How do you know? *A.* Certain.
12206. *Q.* Did you go round the second time? *A.* I was there after he passed.
12207. *Q.* You were there after he passed? *A.* Yes.
12208. *Q.* How long after he passed? *A.* It might be a couple of hours sometimes.
12209. *Q.* How could you see whether he had been there or not? *A.* His date was not there. If he goes there in the night, he is supposed to put the date there; and if he goes there next morning he must put the date there.
12210. *Q.* Do you tell the Court that he could not possibly inspect these places without your seeing him? *A.* Yes.
12211. *Q.* You swear that? *A.* Yes.
12212. *Q.* You did not give evidence at the inquest? *A.* No. I would not have come here to-day if I had not been subpœnaed.
12213. *Q.* Whom did you first tell all this information to? *A.* To nobody.
12214. *Q.* So that nobody knew what evidence you had to give here to-day? *A.* Only just about the No. 1 main heading—somebody might remember my speaking about that.
12215. *Q.* I mean, Mr. Heron, you have never given any notes of your evidence to anybody until you came here? *A.* Only just that I might have been speaking about the No. 1 main heading?
12216. *Q.* To whom? *Q.* Once I did to the under-manager at Corrimal, Mr. Shepherd.

12217. *Q.* When Dungey told you that, if you had been a quarter of an hour or twenty minutes before, you would have had your head blown off, did you tell that to anybody? *A.* Yes, to many.
12218. *Q.* Whom to? *A.* To the underground boss at Corrimal.
12219. *Q.* Who is he? *A.* Mr. Shepherd.
12220. *Q.* And is he there now? *A.* Yes.
12221. *Q.* To anybody else? *A.* I have mentioned it many a time; but I cannot tell you whom I have been mentioning it to.
12222. *Q.* How many places would Dungey inspect there? *A.* Between forty and fifty.
12223. *Q.* And when would he start his inspection? *A.* We used to leave outside at 9 o'clock.
12224. *Q.* And I think you said that, after 9 o'clock, the first inspection, he never inspected some of the places afterwards—that is, a second time? *A.* Some of the places. He is supposed to inspect four hours before the men come in.
12225. *Q.* How long would it take to inspect all the places? *A.* I could not tell you.
12226. *Q.* Forty places; would it take three minutes a place? *A.* It would take more, if he examined it properly.
12227. *Q.* Would it take four? *A.* It would take more, if he examined it properly.
12228. *Q.* Would it take five minutes? *A.* I could not say.
12229. *Q.* Would it take four hours? *A.* More than that.
12230. *Q.* You followed him round? *A.* I followed him to the places I had to work in. I did not follow him to all the places.
12231. *Q.* Cannot you tell whether it would take one hour, two hours, five hours, or ten hours? *A.* I could not tell you.

Examination by Mr. Bruce Smith:—

12232. *Q.* Did you know that, by the special rules, it was the duty of the men not to work in a place unless they saw that date put up? *A.* Yes; I mean that.
12233. *Q.* Do you mean to say that the men did go to work although there was no date up? *A.* The men came in; and, if they did not see the date, they ought to go back; but they did not.
12234. *Q.* Is not it the duty of the men to refuse to do any work if they do not see both dates up? *A.* No: my duty was to go in when I saw the first date up.
12235. *Q.* I am talking of the men who were working on the coal. Do not you know what the 15th Rule says:—

> On first entering his working place, he shall satisfy himself that it has been examined and found safe. If he does not observe the fireman's mark on the face, he will on no account commence his work, but shall at once return to the station and report the circumstance to the fireman, overman, under-manager, or Manager, and await instructions before returning to his working place.

Did you know of that rule? *A.* I never heard of it.
12236. *Q.* And you say that the men actually went to work? *A.* Yes.
12237. *Q.* Getting coal, although there was no date put up? *A.* I could not tell you whether there were two dates or not when the men went in.
12238. *Q* But did not you say he did not inspect twice? *A.* Yes.
12239. *Q.* And therefore had not put the second date up? *A.* I never saw the second date.
12240. *Q.* And yet the men had gone in and worked? Yes.
12241. *Q.* Can you tell me who those men were who went in and worked without the second date being up? *A.* No, I could not tell you.
12242. *Q.* No proceedings can be taken against them; so you need not be afraid. Can you name any one man, or more, if you like, who went in and began work, getting coal, although the date had never been put up there by the deputy? *A.* I could not tell you; but I know for a fact that was the case.

Further cross-examination by Mr. Barry:—

12243. *Q.* Will you undertake to say that he did not put the second date up before the men went in to work? *A.* I would not swear whether he put them both up at once or not.
12244. *Q.* You will not swear? *A.* No.
12245. *Q.* Did you see one date or two dates? *A.* I could not say now.
12246. *Q.* I think you said that the men come in, and, if they do not see the date, they ought to go back? *A.* They ought to, but they never did.
12247. *Q.* Did you ever see them go back? *A.* No.
12248. *Q.* Did you ever go back yourself? *A.* I was not working on the coal.
12249. *Q.* Did you at any time when you were working on the coal? *A.* No.
12250. *Q.* Was the second date always up for you? *A.* I never worked on the coal at Kembla the last few years.
12251. *Q.* They had different rules then from what they have now? *A.* Yes.

Further examination by Mr. Lysaght:—

12252. *Q.* You say he may have put the two dates at the one time? *A.* He may have done so.
12253. *Q.* Can you remember any occasion when he did do that of your own knowledge; that is, that you saw him put both dates with the chalk? *A.* I was never in the place when he put the two dates.
12254. *Q.* Did you ever notice any place with the two dates up when you first went in? *A.* No.
12255. *Q.* Have you ever known him to put the later date on during the first inspection? *A.* No; I never knew him to do that.

Examination by Mr. Ritchie:—

12256. *Q.* Do I understand you to say that, after you had gone in to lift stone in a place, you had been continuously working there until after the time for Dungey to have gone out; and that is the reason you say that you know he had not made the inspection within the four hours before the men went to work? *A.* Yes, I know he did not; that he had not been in the place.
12257. You were working in some places after it was his time to have been outside? *A.* Yes.

[*Witness left.*]

Mr. CHARLES BIGGERS was sworn, and examined as under :—

Examination-in-chief by Mr. Barry :—

12258. *Q.* What is your name? *A.* Charles Biggers.
12259. *Q.* What are you? *A.* I am a deputy at Mount Kembla.
12260. *Q.* How long have you held that position? *A.* About four months, I think; since a month after the explosion occurred.
12261. *Q.* Is it since the disaster that you have entered upon your duties as a deputy there? *A.* Yes, since the disaster.
12262. *Q.* What does your work consist of at the present time? *A.* It mainly consists of examining the waste workings.
12263. *Q.* Do you do other work? *A.* Yes, I do other deputy work; sometimes a day a week.
12264. *Q.* How long have you been at Mount Kembla altogether? *A.* Fourteen or fifteen years.
12265. *Q.* Have you been working on the coal there? *A.* Yes.
12266. *Q.* How many years? *A.* About eight years.
12267. *Q.* Have you worked in different parts of the mine? *A.* Yes: some parts I have not worked in.
12268. *Q.* When was the last time you worked there; about how long before the disaster? *A.* Well, I was working nearly the whole fourteen years before.
12269. *Q.* How long before the disaster? *A.* I worked there up to the day before.
12270. *Q.* Had you been working continually then some months in the mine? *A.* Yes.
12271. *Q.* Now, when you were working on the coal, can you tell the Court if you ever came across any gas there? *A.* No, not when I was working on the coal.
12272. *Q.* You have heard or seen some evidence with reference to the shot-firing, that they have gone back to the face and lit it up; have you ever seen anything of that there? *A.* Yes, I have, on a couple of occasions.
12273. *Q.* What was that? *A.* Well, just a small light I have seen there after a hanging shot.
12274. *Q.* You have heard something about blowers of gas, have you not? *A.* Yes.
12275. *Q.* Do you recollect on any occasion seeing two men boring a hole in the mine and tamping it up? *A.* Yes.
12276. *Q.* Were you there at the time? *A.* I was not there when they were boring the hole. I was there after it had been bored; I saw it when it was stuffed up.
12277. *Q.* I think you say you have seen some flame after hanging shots? *A.* Yes, I have seen some flame with hanging shots.
12278. *Q.* How far back did that flame go on the two occasions when you saw it? *A.* It did not go far back. It seemed to be confined to the face in where the shot was hanging.
12279. *Q.* You have heard a good deal about the hissing sounds in the mine? *A.* Yes, I have heard hissing sounds.
12280. *Q.* Have you heard water cause that sound, too, in the mine? *A.* Yes, I think the water sounds, too, in damp places, where there is water driven out of the coal. I think so.
12281. *Q.* Do you think there is any difficulty in distinguishing the sound caused by gas and that caused by water? *A.* I feel some difficulty.
12282. *Q.* You would not be sure about it? *A.* I would not be sure.
12283. *Q.* Now, with reference to the ventilation at Mount Kembla, have you found the ventilation there good, or how? *A.* I have found it mostly good, so far as my knowledge went.
12284. *Q.* With reference to the furnace, what has been your experience in Kembla, since you have been fireman and previously; does it burn all the year round? *A.* It does now.
12285. *Q.* Had you any different experience years ago there? *A.* Well, I have seen the air reversed.
12286. *Q.* How do you account for that; what caused it in your opinion? *A.* I think it is that the furnace ——[*Interrupted.*]
12287. *His Honor.*] *Q.* Is that the present furnace or the old furnace? *A.* The present furnace. That is some years ago. I think it must be eight years since I have seen the air reversed, except once since; and that is since the explosion when the furnace was put out for repairs.
12288. *Mr. Barry.*] *Q.* You know what a southerly burster means? *A.* Yes.
12289. *Q.* Now, in view of the situation of Mount Kembla, would a strong southerly burster change the air? *A.* I do not think it would if the furnace was alight. It would do it in any other case; or any change of heat would do it, where furnace ventilation is carried on.
12290. *Q.* At the time you discovered that the air was reversed, was that on a Saturday? *A.* Oh, I could not tell.
12291. *Q.* Were the men all stopped working? *A.* No: I have seen it when going in to work years ago; but it has soon been reversed again the right way; but it is so long ago, and I never noticed. I only saw it going out of the tunnel mouth; I could not tell the exact time afterwards that it was reversed again
12292. *Q.* Now about the waste workings, what do you do with respect to the waste workings? *A.* I examine them.
12293. *Mr. Lysaght.*] I submit with every respect that it is immaterial what he does now.
12294. *His Honor.*] He was not deputy until after the disaster.
12295. *Mr. Barry.*] *Q.* Well, then, what is your experience; what have you seen there during the time you have been working there as a miner;—have you seen the firemen or the deputy there inspecting the different places? *A.* Yes, I have seen them inspecting.
12296. *Q.* Inspecting the working places? *A.* He used to come in every day while we were at work, once a day, and make the daily examination; once in a day. In the morning we would not see him come in; but we would know that by the mark on the coal.
12297. *Q.* Have you ever seen him inspecting the waste workings? *A.* No.
12298. *Q.* Have you ever seen any of the officials inspecting the waste workings? *A.* No.
12299. *Q.* Had you ever acted in the position of fireman before you were permanently appointed to this position which you hold now? *A.* No, never.
12300. *Q.* Have you ever occupied the position of check-inspector? *A.* Yes, I did once.
12301. *Q.* How long was that before the explosion? *A.* A few months; but I could not tell exactly. I do not remember the date.

12302.

12302. *Q.* Did you go round with Nelson? *A.* We went with Nelson in one portion of the mine; and we went with Mr. Leitch, the under-manager, another time.
12303. *Q.* Do you recollect whether on that occasion, Mr. Rogers, the Manager, afforded you every assistance?
12304. *Mr. Lysaght.*] Surely this is somewhat leading the witness. It has been throughout. I did not like to object before.
12305. *Mr. Barry.*] *Q.* Did you see Mr. Rogers there? *A.* Yes; but not when we first went there.
12306. I asked the question, your Honor, because some evidence has been given that Mr. Rogers tried to bluff in some way.
12307. *His Honor.*] Put it in this way, as to how Mr. Rogers received them. There can be no objection to that.
12308. *Mr. Barry.*] *Q.* How did Mr. Rogers receive you? *A.* He acted very well. At first he was not there; and we had a bit of trouble about it, because he was not notified of the nomination of the check-inspector for the district, and the under-manager was speaking through the telephone in connection with it; and then we saw him, when we went over to the daylight tunnel to make the inspection; and I did not see him then until we had finished the inspection; so we did not speak much in connection with the inspection at all; only we were talking of the mine. I could not remember all that was said.
12309. *Q.* Did you make your own inspection on that occasion, or make your own report? *A.* Yes, I wrote the report in conjunction with the other gentlemen, the district check-inspector.
12310. *Q.* Did anyone, either directly or indirectly, attempt to interfere with you in any way in making that inspection? *A.* No.
12311. *Q.* Do you recollect the 9th of August last? *A.* No, I do not.
12312. *Q.* Do you recollect having an appointment with Mr. Ritchie to go into the mine? *A.* Yes.
12313. *Q.* Did you go into the mine with a certain number of persons on that date? *A.* Yes.
12314. How did you go in, all together? *A.* Yes, as near together as we could get. It was a very rough road; and some of us were some distance behind the others.
12315. *Q.* There were different parties of you? *A.* Yes, all in the one party.
12316. *Q.* You were not all in a cluster; but you went in one after the other? *A.* That is it.
12317. *Q.* Do you recollect bord 86? *A.* No, I cannot remember the numbers.
12318. *Q.* What part of the mine did you inspect on that occasion? *A.* Well, we inspected the main headings, the back heading, and the top line of cut-throughs, where a person named Aitken had been working, and we went to other places; but I cannot remember the exact places. We went to the 4th Right.
12319. *Q.* Do you think you could just mark out for the Court on that plan the course you took? *A.* No, I could not.
12320. *Q.* Can you describe now, shortly, what occurred; what inspection you made; that is, the places you visited? *A.* Well, we visited the back heading, and Aitken's place; and we went into the 4th Right; and we inspected the main tunnel, right from the tunnel mouth in.
12321. *Q.* I believe you were anxious to gain some experience with reference to the mine; and you happened to mention the fact to Mr. Ritchie; and he asked you to go in with him? *A.* Yes, I expressed a desire that I might go in to Mr. Ritchie.
12322. *Q.* Then you went in; and you got up to where? *A.* The 4th Right in one place, and then the main heading; and then Aitken's place, and all the top line of cut-throughs; and many places we went to that night that I could not say. We were not in front; and they were giving directions where to go; and I could not tell exactly where I was. Things were upset that night.
12323. *Q.* Did you see Morris when he was carried out? *A.* I helped to carry Morris out.
12324. *Q.* Where was Morris taken from? *A.* He was taken from the back heading; that is where he was found.
12325. *Q.* Did you notice him when he was being taken out? *A.* I did not see his face. I noticed Morris senior's hands and arms.
12326. *Q.* What state were they in? *A.* The hands were swollen up like this (*indicating a swelling on the back of the hand about an inch in height*), and it seemed as if they had been burnt.
12327. *Q.* Have you since the disaster been through the mine for the purpose of ascertaining, or gaining some information, to enable you to come to any conclusion as to what was the cause of the disaster? *A.* I have been through the mine in the discharge of my duties.
12328. *Q.* Have you formed any opinion? *A.* No, I cannot form any definite opinion.
12329. *Q.* Have you any idea, or have you any opinion, where the trouble started in the mine, which caused the disaster? *A.* I cannot give any definite opinion where it started, except that it was in No. 1 district, or appeared to be there, either from the rise side—I cannot give any definite opinion. I have tried to form a definite opinion, and cannot, as to where it started. There are too many contradictory signs of force for me to determine where it started.
12330. *Q.* Do you know what grey dust is? *A.* Yes.
12331. *Q* Have you seen any grey dust in the mine? *A.* Yes, after falls. I have seen grey dust after a fall.
12332. *Q.* Now, what is the colour of the roof in No. 1 Right; is it one colour or various colours? *A.* I think it varies; I am not sure now. I think it is mostly yellow.
12333. *Q.* The 4th Right? *A.* That is yellow, to my idea.
12334. *Mr. Bruce Smith.*] *Q.* The 4th Right is the one going into the goaf? *A.* Yes, I have been in there; and I fancy it is yellow.
12335. *Mr. Barry.*] *Q.* Have you fired any shots since you have been in the mine? *A.* One or two.
12336. *Q.* What have you fired them with, a machine or an apparatus? *A.* The day I fired them it was with an apparatus. I fired them in No. 1, before the repairing was finished.
12337. *Q.* How is that done? *A.* It is done with a little cap. It is a kind of machine, I do not know the name, like a tweezers; and there is a little cap, and a fuse inserted into the cap.
12338. *Q.* I presume there are different ways of firing off these shots? *A.* Yes.
12339. *Q.* Can you say whether the mine, before the explosion, was watered, from what you saw? *A.* I could not say definitely.
12340. *Q.* What is its state now, or since the disaster? *A.* Well, some of it is in a damp state.

12341. *Q.* Can you tell the Court the number of ways out of the mine? *A.* Four ways that I know of.
12342. *Q.* You know John Morrison? *A.* Yes.
12343. *Q.* He gave evidence here to-day? *A.* I know him.
12344. *Q.* Have you worked with him, or under him? *A.* I have worked with him.
12345. *Q.* Have you worked under him? *A.* No.
12346. *Q.* Not in the mine under him? *A.* No
12347. *Q.* Had you any previous experience, before going to Mount Kembla? Have you ever worked in Mount Pleasant? *A.* Yes, once, years ago. I worked there about twelve months, when I was a boy of 15 or 16, that is all.

Cross-examination by Mr. Lysaght:—

12348. *Q.* Do I take it, then, Mr. Biggers, that you have had no practical experience of gas? *A.* Oh, yes; I have had some practical experience of gas.
12349. *Q.* Where did you get it? *A.* Well, I have only seen gas once in a safety-lamp.
12350. Where did you get your practical experience of gas? *A.* At Kembla.
12351. *Q.* At Kembla? *A.* Yes.
12352. *Q.* When? *A.* Well, I found gas there about a month ago, a small quantity of gas.
12353. *Q.* A month ago? *A.* No, it is not a month ago. It was about the 1st of last month. That is about the first gas I have actually seen in a safety-lamp.
12354. *Q.* And is that your practical experience of gas? *A.* Oh, well, that is all you require, I think.
12355. *Q.* Well, is it? *A.* Yes, that is all.
12356. *Q.* And you have been a deputy how long? *A.* About four months.
12357. *Q.* So that you were appointed a deputy without having had any practical experience of gas at all? Is not that a fact? *A.* Yes, I had never seen gas except——[*Interrupted*].
12358. *Q.* No; I am talking of practical experience of gas? *A.* Yes.
12359. *Q.* That is the fact? *A.* Yes.
12360. *Q.* And at the time you were appointed deputy you held no certificate? *A.* No.
12361. *Q.* Did any person put you through any examination before you were appointed deputy? *A.* Yes, I was asked many things; how to examine for gas——[*Interrupted*].
12362. *Q.* By whom? *A.* By the under-manager.
12363. *Q.* What is his name? *A.* Mr. Hotchkis.
12364. *Q.* When was that? *A.* It was just after he came there.
12365. *Q.* Now, how long was Mr. Hotchkis examining you? *A.* He asked me while we were going round together; he asked me how I would examine for gas; and how would I tell certain percentages; and I told him; that is all.
12366. *Q.* That is all while you were walking round? *A.* Yes.
12367. *Q.* Casual questions, that is all? *A.* Oh, no, not casual questions.
12368. *Q.* It was only on one occasion, when you went round with him? *A.* This was before I undertook my duties; and he took us all round together.
12369. *Q.* That is only on one occasion? *A.* Yes.
12370. *Q.* And he took you all round together, the men who were to be appointed deputies? *A.* No.
12371. *Q.* Who were with you? *A.* I did not say deputies. John Morrison was there, and myself. I think there were only three on that occasion. I cannot remember exactly.
12372. *Q.* Now, boiled down, the examination you went through was a few questions from the under-manager as to how to test for gas; is not that so? *A.* Yes, he asked me how to detect gas, and different questions about ——[*Interrupted*].
12373. *Q.* And upon that you were made a deputy? *A.* No.
12374. *Q.* Were you asked any other questions by the Manager? *A.* Yes; I had a conversation with him months before, before the explosion, in connection with the deputyship there.
12375. *Q.* With Mr. Rogers? *A.* Yes.
12376. *Q.* Did he examine you as to your knowledge of gases? *A.* Yes, he asked me several questions; and he made inquiries of our technical teacher, and different things.
12377. *Q.* I only want it as to your practical knowledge, as far as the Manager is concerned. Then you did not represent to the management that you had any practical knowledge of gas, did you? *A.* No, I did not.
12378. *Q.* And your duties as deputy included shot-firing? *A.* No, not always. On one occasion I was sent to do some.
12379. *Q.* Part of your duties would be to fire shots? *A.* No.
12380. *Q.* Will you tell me why it was that you fired these shots? *A.* On that day I was appointed to do it, and that is the only day I have been appointed to do shot-firing.
12381. *Q.* Do you know that they were firing shots in Mount Kembla with the naked light, lighting the fuse with the naked safety-lamp? *A.* Yes; I believe they were.
12382. *Q.* Did you ever see it done? *A.* No.
12383. *Q.* Is it not a very dangerous practice? Remembering that you have now a second-class certificate, is it not, in your opinion, a very dangerous practice? *A.* I do not think so, where there is no gas.
12384. *Q.* Do you think it is a very safe practice? *A.* Well, I think it would be better to have the other.
12385. *Q.* Will you not admit that it is a dangerous practice? *A.* No.
12386. *Q.* Is not the examination beforehand only made with the safety-lamp? *A.* Just so.
13387. *Q.* And do you not know that that will not detect less than about 2½ per cent. of gas? *A.* Yes.
12388. *Q.* And do you not know that 1 per cent. is dangerous in certain dusty conditions? *A.* In certain places.
12389. *Q.* Now, will you not admit that, if your lamp will only detect down to 2½ per cent. it may be dangerous, because there might be gas there in dangerous quantities and not detected? *A.* No.
12390. *Q.* Do not you see that there may be less than 2 per cent. of gas present, and it may not be detected? *A.* Yes, I see that.
12391. *Q.* That being so, if you assume, because you test with the ordinary safety-lamp, that there is no gas there, may you not be making a wrong assumption? *A.* No, not where the place is in a damp condition.
12392. *Q.* I mean, may you not be making a wrong assumption in thinking there is no gas there? *A.* Yes.

12393. *Q.* And, if you make that wrong assumption, is not there a risk of danger in firing a shot with a naked light? *A.* But, where the safety-lamps are used, they have to, according to the Act, water the place if it is dry and dusty.
12394. *Q.* I will come to that afterwards: is it not manifestly dangerous, when the assumption that there is no gas there may be wrong, to fire the fuse with the naked lamp? *A.* Well, it is dangerous anywhere to fire a shot at all in mines, as far as that goes. There is always a certain amount of danger with a blown-out shot.
12395. *Q.* And is not there a considerably greater amount of danger in firing it with the naked light instead of the wire? *A.* Well, I cannot say it is a very dangerous practice.
12396. *Q.* But is not there a considerably greater danger with the naked light than with the wire? *A.* No, I do not think that there is, at all; not when it has been examined, and when the place is watered thoroughly.
12397. *Q.* You do not know, of your own knowledge, whether the places were watered where the shots were fired with the naked light, do you? *A.* Well, yes.
12398. *Q.* Then you do know where these shots were fired with naked lights? *A.* I used to know the places.
12399. *Q.* And do you know who fired the shots with the naked lights? *A.* Yes, I know; but I never saw them at it.
12400. *Q.* Who? *A.* Forsyth was one, Livingstone, and Davie Evans, and several others.
12401. *Q.* So that, since the disaster, it has been quite a common practice at Kembla to fire the fuse with a naked light? *A.* No, it has not been a common practice. You asked me who fired the shots; you did not ask me "with the naked light."
12402. *Q.* I am speaking of the firing of shots with the naked lights? *A.* There were not so many doing that.
12403. *Q.* Was David Evans doing that? *A.* No.
12404. *Q.* Now, I want to know whom did you know to fire the shots with the naked light? *A.* I know of two.
12405. *Q.* Who? *A.* Forsyth and Livingstone.
12406. *Q.* Were you present when they were fired? *A.* No, I have never been there at the actual time.
12407. *Q.* Then you do not know what the conditions were at the time of the firing of the shot? *A.* Well, yes, I have seen it afterwards.
12408. *Q.* I am speaking of at the time? *A.* At the time I was not there: but still it is like this—I was not there actually when the shot took place; but I have been there shortly after a shot; and, if the place was in a damp condition or dry before the shot, it would naturally be the same afterwards; and, so I concluded that it was in that state at the time the shot was fired.
12409. *Q.* Do you mean to tell me that there were no dusty places there when any shot was fired? *A.* No, I do not think there were.
12410. *Q.* In view of some evidence we have had, will you swear that no shot was fired in a dusty place since the disaster? *A.* I would not swear that.
12411. *His Honor.*] I do not think there is any evidence that a shot has been fired in a place that was dusty.
12412. *Mr. Lysaght.*] Yes, there was the evidence of Quinn, and Charles Smith also, I think. Smith said he did not approve of a man firing with a naked light, when he (Smith) was required to use a safety-lamp.
12413. *Mr. Bruce Smith.*] I do not think, even if the evidence has been given, that it is usual to remind a witness that certain evidence has been given.
12414. *Mr. Barry.*] It is not right.
12415. *Mr. Lysaght.*] I wanted to show that he did not really know the conditions at the time these shots were fired; and to bring him back to the fact that it was a dangerous practice.
12416. *His Honor.*] That is more a question for the Commission than anyone else, the question whether it was dangerous.
12417. *Mr Lysaght.*] Very well, your Honor.
12418. *Q.* Now, with respect to this inspection you made with Josland: do you know that Josland stated that you did not examine one-half of the bords or the pillars, becaused you assumed ——[*Interrupted.*]
12419. *Mr. Bruce Smith.*] No, they were "assured."
12420. *Mr. Lysaght.*] *Q.* You inspected with Josland? *A.* Yes.
12421. *Q.* You were the check inspector with Josland some three or four months before the disaster? *A.* Yes, on one occasion.
12421½. *Q* You do know that Josland has stated that on that inspection you assumed that more than one-half of the places were right, because the adjoining places that you went into were all right? *A.* Yes, I heard he said that.
12422. *Q.* Well now, is it true? *A.* It is not. We went to more than one-half of the places.
12423. *Q.* Well then, I will not cut it exactly to half. May I take it from you that there were at least one-third of the places that you never went into at all, but assumed that they were right? That is giving you a good margin? *A.* Well, there were some we did not go into, if that is what you mean.
12424. *Q.* I am not making any suggestion that you did wrongly, at present. I do not want you to think that I am going to blame you, at present: but I ask you, is that part of the evidence true, that there were a large number of places that you did not go into and inspect at all? *A.* Not a large number. We missed a good many; but I believe we did more than two-thirds of the places. That is what I think, anyhow.
12425. *Q.* Well now, you did miss a good many? *A.* Yes.
12426. *Q.* Do I understand pillars and bords? *A.* Yes, we missed some pillars; and we missed some bords.
12427. *Q.* The practice was, on that inspection, to go and inspect, say, one bord, and miss the next couple; and go in another bord, and miss the next two or three; that was the mode of inspection? *A.* Anywhere we thought likely to go, if the under-manager was going on, we would say, "Well, will we go in here?"; and I used to sometimes ask him and the District Check Inspector where to go.
12428. *Q.* In fact, you went where the under-manager took you? *A.* Oh, no.
12429. *Q.* Did not you say that where the under-manager was going in you would go? *A.* No, you made a mistake; when the under-manager was going ahead we would walk behind him, and go in some place where he was not going; that is what I mean. We went just where we thought necessary. We exercised our discretion.

Witness—C. Biggers, 3 February, 1903.

12430. *Q.* Is it not a fact that the under-manager said you need not go up a number of places on the 4th Left? *A.* I do not remember anything being said about that.
12431. *Q.* Will you swear that that part of Josland's evidence is not correct? Will you swear that the under-manager did not say that? *A.* I will swear I did not hear it, or I do not remember that. I will say, certainly, that we were masters of the situation, and could go where we wanted.
12432. *Q.* Do I understand from you that you went wherever Josland suggested? ——[*Interrupted.*]
12433. *Mr. Barry.*] He has never said that, or anything like it.
12434. *Witness.*] He used to, at times, refer to me; and I used to refer to him.
12435. *Mr. Lysaght.*] *Q.* And did you not say that you used to ask Josland whether you would go into a place or not? *A.* At times.
12436. *Q.* May I take it that you would be guided by Josland as to whether you went into that particular place? *A.* No, he was partly guided by me; and I was partly guided by him.
12437. *Q.* Do you not know that Josland stated that he trusted entirely to you to take him to the places? *A.* He might have said it; and he might have thought it, too.
12438. *Q.* Now, what I want to know is, had you any reason for not going into those places on the 4th Left? Let me show you on the plan exactly; and you think before you answer? *A.* I could not be sure of the places we went to that day. We went to the rise places, because those are the places I wanted to go to.
12439. *Q.* You have seen a plan like this for days and days? *A.* Oh, no.
12440. *Q.* Do you mean to tell me you have never seen one like that? *A.* Yes.
12441. *Q.* Have not you studied it? *A.* I could not say.
12442. *Q.* Do you not know where the 4th Left is; those places on the 4th Left here where Aitken and Tost and all these men were working? *A.* Yes, I was there yesterday.
12443. *Q.* Now, is it not a fact that you did not go in at least one-half of those places during that check inspection? *A.* No, I will not say that; I believe we went into most of those places. We went to most of the rise places on that occasion.
12444. *Q.* Have you read Josland's evidence? *A.* Yes.
12445. *Q.* Where did you read it? *A.* I read a portion of his evidence in the paper, and I have been told about what he said since.
12446. *Q.* Where did you read Josland's evidence? *A.* In Sydney, about a week ago.
12447. *Q.* Who showed it to you? *A.* I read it in the paper; nobody showed it to me.
12448. *Q.* Do you mean to tell me that you have not seen a typewritten copy of Josland's evidence? *A.* No; I have never seen anything of his evidence, only what I have heard men talking of what he said.
12449. *Q.* Were you in Sydney when Josland gave his evidence? *A.* Yes, I was in Sydney.
12450. *Q.* Now, did you not see it reported in the Press that Josland had stated that he had not examined more than one-half of those places in the 4th Left? *A.* Yes, I saw that; but I take it that he has made a mistake, because he did not know the places as well as I did; and I did not know them too well up there at the time. I had never worked up there; and I do not see how Josland could know too well the exact places we went to.
12451. *Q.* Do you mean to say that nobody has ever read to you, or that you have not seen, a complete copy of Josland's evidence typewritten? *A.* No.
12452. *Q.* Have not you given any statement of your own evidence? *A.* I have given a little statement when I was in Sydney at the examination.
12453. *Q.* To whom did you give that statement? *A.* To Mr. Wade.
12454. *Q.* And were not you then told what Josland had sworn? *A.* He said a few things that Josland had said.
12455. *Q.* And did not he read it from the typewritten copy? *A.* No, he did not.
12456. *Q.* Is that the only statement that you gave? *A.* Well, to-day I was talking to Mr. Barry.
12457. *Q.* Well, before to-day? *A.* No. I have given no other statement that I can remember.
12458. *Q.* Do not you know that your name was mentioned as a witness as far back as three weeks ago at Wollongong? *A.* No; I do not know, except that Morrison told me that I would be likely to be there. We were talking and speaking of who would be there: and he said, "Oh, you will be there"; and I said, "I do not think so; I do not think they will want me." That is all that I heard. I was surprised when I got it [*meaning the subpœna*].

[At 1 p.m. the Commission adjourned until 2 p.m.]

AFTERNOON.

(On resuming at 2 p.m., Mr. W. R. Pratt attended to take shorthand notes of the evidence and proceedings.)

CHARLES BIGGERS, previously sworn, was further examined, as under:—

12460. *Mr. Lysaght.*] *Q.* At the time of the check-inspection you had to depend on Nelson where to go? *A.* Not exactly. I would not know where I had been, but I had been in that district before.
12461. *Q.* Would you know of any of the places not at work? *A.* No.
12462. *Q.* When you observed Mr. Nelson run past a place, you would stop him and go into it—a working place? *A.* I would stop and say, "We had better come in here."
12463. *Q.* After Nelson had passed? *A.* Very often.
12464. *Q.* Did you observe Nelson hurry past any different places? *A.* No.
12465. *Q.* Then you had no cause to stop him when you wanted to go into various places? *A.* We would stop him.
12466. *Q.* Would you call him back, and go into a place that he had passed? *A.* Yes, if we had occasion.
12467. *Q.* Where are any of these places in the 4th Left where you had occasion to call him back? *A.* I cannot say exactly where they are.
12468. *Q.* During the whole of the three days' inspection the pit was not working? *A.* No.
12469. *Q.* Did you ask the under-manager whether the men were working in any particular place or whether they were not? *A.* We knew there were no men in the mine.
12470. *Q.* Were any places lying idle permanently, or where they had finished work? *A.* Yes.
12471. *Q.* Can you tell me of any place that you went into which was not being permanently worked? *A.* No, I cannot say.

12472.

12472. Can you remember going into any place not being permanently worked? *A.* Yes; in the shaft district.
12473. *Q.* I mean No. 1? *A.* No.
12474. *Q.* Did you go into the top of No. 1 Main Heading? *A.* Yes, I think we went to that.
12475. *Q.* You think; cannot you remember? *A.* It is a long time ago, and I have had many things to drive it out of my mind since then.
12476. *Q.* Can you remember whether you went into this top heading? *A.* I cannot remember.
12477. *Q.* To the top heading—you remember No. 1 Main Level? *A.* They were not up that far.
12478. *Q.* Did you go into the place as far as it had gone up? *A.* I cannot be sure.
12479. *Q.* Are they not the places which Josland said were passed? *A.* I cannot be sure; I cannot be certain whether we went in there or not.
12480. *Q.* Who had the safety-lamp? *A.* Nelson.
12481. *Q.* Do you remember any remark being made when they saw the safety-lamp? *A.* No, I do not remember; I heard that Josland said so. I do not know.
12482. *Q.* Will you say that it was not said? *A.* I will not swear that it was not said.
12483. *Q.* Will you tell me anything that Rogers said about it? *A.* We had more talk with Mr. Leitch.
12484. *Q.* Do you not remember the remark being made that gas had not been found for the last twelve months, and that you did not want the lamp there? *A.* You mean by Leitch.
12485. *Q.* Do you remember his saying that you did not want a thing like that there? *A.* No; I do not remember any one of them saying anything like that. The safety-lamp was brought there; and we could not get it to work. It went out. Before anyone had spoken about it it was a settled thing that we should take the safety-lamp, but we could not get it to burn. Then was the time that the under-manager said, "What are you going to do?" He said, "You can get another safety-lamp, or clean this, or do as you like; but I have not seen gas for twelve months." Josland said, "What will you do?" I said, "We have seen no gas"; and we went into the shaft district.
12186. *Q.* Did you go into No. 1? *A.* We had the safety-lamp with us in No. 1. Nelson had it.
12487. *Q.* Nelson had one? *A.* Yes; Nelson went first and examined in front. We all went up with open lights to the face.
12488. *Q.* Was that after an examination had been made with the safety-lamp by Nelson? *A.* I examined with a lamp myself.
12489. *Q.* The only person who had the safety-lamp was the under-manager? *A.* He was deputy at the time.
12490. *Q.* The only person who had a safety-lamp was Nelson? *A.* Yes.
12491. *Q.* He went into the place first to see that it was safe before you went with a naked light? *A.* Yes.
12492. *Q.* You did not go into one-third of those places at the top of No. 1? *A.* Yes.
12493. *Q.* Do you not know that the safety of a mine, as far as gas is concerned, depends on the safety of every particular place? *A.* Yes.
12494. *Q.* It is like a chain which depends on its weakest link?——[*Interrupted.*]
12495. *Mr. Barry.*] Should not the witness be allowed to finish an answer?
12496. *His Honor.*] The witness certainly ought to be allowed to finish answering a question.
12497. *Mr. Lysaght.*] *Q.* Do you want to finish any answer? *A.* I want to say that, if all the places were together, it is improbable that gas would be found in one and not in the one next to it higher up. If I had to choose I would go to the rise.
12198. *Q.* Might there not be a blower of gas in the one you did not go into? *A.* It might be possible to find gas issuing from anywhere.
12499. *Q.* Was not your inspection, so far as gas is concerned, practically valueless as a check-inspection? *A.* I will not admit that.
12500. *Q.* Did you mention anything in the report about gas? *A.* I have not seen it since, and I have no copy of it.
12501. *Q.* Can you remember whether Nelson said it was no good to go into the top heading because there was nothing there? *A.* I cannot remember.
12502. *Q.* You will not swear he did not? *A.* No.
12503. *Q.* Then substantially Josland's evidence is correct? *A.* I do not know it.
12504. *Q.* You do not know? *A.* It is not correct about the hydrogen flame, or about intimidating.
12505. *Q.* Is there anything that you take exception to in Josland's evidence, as far as you saw it? *A.* Yes.
12506. *Q.* What did you object to? *A.* That we were intimidated from going in.
12507. *Q.* Josland never said anything about it? *A.* Some of the men were talking about it.
12508. *Q.* I tell you no. Josland never said he had been intimidated? *A.* I have heard them talking about it.
12509. *Q.* Did Mr. Rogers tell you? *A.* No.
12510. *Q.* None of the management? *A.* None of the management.
12511. *Q.* What else in Josland's evidence do you take exception to? *A.* I do not know it. Read the evidence to me, and I will tell you.
12512. *Q.* Well, there is nothing further so far as you know of it that you want to take exception to? *A.* Nothing further.
12513. *Q.* Now you talk about a hissing sound, and that sometimes it came from water? *A.* Sometimes
12514. *Q.* And in the majority of other times, what is it caused by? *A.* I should say that it was caused by either gas or water, and they used to try and find the gas.
12515. *Q.* Did you never know of gas being found in Kembla before the disaster? *A.* I have heard of it, and have seen gas there years ago.
12516. *Q.* When was the last time? *A.* Years ago, when I was a boy.
12517. *Q.* Where you described it as lighting after a shot? *A.* I have seen it after a bore too; and they would not fire the shot because the gas was giving off.
12518. *Q.* You know that a large number of men died from the effects of after-damp. In view of that fact, and what you know as to the mine giving off gas, have you formed any theory as to what was the probable cause of the disaster? *A.* I have a theory as to the probable cause.

12519. *Q.* What theory? *A.* The probable cause was the gas.
12520. *Q.* You think that most probably gas would be the cause? *A.* Gas and coal dust.
12521. *Q.* Have you any doubt that it was an explosion of gas and coal dust? *A.* I am not clear on that point.
12522. *Q.* Have you any honest doubt? *A.* Yes, I have.
12522½. *Q.* After hearing of gas and of coal dust, what else would it be? *A.* I have heard of the likelihood of a fall doing it.
12523. *Q.* Apart from that, can you mention any other cause than gas or coal dust? *A.* No, I cannot.
12524. *Q.* I suppose you admit that that 4th Left, being on the highest part of the mine, would be the most probable place for gas to accumulate? *A.* Yes.
12525. *Q.* And that that would probably be the original seat of the disaster—the vicinity of the 4th Left? *A.* I cannot say where the original seat of the accident was; I have no idea.
12526. *Q.* Do your conclusions lead you to adopt that place—the highest part of No. 1 Main Level? *A.* No. I have seen signs of force in the opposite direction. That is what is puzzling to me.
12527. *Q.* As far as you can offer an opinion, you say that it is an explosion caused by gas and coal dust? *A.* I do not offer any opinion.
12528. *Q.* Can you tell us whether you observed that the brattice was burnt? *A.* There was a little burnt in the main heading.
12529. *Q.* At the top? *A.* Yes.
12530. *Q.* You know that a number of bodies were burnt? *A.* I do not know of a number.
12531. *Q.* But there were some? *A.* There were some who had the appearance of being burnt.
12532. *Q.* In the top heading? *A.* Yes.
12533. *Q.* Have you any doubt that they were burnt by an explosion of gas? *A.* I have no great knowledge of the matter.
12534. *His Honor.*] Is it of any use examining this witness on this matter. There are the facts from which the Commission can judge.
12535. *Mr. Lysaght.*] *Q.* How often has the furnace been reversed? *A.* Once.
12536. *Q.* How often have you seen the air stationary, hanging in the balance? *A.* Only once, when the furnace was out for repairs, and there were only two or three of us there.
12537. *Q.* You said that sometimes the furnace did not burn properly. Did the westerly winds have any effect upon it? *A.* I do not know.
12538. *Q.* Then what do you mean? *A.* Sometimes the fire was banked up; there were not so many men there then as of late years.
12539. *Q.* The furnace was not sufficient to supply the ventilation? *A.* While men were at work, the fire was always there. This reversal of air occurred when the mine was idle for two or three days.
12540. *Q.* Now, I will ask you with regard to these Recommendations, No. 1—"Managers, under-managers, deputies, and shot-firers to hold certificates of competency by examination, and to have had five years' practical mining experience, before being eligible for their respective positions"? *A.* Yes; I approve of that.
12541. *Q.* Recommendation No. 2 is—"Inspectors to be vested with absolute power to order use of safety-lamps.' Do you approve of that? *A.* Yes.
12542. *Q.* Recommendation No. 3 is—"Ventilation by furnace prohibited, and fans substituted." Do you approve of that? *A.* I would not like to give an opinion on that.
12543. *Q.* I come to Recommendation No. 5—"All places, excepting prospecting drives, to have cut-throughs not more than 30 yards apart?" *A.* Yes. That would be good. It would be safe.
12544. *Q.* Recommendation No. 12 is—"An extra supply of safety lamps and their requisites equal to one-third of the number of persons employed below ground to be kept constantly in good order and ready to use." Do you think this extra supply of safety-lamps ought to be kept? *A.* Yes.
12545. *Q.* You had difficulty at the time of the Kembla disaster in getting lamps? *A.* We had difficulty in getting them to light.
12546. *Q.* They would not work? *A.* No.
12547. *Q.* And there was some delay in the rescue parties bringing out the men? *A.* There was some delay.
12548. *Q.* Recommendation No. 13 is that "Travelling and haulage roads, and other places necessary, be properly watered?" *A.* I agree with that.
12549. *Q.* I will pass on to Recommendation No. 18, that "Instruction be given to employees regularly on means of escape"? *A.* Yes; I agree with that recommendation.
12550. *Q.* And who do you think should give the instruction? *A.* Any deputy who knew the road, or any official.
12551. *Q.* The deputy? *A.* He would do.
12552. *Q.* Would you have the instruction given once a quarter? *A.* Yes; I believe that would do.
12553. *Q.* You believe that that would be a practical way of carrying out the recommendation? *A.* Yes.
12554. *Q.* Recommendation No. 20 is, that "Safety-lamps should not be unlocked for shot-firing"? *A.* I approve of that, too.

Examined by Mr. Bruce Smith:—

12555. *Q.* Were you spoken to four months ago about being made a deputy? *A.* Before the disaster?
12556. *Q.* Before the disaster? *A.* Yes.
12557. *Q.* By whom? *A.* I spoke to the Manager.
12558. *Q.* Did you speak to him; or did he speak to you? *A.* Well, I spoke to one of the deputies first. I had failed in an examination for a second-class certificate, and I thought it might be because of my not being an official in the mine. I talked to Davie Evans about the matter, and he said, "Oh, you should try and get a position," and so I spoke to the Manager about it.
12559. *Q.* It was a desire on your part to get a position? *A.* Yes.
12560. *Q.* You were never approached by the Manager with regard to it? *A.* Not before I spoke to him.
12561. *Q.* Did anybody representing the men approach you or ask you if you would care to take that position? *A.* No.
12562. *Q.* You told Mr. Barry that you never came across gas while looking for coal? *A.* No.

12563. *Q.* How often, before the disaster, did you meet with gas while working in any capacity? *A.* I could not say how often, but two or three times. I have seen little flashes.
12564. *Q.* Only little flashes? *A.* Yes. I have never come across any lighted, but I have seen men light it.
12565. *Q.* You are thoroughly impressed with the fact that there was gas in the mine, because you came across it three times yourself, and saw men light it? *A.* Of late years I did not think that there was any.
12566. *Q.* How long ago is it since you met it? *A.* Eight or nine years ago.
12567. *Q.* And when you saw men light it? *A.* Somewhere about the same time. It was when some men were working on a hole.
12568. *Q.* Then, from eight or nine years ago, up to the time of the disaster, you never saw gas or saw men light it? *A.* No.
12569. *Q.* When you say that you twice saw a light after firing a shot, was that eight or nine years ago? *A.* No.
12570. *Q.* Then you do not include that? *A.* I think that was fire-damp, or we called it powder-smoke.
12571. *Q.* How often have you seen powder-smoke go off? *A.* Twice, after a hanging-shot.
12572. *Q.* You say that you heard a hissing sound, but you do not know whether it was water or gas? *A.* Yes.
12573. *Q.* And you tried to find it with a light? *A.* Yes. I could not find it; and I took it for granted it was water.
12574. *Q.* How many times have you seen the air reversed in that mine in all your experience? *A.* I could not say; three or four times.
12575. *Q.* What did you attribute it to? *A.* I took it to be because the fire had gone out, and the wind had reversed and changed the ventilation.
12576. *Q.* Did you examine the fire? *A.* No.
12577. *Q.* You did not look to see whether the reversal was the result of having banked the fire? *A.* No.
12578. *Q.* When it was reversed, you said that there were only a few men working in the mine? *A.* That was on the last occasion.
12579. *Q.* On the other occasion when it was reversed, were there the usual number of men in the mine? *A.* It was reversed when we were going in. There were the usual number of men going in.
12580. *Q.* How long ago was this? *A.* It only occurred once during the last six or seven years—excepting once when the fire was out.
12581. *Q.* There were only officials in the mine on that occasion? *A.* Yes.
12582. *Q.* The reversal was only once in six or seven years? *A.* Yes.
12583. *Q.* Now, with regard to this check inspection. You knew that the object of going into the mine with your colleague was to check the safety of the mine with regard to the ventilation and various other matters? *A.* Yes.
12584. *Q.* Do you consider that you did check it? *A.* To the best of our ability we did.
12585. *Q.* You have passed an examination lately as underground-manager? *A.* Yes.
12586. *Q.* You have got a second-class certificate? *A.* Yes.
12587. *Q.* You have read a little. *A.* Yes.
12588. *Q.* You have listened to lectures? *A.* Yes.
12589. *Q.* Were you under Mr. May? *A.* Yes. I have got my certificate as underground-manager, and I have also got technical certificates.
12590. *Q.* With that knowledge, do you consider that your visit and your report as to your inspection was really a check on the safety of that mine? *A.* I think it tended in that direction.
12591. *Q.* You admit that you did not go into about a third of the places? *A.* Yes.
12592. *Q.* And, with regard to a number that you went into it was with open lights, after they had been tested by the deputy? *A.* Yes, but we tried them when we got there with a safety-lamp.
12593. *Q.* You say that you tried them after you had gone in with naked lights? *A.* Yes.
12594. *Q.* In what way? *A.* We tried up to the roof above with a safety-lamp.
12595. *Q.* You say that you went in with a naked light, and that you examined higher up with a safety-lamp? *A.* Yes.
12596. *Q.* How many hours were you in altogether? *A.* We were three days altogether. We were delayed getting to work owing to the mine being idle.
12597. *Q.* Why did you limit yourself to three days? *A.* We did not like to give any more, owing to the expense.
12598. *Q.* Expense to whom? *A.* To the miners who paid us.
12599. *Q.* Were you limited in your time? *A.* No.
12600. *Q.* But you got through the work as quickly as possible? *A.* If we had gone over every part of the mine, it would have taken a fortnight to make a minute inspection.
12601. *Q.* To check the whole thing then would have taken a fortnight? *A.* Well, it would have taken eight or nine days. It takes me five days now to inspect the old workings.
12602. *Q.* Were you interfered with in any way in your attempt to check the ventilation, or to check the presence of gas, on that occasion? *A.* No.
12603. *Q.* Were any restrictions placed on you? *A.* No.
12604. *Q.* Why did you accept the assurance of Mr. Hotchkis that there was no gas? *A.* Mr. Hotchkis?
12605. *Q.* No, I mean Mr. Nelson? *A.* I do not remember having accepted it.
12606. *Q.* Were you not assured by him or by Mr, Rogers that there was no need for you to go into certain places? *A.* No, we were not. If I said that, I was much mistaken.
12607. *Q.* Mr. Rogers told you when you arrived that they had not seen any gas for twelve months? *A.* No, Mr. Leitch.
12608. *Q.* Who is Mr. Leitch? *A.* He was the underground-manager.
12609. *Q.* Did that lead you to reduce your inspection in any way? *A.* It did, when we looked at the reports. We asked to look at the reports of the deputies, and we found there were no reports of gas being present.
12610. *Q.* It was an inspection to check the reports of others, and you asked for the reports of other men? *A.* We had no lamps. My colleague had a lamp; but he could not get it to work.
12611. *Q.* He brought his own safety-lamp? *Q.* Yes, but it would not work. 12612.

12612. *Q.* Did you ask for a loan of a lamp? *A.* No; Mr. Leitch said he could have a lamp if he liked. He said "I do not want to say anything, but I have seen no gas for twelve months."
12613. *Q.* Having seen these reports, which read satisfactorily, you limited the inspection accordingly? *A.* Yes, together with my own experience of having found no gas in the mine.
12614. *Q.* You spoke about Morris senior's hands being burnt;—how many indications were there of men or things being burnt—how many men? *A.* I saw Morris.
12615. *Q.* Did you see any other men? *A.* Tost, and a few others, appeared to be burnt.
12616. *Q.* Why? *A.* The skin was hanging off them.
12617. *Q.* Was their hair singed? *A.* I did not examine them, but I think that they were burnt.
12618. *Q.* Do I take this from you: that up to the time of your being appointed a deputy you had never seen a safety-lamp under the influence of gas? *A.* No, I had not.
12619. *Q.* Either in lectures, or in undergoing an examination, or in a mine? *A.* I have never seen the gas actually in the safety-lamp.
12620. *Q.* You have never seen it of your own accord, and have never been shown what the effect was on the safety-lamp? *A.* I have been told, but have never seen it.
12621. *Q.* You said, "I have seen forces in the opposite way," in answer to a question by Mr. Lysaght. Now, were you in the mine after the accident? *A.* I was in with the first rescue party.
12622. *Q.* You were in continuously? *A.* Not continuously. I was too ill the next day.
12623. *Q.* You were in frequently within a month afterwards;—you had an opportunity of seeing the effect of the explosion? *A.* Yes.
12624. *Q.* And in how many directions did you see indications of force? *A.* In some places in all directions.
12625. *Q.* In more than one place you found it in all directions;—from how many centres did you see it working? *A.* I could not say. I have seen a bord running in the same direction as another, with forces running inbye and outbye, and some with forces in all directions. In the main tunnel I saw a force going out, and a contradictory force coming in.
12626. *Q.* Then you saw evidence of many conflicting forces after the accident? *A.* Yes.

Examined by Mr. Robertson:—

12627. *Q.* Your experience with regard to gas seems to have been very limited? *A.* Yes.
12628. *Q.* Were you examined by the Board of Examiners as to your knowledge of gas? *A.* Yes, I was, as to my knowledge of mining gas generally—how to detect gas, how to detect certain percentages, how to deal with them, and how to find out in what quantity I found it.
12629. *Q.* You say that you have not met with gas yourself, excepting on one occasion? *A.* I only met with it on one occasion, and in a small quantity; but I soon detected it, although I had never seen gas in large quantities, and I am sure I could detect it now.
12630. You were put to an examination by Mr. Hotchkis, before being appointed? *A.* Yes; Mr. Hotchkis asked me several questions, as how to examine a mine, and so on, and I told him; and he seemed satisfied.
12631. *Q.* Do you think that one examination was more exhaustive than the other? *A.* In the examination under the Coal Mines Act I went through a big examination with regard to the nature of gases.
12632. *Q.* I mean as to practical knowledge? *A.* They were something similar.
12633. *Q.* Then the practical questions, relating to the finding of gas, put to you by Mr. Hotchkis and the Inspectors, were somewhat similar? *A.* Yes.
12634. *Q.* Do you not think that the management of a mine would be more likely to know the qualifications of a man than an Examining Board, the members of which have had no opportunity of watching his work in a mine? *A.* Well, I do not know. I think both of them would have an opportunity of putting questions to you.
12635. *Q.* For the position of deputy, do you not think it is probable that the Managers, who are responsible for the mine, would have a personal knowledge of the working of a man in the mine? *A.* Yes.
12636. *Q.* I think you said it took five days to inspect the old workings? *A.* Yes.
12637. *Q.* Do you go into every accessible place in the mine? *A.* Yes.
12638. *Q.* Do you mark them? *A.* Yes.
12639. *Q.* And, when you come to a fall, do you get on top of the fall? *A.* If it is in any way practicable. In fact, since the explosion, I have been in places altogether dangerous to see whether there was any gas there. I have been into some places that I would not go into again.
12640. *Q.* You are sure that it takes five days to inspect these workings? *A.* Yes, to do them carefully. I may be a few hours short, that is all.
12641. *Q.* How many hours a day do you take inspecting them—eight or nine? *A.* About eight hours altogether. Of course, sometimes, if I were to do it all through, I could do it in four days. But sometimes there is a stopping to be looked after in the old workings, and things like that.
12642. *Q.* Could you do it in two days? *A.* No, not to examine it properly.
12643. *Q.* We have the evidence of deputies who have stated that they did it in one day? *A.* Well, I could not do it in that time. I go over every place by myself. Sometimes the men, when they come to a heading split up, and take one road each; that helps them. But I go up one road and down the other, and that adds to the time.
12644. *Q.* Coming to this matter of the check inspection. I take it that you consider that you made a sufficient check as to the condition of the mine by taking some sample places? *A.* We thought that that check would be a help.
12645. *Q.* You did not think it absolutely necessary, in order to ascertain the general condition of the mine, to visit every place in it? *A.* Well, I do not think so. We did not visit every place. I think that if there are two places together, and you go to the one on the rise, that will do. If there is time, you can visit them all.
12646. *Q.* Having been three days inspecting the mine, you ought to have a fair idea of it? *A.* We ought to.
12647. *Q.* You had option to go where you liked? *A.* Yes.

12648. *Q.* It would be no reflection on a Custom-house officer to say that he only looked at one or two packages in a cargo of a ship, to find out if there was fraud? *A.* No.
12649. Do you think it necessary for a Custom-house officer to examine every package in a cargo? *A.* I have never had much to do with Custom-house officers.
12650. *Q.* Custom-house officers are there to check any hanky panky work, but they do not open every package? *A.* I would not like to open every one; if I picked out one every here and there, I should think that would be a check.
12651. *Q.* And if you inspected a mine, and took three days instead of five days, you think you ought to have a fair idea of that mine, and whether the rules were being carried out? *A.* Yes.
12652. *Q.* Your objection to Mr. Joaland's evidence seems to be about some intimidation of the check-inspectors? *A.* That is, if he did say such a thing. I have had no authentic statement of it. I only read the short accounts in the press, but I heard from the men that the Manager had intimidated us, and that we did not take safety-lamps; I object to that. We did not take the safety-lamp, because it was out of order.
12653. And you were not intimidated? *A.* I was there to do my duty; and I was not intimidated or influenced by anyone. We were there on behalf of the men; and what little I knew, I went to try and find out as honestly as I could.
12654. *Q.* You have a special appliance for shot-firing? *A.* Yes; that was introduced not long after the explosion.
12655. *Q.* It is in the form of a pistol? *A.* Yes; with a fuse inserted in the cap.
12656. *Q.* Do you not think that it is a satisfactory method of firing a shot? *A.* Yes; I like the way myself.
12657. *Q.* And it is preferable to the wire? *A.* I think it would be much the same, because the fuse still throws out sparks just the same.
12658. *Q.* It does not spark under that appliance; it is enclosed? *A.* The fuse which you see sparks.
12659. *Q.* It throws off fumes, but not sparks? *A.* The fuse gives off sparks. The fuse I had is half-an-inch out of the hole when you pull the tweezers together to get a light; then the fuse gives off sparks.
12660. *Q.* Where do the sparks come from:—is not the fuse entirely enclosed in a cap? *A.* Yes.
12661. *Q.* Is not that better than the red-hot wire? *A.* It is better; but the wire is a pretty good method. I was not sure at the time; but I fancy sparks came out of it.
12662. *Q.* Can you tell me the position of the 4th Right on the day of the explosion, or thereabouts;—was it wet? *A.* Yes; there was water there.
12663. *Q.* Was it sloppy? *A.* Yes.
12664. *Q.* If anybody says that it was dry and dusty —— *A.* That is at the mouth of the 4th Right; but there is a little goaf in from the main road, and there was water there.
12665. *Q.* Were you in there before the explosion? *A.* No.
12666. *Q.* After the explosion? *A.* I examined it afterwards with Mr. Ritchie and a party.
12667. *Q.* Did you notice some props in there? *A.* I do not remember identifying them at the time. There was a little black-damp there; and it was only a question of going up to the goaf fast and retreating. It was only by doing that that you could get there at all.
12668. *Q.* You cannot remember anything as to the direction of force in there? *A.* No.

Examined by Mr. Ritchie:—

12669. *Q.* Do you remember making an examination of the 4th Right Section when you made your check inspection? *A.* Yes, I remember that distinctly; there were two places working there.
12670. *Q.* Did you make any observations for gas? *A.* Yes.
12671. *Q.* Did you find any? *A.* No.
12672. *Q.* Did you test for gas at the bottom of the working? *A.* No, we did not. There was too much ——. I cannot remember distinctly whether we did or not.
12673. *Q.* I suppose that is the most likely place to find carbonic acid? *A.* Yes.
12674. *Mr. Bruce Smith.*] *Q.* You were going to say just now that there was too much ——? *A.* I do not know now what I was going to say. It has gone past. That is because you are asking me questions too closely.
12675. *Mr. Ritchie.*] *Q.* Did you tell us that, because you were not an official your chances of passing the examination were not as good as if you had been an official? *A.* That is what I thought. That is why I aspired to the post.
12676. *Q.* Do you think that now;—do you think that on account of your being a deputy you have been successful? *A.* No; I thought it would help me to gain more practical knowledge of the working of the mine.
12677. *Q.* Did you think that a miner has not the same chance of passing successfully as an official? *A.* I thought so; I thought that he would not have the same chance of inspecting the mine, and that an official would be able to gain more knowledge.
12678. *Q.* Which do you mean—that the influence of your being an official is sufficient to get the Examining Board to help you, or that you have an opportunity, by being an official, to better prepare yourself? *A.* I rather mean that an official would have greater opportunities of seeing practical work; although I would not say that it would not influence the examiners to know that you have been an official in a mine. I think it would influence the examiners a little; but I am not certain.
12679. *Q.* You think that the fact of your being an official would help in influencing the Board? *A.* Yes; if you were an official for any length of time.
12680. *Q.* In view of the fact that you say the examination of the waste workings takes five days, do you think that the inspection you made on three days—the 29th, 30th, and 31st—was at all an effective one? *A.* Yes, it was to a certain extent.
12681. *Q.* To a certain extent? *A.* Yes.
12682. *Q.* How long would it take you to examine the working places in Mount Kembla? *A.* I cannot tell you exactly.
12683. If one man had to do the whole of them, would it take two days? *A.* Yes, it would—I believe it would, unless he ran.

Witness—C. Biggers, 3 February, 1903.

12684. *Q.* You know that every morning the whole of the working places have to be examined by someone? *A.* Yes.
12685. *Q.* And a report has to be written, certifying that the working places are in a fit state for the men to go into;—how many men are doing it now? *A.* Two.
12686. *Q.* You think it would take eight or nine days to examine the colliery thoroughly? *A.* To examine minutely, and to go over every goaf and test it properly, it would take a man more than a week; and it takes you longer when you are working alone.
12687. *Q.* On the check inspection you only took about one-third? *A.* Yes.
12688. *Q.* If you did the work minutely, there would be two-thirds not inspected? *A.* Yes.
12689. *Q.* That is to say, one-third not examined at all, and the other two-thirds examined in a slipshod manner? *A.* That is two-thirds of the working places. We never thought of the old workings; we did not do the old workings, further than visit any goaf which we passed. The old workings would have taken us a day to do.
12690. *Q.* Now, which is it most necessary to examine—waste workings or a working face where there are currents of air constantly travelling? *A.* It depends on what you have in the mine.
12691. *Q.* If you are sent as a Check-Inspector to report, which part do you regard as particularly necessary for you to examine—the working faces, or the waste workings? *A.* The one has as much right to be examined as the other.
12692. *Q.* Which part is danger likely to lurk in more than the other—the place where the ventilation is constantly travelling, or the place where there is no work at all going on? *A.* We have other things to look to besides looking for gas in a mine, such as the condition of the roof and the sides.
12693. *Q.* What other dangers are there? *A.* We have to consider the general condition of the mine.
12694. *Q.* We may take it that gas is a most dangerous factor in a mine, and as Check-Inspector you are going to look for it. Now, which is the most likely place to find it? *A.* The highest places in the mine.
12695. *Q.* Would you not think that the old working places would be a more likely spot in which to find gas rather than the working faces? *A.* Not at Mount Kembla.
12696. *Q.* You think you are just as likely to have gas lurking about the working faces? *A.* Of course, you might find gas in the old workings; but, if the current was not constantly travelling, you would find gas in the newly-wrought coal.
12697. *Q.* I see that in your report of your check inspection you say, "We, the undersigned, have examined the air-courses and the workings, &c." What do you mean by that? *A.* Let me see the report. I do not think the word, "&c." ought to be there. I think there must be some mistake with regard to the way that word is put there. "We, the undersigned, have examined the air-course and workings, &c." I take it that by the word "&c." I meant the other words in the Act of Parliament.
12698. *Q.* Did you or Josland write that report? *A.* I wrote the report.
12699. *Mr Ritchie.*] *Q.* Did you give any report to the miners? *A.* I gave the workmen a verbal report.
12700. *Q.* Did you mean your report to read that you had examined all the workings? *A.* No, I did not mean that, and it would not include the machinery, and so on. I meant that word "&c." to stand for the other words mentioned in that part of the Act.
12701. *Q.* Did you examine all the air-courses? *A.* All the air-courses.
12702. *Q.* Every one of them? *A.* All the main air-courses we did, but there are so many of them.
12703. *Q.* You only examined part of them? *A.* We were more particular in that than in anything else.
12704. *Q.* Really, after all, your check-inspection on that date was not an inspection of the whole of the air-courses and workings? *A.* No, we missed some of them.
12705. *Q.* Taking your evidence as a guide, there would be about one-third of the work which you did not do? *A.* Yes, counting the old workings in.
12706. *Q.* The old workings were not examined? *A.* No, with the exception of a few goafs which we looked at as we passed. To go to all places like the daylight heading would have taken up a day.
12707. *Q.* Can you remember what goafs you did examine? *A.* I can remember a bit of the shaft district which I was well acquainted with.
12708. *Q.* In view of what has happened, do you not think that a check inspection should be made more complete? *A.* We had nothing to go by. We were sent to examine the mine, and we knew that three days had been taken in examinations before. You took three days yourself. I saw that we could not go right through it and make a minute examination in three days, and so we went where we thought that we would be most likely to find danger.
12709. *Q.* What had you to guide you in making choice of places? *A.* We went into all the rising places.
12710. *A.* How did you know the rise from the dip? *A.* We would know when we were working up hill. Besides, I knew the 5th Right.
12711. *Q.* Do you not know that you may be walking to the dip and before you get there you may get to a rise? *A.* I know the main district too well to do that. I knew that when we got to the 5th Right and the 4th Left we got on to the rise. I knew which way the seam was going.
12712. *Q.* How could you tell that all the working places were safe without making an examination of them? *A.* I knew that the most likely places to be unsafe would be on the rise. There were places when we came to the rise where the deputy would go on with his light. We did not bother so much with the places in the dip.
12713. *Q.* Did you go through the whole of the travelling roads? *A.* Yes, we went through the whole of the travelling roads.

Re-examined by Mr. Barry:—

12714. *Q.* Who appointed you to the post of Check Inspector? *A.* The miners.
12715. *Q.* You represented the miners there? *A.* Yes.
12716. *Q.* You were there in their interests? *A.* Yes, in their interests.
12717. *Q.* I think you said this in your evidence to-day, "Leitch, the underground-manager, said, 'I do not want to influence you; you look for yourself. All I can say is I have not seen gas for twelve months'"? *A.* He said words to that effect. He had not seen gas for twelve months.
12718. *Q.* You had liberty to go where you liked, and do what you liked, in the mine? *A.* Yes.
12719. *Q.* I think you said that the usual time which it took to do this check inspection was three days? *A.* Yes, that is all we went by.

12720. *Q.* How did you know it had taken three days previously? *A.* The miners told us. Some said two days. I said, "We will only be three days; they will not pay us for any more."
12721. *Q.* You knew Mr. Ritchie to be a careful, cautious man? *A.* Yes.
12722. *Q.* And he had previously been to the mine, and taken three days to do the work? *A.* Yes.

Re-examined by Mr. Bruce Smith:—

12723. *Q.* You inspected the end of No. 1 Right heading? *A.* I think we went to the face there.
12724. *Q.* You inspect it now? *A.* Yes, I was there yesterday.
12725. *Q.* Do you go right up to the face? *A.* I do, once a week. It is an old working. The under-ground-manager also goes, I think.
12726. You only go once a week? *A.* Yes.
12727. *Q.* Which of the shifts do you do? *A.* I start at 7 in the morning and go right round the mine.
12728. *Q.* Is this the opinion you have formed—if men are not working in a place, it does not require to be examined so often. You have a certificate now as an under-manager. I should like to know what your opinion is? Do you think that because men are not working there a place does not require to be examined? *A.* It is according to where the place is situated.
12729. *Q.* This is one of the highest places in the mine? *A.* Yes.
12730. *Q.* And, therefore, liable to gas? *A.* Yes; but there are no men beyond that and the return. It is an old working.
12731. *Q.* And, as no men are working there now, you only go once a week, and you think that is enough? *A.* It is enough for me to go.
12732. *Q.* Have you ascertained whether the other officials go there? *A.* They must go, because within the last few days men have commenced to work near there.
12733. *Q.* Do you know that this place was left by Mr. Morrison unexamined for many months? *A.* I do not know that.
12734. *Q.* As far as you are concerned, you inspect a place once a week? *A.* Yes, once a week.
12735. *Mr. Robertson.*] *Q.* Are any men working on the return side of this No. 1 main heading? *A.* I do not think there are any men working now.
12736. *Q.* So you consider it to be an old working? *A.* They did not tell me what to do; I took it to be an old working; and I go weekly; but I see the marks of the under-manager, Mr. Morrison, and others when I go there.
12737. *Q.* The danger is less from an old working, when it is the last place on the section, than when it is in the centre of the working places? *A.* Yes.
12738. *Q.* At the time of the explosion, however, that was not so. It was then the first place in a split; and the air would go on to a number of working places? *A.* Yes.
12739. *Q.* There are no working places on the return side now? *A.* No.
12740. *Q.* Then the conditions are reversed at the present moment? *A.* Yes.

[The Commission at 3·30 p.m. adjourned until 10 o'clock the following morning.]

WEDNESDAY, 4 FEBRUARY, 1903.

[*The Commission met at the Land Appeal Court, Darlinghurst.*]

Present:—

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq., Commissioner. | D. RITCHIE, Esq., Commissioner.

Mr. Bruce Smith, Barrister-at-Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf of the Crown.

Mr. A. A. Lysaght, Solicitor, appeared on behalf of—
(*a*) the representatives of deceased miners, wheelers, &c., (victims of the explosion);
(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.); and
(*c*) the Illawarra Colliery Employees' Association (the Southern Miners' Union).

Mr. G. J. Barry, Solicitor, appeared on behalf of the Mount Kembla Coal and Oil Company (Proprietors of the Mount Kembla Mine).

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings.)

12741. *Mr. Bruce Smith.*] I would like to say, before Mr. Atkinson goes into the box, that, in view of the fact that this is the largest and most serious accident which has occurred since he has been the Chief Inspector of Coal-mines, he proposes to make a full statement with regard to the cause, and with regard to the coal-dust theory, and what he thinks should be done to prevent such an accident in future: and Mr. Atkinson thinks, and I think myself, that it may be of much use to the large number of people who are interested and take part in the mining industry, if they have the matter fully set out by him, with a full knowledge of its nature, and with all the latest information that has been gathered together from time to time on the subject.
12742. *His Honor.*] The Commission will appreciate that. If it happens that Mr. Atkinson has worked up shortly the history of this particular mine, that also might form part of his evidence, and be a useful part. Otherwise we shall have to get the history from some other source.
12743. *Mr. Bruce Smith.*] He has not prepared that, your Honor; but I understand he has the knowledge at his disposal, and he will do so.

12743½. I want to utilise his evidence, that he gave immediately after the disaster, and take that as part of his evidence, without repeating it in any way, except so far as he identifies the particular indications of force upon a map or plan which has been prepared for the purpose (p. 56 of Inquest).
12744. *His Honor*.] Very well.

Mr. A. A. ATKINSON was sworn and examined, as under:—

Examination-in-chief by Mr. Bruce Smith:—

12745. *Q.* What is your name in full? *A.* Alfred Ashley Atkinson.
12746. *Q.* You are the Chief Inspector of Coal-mines for the State of New South Wales? *A.* Yes.
12747. *Q.* And you have occupied that position, I think, for five years? *A.* Since September, 1897.
12748. *Q.* And, previous to your coming to this State and occupying that position, what was your position at Home? *A.* I was Manager of the Barrow Collieries in South Yorkshire.
12749. *Q.* I think you were appointed in England to come out here and take this position? *A.* Yes.
12750. *Q.* How many years' experience had you had in coal-mining before you accepted that position? *A.* About twenty-two and a half years.
12751. *Q.* So we may add that on;—you have had twenty-eight years' experience altogether? *A.* Yes.
12752. *Q.* And during the whole of that time, I think, you were engaged in one position or another in English collieries;—English or Welsh collieries? *A.* After serving my apprenticeship I went to India, and was there three years as Manager at some collieries. The rest of the time I was occupying some official position in English collieries.
12753. *Q.* Well, now, you have told us practically here, through your evidence given at the inquest at Woollongong, what took place immediately after you first heard that this disaster had occurred, and during your several visits to the mine? *A.* Yes.
12754. *Q.* You have told us what you saw, and what you did, and what you took notes of? *A.* Yes.
12755. *Q.* I think that, since that, you have had one of these lithographed plans marked with the greater number of the indications which you noticed during that visit? *A.* Yes, that is so.
12756. *Q.* And you have had a plan and section prepared of portion of No. 1 Right main level? *A.* Yes; prepared by two of the officers in the Mines Department.
12757. *Q.* Under your supervision? *A.* Yes.
12758. *Q.* And that illustrates the indications in No. 1 Right? *A.* From about the 3rd Left to a point beyond the 5th Right.
12759. *Q.* Now, just following the notes you have made, can you tell me what else the plan and section show? *A.* The indications of force on the portion of road to which they refer.
12760. *Q.* Do they show the positions of the bodies? *A.* The positions of some of the bodies.
12761. *Q.* And you propose to use that plan and section during your examination? *A.* Yes.
12762. *Mr. Bruce Smith.*] Subject, your Honor, to being sworn to by-and-bye, by the two gentlemen who made it.
12763. *His Honor.*] Yes.
12764. *Mr. Bruce Smith.*] Because they were at work upon it during the whole of the inquest, noting down the exact positions of the bodies as testified to by the different witnesses who gave their evidence during the inquiry.
12765. *Q.* Now, you have visited the mine since the first series of visits? *A.* Since the inquest I have visited it, once in November, and twice in December.
12766. *Q.* Did you examine anything further than what you have already stated in the inquest? *A.* I think there was very little further to note, beyond what I had previously noted, in regard to force.
12767. *Q.* Is there any difference in the mine as regards moisture? *A.* Yes; a considerable difference. In the first place, owing to a good deal of wet weather since the explosion, the atmosphere, being much moister, had altered the condition of the mine; and, in addition, a system of watering had been adopted on some of the haulage roads, which made a difference in that respect also. One noticeable feature was the fungus which was to be seen on the No 1 travelling road, a sure indication of moisture.
12768. *Q.* That was that constant appearance of a white frothy substrnce? *A.* Yes; a fungus growth on some of the timber.
12769. *Q.* Was any of that there immediately after the disaster? *Q.* No; I did not observe it.
12770. *Q.* That, in your opinion, is the result of the increased moisture, resulting from the causes you have named? *A.* Yes; there had been, previous to the disaster, a long period of drought; of course, I think that assisted the dry character of the mine generally.
12771. *His Honor.*] *Q.* If there had been that growth at the time of the explosion the sulphur products in the air, assuming there was an explosion, would have practically destroyed it? *A.* Probably they would, on the roads over which the explosion passed; doubtless they would.
12772. *Mr. Bruce Smith.*] *Q.* But did you find that fungus growth in other parts of the mine into which you went—other parts than those in which the explosion had directly operated? *A.* I saw a little of it in some of the returns.
12773. *Q.* Now, was there any noticeable difference in the quantity of dust in the haulage roads in November and December as compared with your first visits? *A.* Yes; where the water had been put on there certainly was less dust.
12774. *Q.* Well, now, taking the evidence which you gave at the inquest as part of your evidence assumed to be given now, I want to ask you about the deductions that you have made from all the evidence that has come to your mind. First, as to the causes which led to this disaster; now, you may just look at your notes as much as possible, because you have concentrated there, I think, the statements you wish to make? *A.* Yes, I have.
12775. *Q.* Use that as much as you like. Now, first, as to the causes? *A.* Well, briefly, there are the following causes——[*interrupted*].
12776. *Q.* Will you state to me, first of all, the various causes that are known to lead to explosions in mines? *A.* Several recognised means of ignition, leading to explosions in coal mines, are, shortly, as follows:—First, naked lights carried by persons; second, naked lights in the form of gob-fires produced by spontaneous combustion, or other fire underground; third, defective or improperly-opened safety-lamps; fourth, blasting shots, either from the flame of the shot or from the flame of the fuse; fifth,

escaped

escaped electrical currents which have been carried underground for power purposes; sixth, it has also been stated that falls of roof have caused explosions in the entire absence of naked lights or persons underground; but it is difficult to obtain any reliable instances of this.

12777. *Q.* Now, how far back is it;—say, as far back as 1880, what was the condition of knowledge then in regard to explosions and their causes? *A.* Well, the only inflammable agent which had been seriously considered, or which had been accepted by the majority of mining people, was fire-damp.

12778. *Q.* Had coal-dust been referred to before that as a possible cause of explosion? *A.* A few references had been made in reports from time to time in regard to the part which coal-dust had played.

12779. *Q.* But it was not ——? *A.* It was not seriously considered by many as a factor in explosions.

12780. *Q.* Now, you deal with that aspect more when you come to deal with the coal-dust theory? *A.* A little later on.

12781. *Q.* Now, in those five or six causes of explosion which you have enumerated, which of them is answerable for the greater number of disasters? *A.* "Naked lights carried by persons," in my opinion; and, I think, also in the opinions of most mining experts.

12782. *Q.* Are there any of the other causes which these explosions are attributed to frequently—I mean next to that one? *A.* Well, many explosions, causing large numbers of deaths, single explosions, have been caused by blasting.

12783. *Q.* Now, with the view of narrowing this series down, so that we may come to your opinion as to the cause of this particular explosion, will you name any of these numbers that may be left out of consideration? *A.* The second, third, and fifth may be omitted.

12784. *Q.* In your opinion, those three may be put on one side? *A.* Yes.

12785. *Q.* And you say that, with all your knowledge of what took place, and what you have seen, and what indications have been presented to you by your visits to the mine? *A.* Yes, that is so.

12786. *Q.* In your opinion, has any evidence been forthcoming, either at the inquest or at this inquiry, to lead you to think that this explosion could be brought under number six? *A.* No; there has not.

12787. *Q.* Now you have named (number two) "Naked lights in the form of gob-fires, produced by spontaneous combustion or other fire underground." In your opinion, had the furnace anything to do with this explosion? *A.* Well, as the explosion did not originate in the district in which the furnace is placed, and as the furnace was not in any way damaged, I do not think that the furnace had anything at all to do with the explosion.

12788. *Q.* That can be dismissed? *A.* It may be disregarded.

12789. *Q.* That reduces the causes to two—naked lights and blasting shots? *A.* Yes.

12790. *Q.* Now, speaking generally, first of all, which of those do you consider that this explosion is mainly attributable to? *A.* Well, as naked lights were universally used in the mine on the day of the accident, I think that they were an element in the disaster.

12791. *Q.* And with regard to blasting shots—which is one of the two possible causes left—what opinion have you formed? *A.* Well, as the result of inspection of all the haulage roads and working places, and the knowledge that no blasting shot appeared to have been fired on the haulage roads on the day of the accident, I am of opinion that blasting was not the cause.

12792. *Q.* Has any evidence been brought under your notice of shots having been fired in the face workings? *A.* Oh, yes, shots were regularly fired.

12793. *Q.* I mean on that day? *A.* Regularly fired.

12794. *Q.* I mean at that time? *A.* Oh, doubtless there would be; in fact, I have seen many of the remains of the shot-holes, and a blown-out shot, and a shot ready to fire.

22795. *Q.* Now, will you tell the Court your reason for attributing this explosion rather to naked lights than to shot-firing? *A.* Well, there was no evidence of force from any particular place where the shots were fired which would lead me to think that the explosion had originated at any of the shots.

12796. *Q.* Then, you are brought at last in your reasoning to the conclusion that naked lights were the originating cause of this explosion? *A.* The cause of ignition.

12797. *Q.* Now, with regard to the locality in which it originated. You made some statement at the inquest, did you not? *A.* Yes; I stated that I was in doubt as between two points.

12798. *Q.* Which were they? *A.* One was near the face of the back heading in No. 1, and on the inbye side of Morris' place.

12799. *Q.* That was one? *A.* Yes.

12800. *Q.* Which was the other? *A.* The other was a fall of roof at the 4th Right goaf edge, forcing out an inflammable mixture of fire-damp and air, possibly also raising coal-dust on No. 1 level, and becoming ignited at the nearest naked light, probably that carried by H. Morrison, near to the 4th Left junction.

12801. *Q.* Now, they are the two places between which you hesitated to fix the exact spot? (No answer.)

12802. *Q.* Had you the plan and section, which you are going to produce to this Court, before you at that time? *A.* No; it was being prepared.

12803. *Q.* Well, I think that was prepared by Messrs. Cambage and Martin? *A.* Yes; Mr. Cambage is the Chief Mining Surveyor now, and Mr. Martin is one of his officers.

12804. *Q.* And you supervised its preparation, and saw it from time to time as it progressed? *A.* Yes.

12805. *Q.* Now, after those two plans had been completed, did they assist you in getting any nearer to the originating locality? *A.* They did. They threw considerable light on the evidences of force on this length of road (No. 1 main level, between the 3rd Left and a point beyond 5th Right rope-road), which before had appeared to me inexplicable.

12806. *Q.* Now, having the advantage of those plans, will you tell the Court in what direction the greatest force appeared to have been exerted? *A.* In an inbye direction.

12807. *Q.* Inbye of what; inbye generally? *A.* Inbye generally over the length of road to which the plan refers.

12808. *Q.* And, having seen and studied those plans, what conclusion have you since come to? *A.* Well, I am forced to the conclusion that the originating cause ——[*interrupted*].

12809. *Q.* The position? *A.* Of the disaster is rather to be found in the second than in the first.

12810. *Q.* Which is that? *A.* That is the 4th Right.

12811. *Q.* That is the fall of roof at the 4th Right goaf edge? Yes.

12812. *Q.* Forcing out, as you have said, an inflammable mixture of fire-damp and air; possibly also raising coal-dust on No. 1 level, and becoming ignited at the nearest naked light, probably that carried by Morrison near to the 4th Left junction? *A.* Yes. 12813.

12813. *Q.* Did any difficulty present itself in regard to the conclusion at which you have now arrived? *A.* Yes. With reference to the force which had been exerted on two of the stoppings between the No. 1 main level and the back heading, on the inbye side of the 5th Right rope road.
12814. *Mr. Robertson.*] Mr. Bruce Smith, do you mean a difficulty in accepting the second theory?
12815. *Mr. Bruce Smith.*] Yes. He means that it was not absolutely clear; there were difficulties which presented themselves in regard to that. Shall I get him to repeat that?
12816. *Mr. Robertson.*] Yes.
12817. *Mr. Bruce Smith.*] *Q.* Just repeat that, please? *A.* A difficulty presented itself to me to account for the force which had been exerted on two of the stoppings between the No. 1 main level and the back heading, on the inbye side of the 5th Right rope road.
12818. *Q.* In what direction? *A.* They were forced on to the No. 1 main level from the back heading.
12819. *Q.* And was that direction contradictory of other forces in the same district? *A.* It was.
12820. *Q.* In the same vicinity? *A.* Yes.
12821. *Q.* How do you account now for that apparent contradiction. How do you reconcile those apparent contradictions? *A.* Well, assuming that ignition took place near to the 4th Left road end, or junction, the explosion would radiate from that point in all directions. Going inbye from the 4th Left, the two stoppings referred to are respectively distant about 100 and 150 yards.
12822. *His Honor.*] *Q.* From the starting-point? *A.* From the starting-point.
12823. *Mr. Robertson.*] *Q.* From the 4th Left? *A.* From near the 4th Left.
12823½. *Q.* Do you mean the stoppings inbye of the 5th Right? *A.* Yes.
12824. *Q.* That is more than 100 yards? *A.* 100 and 150 yards respectively. I measured it on the plan.
12825. *His Honor.*] *Q.* The northernmost one 150 yards, and the other about 100? *A.* Yes.
12826. *Mr. Robertson.*] *Q.* I think you will find it more than that? *A.* I think that is about right, Mr. Robertson [*referring to plan again*].
12827. *Mr Bruce Smith.*] *Q.* You might just now continue that answer and complete it? *A.* Going inbye from the 4th Left, these stoppings are respectively distant about 100 and 150 yards; and the force exerted on them in the first place, in passing them towards the face, was evidently insufficient to force them into the back heading; but the pioneering cloud of coal-dust which would precede the flame of the explosion, which was carried along probably by means of coal-dust, assisted by a small percentage of fire-damp in the face, would cause an increase in the force of the explosion; and this, passing down the back heading, was then sufficient to account for (first) the stoppings mentioned being blown on to the main level; and (second) the building stones at either side of the door in the back heading, on the inbye side of the 5th Right rope road, being blown in the direction of the 5th Right.
12828. *His Honor.*] *Q.* And that, you think, would be the very first destructive action in that direction? *A.* I think so.
12829. *Q.* Of course, the whole thing would be nearly instantaneous; but you say you can account for that as the very first destructive action in that direction? *A.* In that particular part.
12830. *Mr. Robertson.*] *Q.* May I just interrupt one moment. Would not that door in the 5th rope road be blown to the east, in the first instance, by the force coming along the main tunnel? *A.* Yes; but I think we are not on the same door. The door that I refer to now is the door in the back heading.
12831. *Mr. Robertson.*] Yes; but I think you referred to two doors.
12832. *His Honor.*] *Q.* You have only referred to one door, so far? *A.* I think I have only referred to one door. As a matter of fact, the building stones at the side of the door to which you refer were blown to the east. I have not mentioned it yet.
12833. *Mr. Robertson.*] *Q.* You have only referred to the door in the back heading? *A.* I had only referred to the door in the back heading.
12834. *Mr. Bruce Smith.*] *Q.* Now, the action of these forces on these two stoppings, and on the door which you have mentioned, were, I think, a difficulty, were they not? *A.* Yes, they were.
12835. *His Honor.*] *Q.* This would be instantaneously preceding what you are going to tell us now followed, I understand, this action? *A.* I do not know exactly what your Honor means.
12836. *Q.* What you have told us now, according to your theory, is the first instantaneous action preceding the great explosion which followed instantaneously on it, I understand? *A.* I could not separate what took place, your Honor. I think it was all one great explosion.
12837. *Q.* Not by any appreciable lapse of time? *A.* Not by any appreciable lapse of time. I think it was altogether concurrent, and really one large explosion.
12838. *Q.* Still, there is such a thing as an almost inappreciable duration of an explosion, and almost inappreciable sequences of action? *A.* No doubt that is so.
12839. *Mr. Bruce Smith.*] *Q.* I understand, Mr. Atkinson, that, although you recognise that what you call one great explosion may have been the action of a series of forces, you cannot separate them? *A.* Quite so; separated by such small intervals of time and place that it is impossible to —— [*Interrupted*].
12840. *Q.* So that, if you wanted to, you could not plot them separately? *A.* No.
12841. *Q.* Well, that is your explanation of the difficulties which presented themselves to you? *A.* That is the only explanation that I can offer; and I think it is a reasonable one.
12842. *Q.* Well, is there anything further you would like to say with regard to that explanation of the difficulty? *A.* Well, I might say that four days after the explosion a considerable quantity of fire-damp was found in the face of these headings, No. 1 main level.
12843. *Q.* The measurements indicating the quantity were given at the Inquest? *A.* Yes.
12844. *Q.* Do you mention, in any part of your evidence further on, what that quantity was? *A.* In answer to Mr. Lysaght, I think it was.
12845. *Q.* You have the cubic measurements, but you did not say what its extent was? *A.* The gas was found at a point 4 or 5 yards on the outbye side of the last cut-through next the face. That would give a distance of about 20 yards from the face.
12846. *Q.* Speaking generally, what would be about the cubic measurement of the gas which you found in that part of the mine? *A.* Well, assuming that the gas was also in the back part place, and in the cut-through between them —— [*Interrupted*].
12847. *Q.* Which is probable, I take it? *A.* I think that there would be some thousands of feet of an inflammable mixture.
12848. *Q.* And that assumption which you have mentioned is probable? *A.* I think so.

12849. *Q.* Because the cut-through was beyond the point at which you discovered the gas? *A.* That is so, yes.
12850. *Mr. Robertson.*] *Q.* What do you mean by "inflammable mixture";—what percentage, roughly? *A.* Well, where we tested the gas, which was at the edge of this quantity, it would explode in the safety-lamp.
12851. *Q.* In the ordinary safety-lamp? *A.* In the ordinary safety-lamp. Of course, beyond that, it is possible that it might not be explosive, if the mixture of fire-damp and air was such as to prevent that being so.
12852. *Mr. Bruce Smith.*] *A.* But the natural inference was that the percentage was uniform from the point at which you detected it up to the face? *A.* Well, you would naturally have more air towards the outer end, and less fire-damp, and more fire-damp towards the face; which would have some effect in altering the explosibility of the mixture at the two points.
12853. *Q.* And, as the outer edge of the mass of gas which you found came beyond the cut-through, you assumed that it had filled the cut-through and the next heading? *A.* We assumed that, yes.
12854. *Q.* That is a reasonable assumption, too? *A.* Yes, I think so.
12855. *Q.* Well, what bearing has the presence of that gas upon your theory as to the cause? *A.* I think that it would assist the explosion, and account for the stoppings being blown on to the No. 1 Main Level.
12856. *Q.* What would assist the explosion? *A.* The explosion of fire-damp.
12857. *Q.* The explosion of fire-damp at that point? *A.* At that point.
12858. *Q.* You are assuming then, I take it, that there had been an accumulation up to the time of the accident? *A.* I would not say that; but I think that, as gas was given off, as proved four days after the explosion, there might be, and probably would be, a small percentage of fire-damp in the air.
12859. *Q.* At that point? *A.* At that point, which would assist —— [*Interrupted*].
12860. *Q.* At the time of the explosion? *A.* That is so, yes.
12861. *Q.* I take it that, finding that quantity four days after the explosion, you inferred that there must have been an accumulation at the time of the explosion; and that that assisted the explosion in forcing down the No. 1 heading? *A.* Well, I think it is strong presumptive evidence that there would be a certain percentage of gas in the air.
12862. *Q.* I think the Court know, but I may repeat it here, that that is the highest part of the mine? *A.* One of the highest parts.
12863. *Q.* And there is a considerable rise to it? *A.* A rise of 30 or 35 feet, I think, from the 5th Right.
12863½. *Q.* It was, then, a very favourable place for the accumulation of gas? *A.* It was.
12864. *Q.* Now, have you anything to say in further support of your opinion that the fall in the 35-acre goaf was the initial cause of the explosion? *A.* Well, if the explosion originated, as I have suggested, near the 4th Left, which is a main intake airway, and therefore, under normal conditions, not likely to contain an inflammable mixture of air and fire-damp, it is necessary to look elsewhere for such inflammable mixture; and, in further support of my opinion that the fall in the 35-acre goaf was the originating force of the explosion, the following facts are important —— [*Interrupted*].
12865. *Q.* Will you name those facts? *A.* The 4th Right pillars at the edge of the 35-acre goaf had been stopped eight or nine days prior to the explosion.
12865½. *Q.* That I think you got from Morrison's evidence? *A.* That is referred to in Morrison's evidence at page 39, line 25 [*Depositions at Inquest*].
12866. *Q.* Yes, assuming that to be true? *A.* And, by the condition of the stones at the goaf edge, as seen by me several times after the date of the explosion, which were clean and not blackened by coal-dust, it was evident that the fall had not altogether finished prior to the explosion, or at the time of the explosion; otherwise they would have been blackened by coal-dust blown about by the explosion.
12867. *Q.* Well, in connection with that opinion, I think you wanted to quote to the Court a passage from a book by a brother of yours, I think, on "Explosions in Coal Mines"? *A.* Yes.
12868. *Q.* On page 23? *A.* Page 23.
12869. *Q.* You have not the book here, but you have the extract? *A.* Yes.
12870. *His Honor.*] *Q.* What is the title of the book? *A.* "Explosions in Coal Mines."
12871. *Mr Ritchie.*] *Q.* By whom? *A.* By W. N. and J. B. Atkinson.
12872. *Mr. Bruce Smith.*] *Q.* Now, will you just read the extract which you wish to mention; or I will take it off your shoulders; I will read it:—

> With regard to falls of stone, an important point is noticed. Where timber is blown out, and some stone falls at once, and during the explosion, and other stone falls some time after, and may continue falling for days, the stone falling at the time of explosion can be known by the fact of its being blackened with dust then filling the air. The place from which the stone fell can also be known, by this blackening. Stone falling after the dust has subsided is, in the newly-exposed surfaces, clean; as also is the place from which it fell. Thus, in a pit after an explosion, we find stone with three characteristics as regards dust: (1) stone exposed before the explosion, and usually blackened with the remains of an old curtain of dust; (2) stone exposed during the explosion, and coated thinly with a fresh coating of dust; (3) stone exposed after the explosion, and clean as regards dust.

Now, does the classification there, of the different degrees of cleanliness, help you in explaining this explosion? *A.* Yes; the stone which I saw at the edge of the 4th Right goaf was clean, and may therefore be classed under the last heading which is mentioned in the quotation.
12873. *Q.* And what conclusion does that lead you to? *A.* Well, it shows that the fall had evidently not finished when the explosion took place.
12874. *Q.* Even with the explosion itself? *A.* Even with the explosion itself.
12875. *Q.* Is there any evidence which Morrison gave which bears upon that conclusion? *A.* He mentions that a fall was anticipated a week before the explosion.
12876. *Q.* Well, what would you say with that knowledge—I think there is some deduction you make from these signs? *A.* Of course it is quite possible, from these signs, that the fall had not even begun until after the explosion; in which case, of course, it would have no connection with it, except possibly as a result of the explosion.
12877. *Q.* Supposing that to be the case, what would you consider to be the noise which some of the witnesses mention having heard at the time they felt the air coming upon them, supposing the fall had not taken place until after the explosion? *A.* Well, I should say that it would be the noise caused by the explosion itself: I do not think it is possible that this fall which took place could have been heard by witnesses in the positions in which they were at the time.

12878. *Q.* You are referring to some of the evidence which was given by men who were a long way from the goaf at the time they heard a noise? ——
12879. *His Honor.*] *Q.* You do not think it possible? *A.* I do not think it possible.
12880. *Mr. Bruce Smith.*] *Q.* Now, assuming that this fall was the indirect cause of the explosion, what would have occurred? *A.* Well, it would propel a mixture of air, possibly mixed with fire-damp, through the travelling road, and on to the No. 1 Main Level; and, at that point, whatever force it had, it would split, as the roadway goes in two directions A portion of it would go inbye towards the 4th Left, and at that point was the nearest naked light to the 4th Right; and it would probably be carried by Morrison, the clipper.
12881. *Q.* The naked light? *A.* The naked light. From that point, as I have said before, the explosion would radiate in all directions; and it would re-enter the 4th Right, which, in my opinion, will explain some contradictory forces seen in that vicinity.
12882. *Q.* In that case, the fall would be the first source of force, and the explosion from the naked light would be the second one, producing contradictory results? *A.* Yes.
12883. *Q.* Now, if the explosion had been initiated in the back heading, from your knowledge of the condition of things, what would have been the result? *A.* Well, the only naked lights there were carried by the two Morrises.
12884. *Mr. Robertson.*] Do you refer, Mr. Bruce Smith, to the back heading at the face?
12884½. *Mr. Bruce Smith.*] Yes, at the end of No. 1.
12885. *Q.* That is where you refer to? *A.* Yes.
12886. *Q.* Now, if the explosion had been originated in the back heading, what do you say about that? *A.* The only naked lights were carried by the two Morrises, whose working place was about 110 yards from the face of the back heading: and their bodies were found at a point about 80 yards from the face.
12887. *Q.* So that their bodies were found between their working place and the face of the back heading? *A.* That is so, yes.
12888. *Q.* Is there anything further bearing on that? *A.* Well, there was no evidence of a shot having been fired in Morris' place immediately before, or at the time of, the explosion.
12889. *Q.* What was the first place ventilated? Was not Morris' the first? *A.* On that current of air the first place ventilated was that of the two Morrises; and the air, therefore, under normal conditions, was not likely to contain an inflammable mixture of fire-damp, in their heading.
12890. *Q.* You know that the two main headings had been standing idle for some months? *A.* That was gathered from the evidence given at the inquest by Mr. Rogers.
12891. *Q.* I believe that the tram-rails were not laid down, were they? *A.* No; but inspections afterwards showed that the tram-rails had been taken out.
12892. *Q.* Could you account for Morris and son going up there? *A.* Well, it is difficult to account for their going there prior to the explosion. I cannot see any sufficient reason to take them up into that place.
12893. *Q.* And what conclusion do you draw from their bodies being found out of their own heading, and up towards this unused and unexamined place? *A.* Well, I think it is more likely that after the explosion they were flying away from it; and, although that was in a direction opposite to the exit from the mine, you cannot always understand the actions of men under those conditions. Doubtless they would be in a confused state of mind.
12894. *Q.* Is that important in causing you to lean to the cause of the explosion being also down No. 1, rather than up in the end? What is the significance of their position? *A.* Well, I think that they were getting away from the explosion after it had occurred; and I cannot offer any sufficient reason to take them up there before it had occurred; and we have seen other instances where men have evidently been travelling towards the face in order to get away from the after-damp—in other parts of the pit we have evidence of that—I think that they were doing the same.
12895. *Q.* Does their going up in that direction to get away from the explosion assist you in locating the cause of it? *A.* No, I cannot say that it does.
12896. *Q.* Then the only conclusion you can draw from their position is that they were seeking to get away from the effects of the explosion? *A.* That is my opinion.
12897. *Q.* But their going there does not point to the location of the source? *A.* No.
12898. *Mr. Robertson.*] *Q.* It assists you, though, to narrow it down to one theory? *A.* Well, I rely more on the indications of force.
12899. *Q.* But does it not assist you in discarding the first theory, that as to the explosion being in the back heading? *A.* Well, assuming, as I do, that they were retiring from the after-damp, in that respect it will assist in reducing it.
12900. *Mr. Bruce Smith.*] That is what I suggested.
12901. *Q.* Quite apart from your statement, I want to put this question to you, which occurs to me; if the accumulation of gas up in the back heading, where you found it had occurred before the explosion, and the explosion had, in consequence, originated there, you certainly would not expect to find the Morrises out of their own place, and up towards the back heading? *A.* Well, there would remain the same difficulty in accounting for their having left their working place, and going into a place which had been standing for some time, and in which there was nothing that I saw that they could obtain to help them in their work in any way.
12902. *Q.* Well then, bearing all these facts which you have mentioned in view, you come to the conclusion that the explosion was caused—put it in your own way? *A.* Well, indirectly, by the fall at the 4th Right goaf edge.
12903. *Q.* By the fall of the roof? *A.* Yes.
12904. *Q.* At the goaf edge in the 4th Right pillars? *A.* 4th Right pillars?
12905. *Q.* Did you also come to the conclusion that the fall was not completed by the explosion? *A.* That is my opinion.
12906. *Q.* Now, what information are you able to put before the Court as to the presence of gas in the Mount Kembla Mine, apart from the evidence which has been presented to it, and which was presented before the Coroner and Jury at the inquest? *A.* An official report of 1892, which was amongst the records of the Department, referring to an accident to a man named Gallagher by burning with gas is now in the hands of the Commission.
12907. [The correspondence was produced, and put in as Exhibit No. 16. It is copied in the Appendix.]

12911. *Mr. Bruce Smith.*] *Q.* The official report was in 1892? *A.* Yes.
12912. *Q.* That is before the Commission now? *A.* Yes.
12913. *Q.* And, in addition to that, you were going to mention something? *A.* Mr. Ronaldson, who was the Manager of the Mount Kembla Colliery, gave evidence before the Coal Mines Commission which sat in connection with the anticipated Coal Mines Regulation Bill in 1895; and in his evidence are certain particulars with reference to the appearance of gas.
12914. *Mr. Bruce Smith.*] I will just read those:—

"5251. *Q.* Do you recollect an accident occurring some time ago at Mount Kembla, where you were approaching some work—an explosion? *A.* Yes.
"5252. *Q.* Were you Manager at the time? *A.* Yes.
"5253. *Q.* How did that occur? *A.* It arose from a working coming on an old working, which had been out of use for several years, in which there was a small accumulation of gas. One man holed through, and, instead of going out and reporting the occurrence to the fireman, he went into his neighbour's heading, and the two of them proceeded to the face where they had gone through, and discussed matters. The gas came through the hole and exploded, burning these two men to some extent.
"5254. *President.*] *Q.* Was anyone killed? *A.* No.
"5255. *Mr. Curley.*] *Q.* Had you a bore in advance at the time? *A.* No, no bore.
"5256. *Q.* Did you know you were approaching these workings? *A.* Yes.
"5257. *Q.* Do you think bores should be kept in advance in approaching old workings? *A.* When there is supposed to be any danger, yes.
"5258. *Q.* Could you know what danger there would be there? *A.* We had reasonable grounds to suppose there was no danger.
"5259. *Q.* Was your judgment mistaken in that case? *A.* Yes, or knowledge. In connection with that particular accident we had taken very special precautions to eliminate any danger, as we thought; and, having done so, we thought the bore was not necessary.
"5260. *Q.* How do you ventilate the mine? *A.* By furnace.
"5261. *Q.* Is your mine fairly well ventilated? *A.* Yes, very well.
"5262. *Q.* Have you had any complaints from the men at any time? *A.* We never have had any complaints that I can recollect.
"5263. *Q.* Has the Inspector ever complained? *A.* No.
"5264. *Q.* Does the mine give off any fire-damp? *A.* Very rarely, in cracks.
"5265. *Q.* It does give off a little? *A.* Yes, from fissures—rarely.
"5266. *Q.* It either gives it off, or does not give it off? *A.* It gives it off rarely.
"5267. *Q.* In what section of the mine is this? *A.* All sections."

12915. *Q.* That is the evidence in 1895? *A.* Yes.
12916. *Q.* Well, has the Department received any complaint in reference to want of ventilation, or the presence of fire-damp, since you arrived in 1897? *A.* No—that is, in reference to the Mount Kembla Colliery.
12917. *Q.* I mean in regard to the Mount Kembla Colliery. So those records of 1892, and the admissions made by Mr. Ronaldson, in 1895, are the only official knowledge which you have of the presence of gas in Mount Kembla? *A.* Yes.
12918. *Q.* Have you any system by which your Inspectors report to you the names of collieries in which fire-damp is discovered? *A.* During the past few years, at my request, the Inspectors have communicated to me the names of the collieries in which fire-damp has been discovered and reported under General Rule 4; and it has been my practice to mention those in the Annual Report for the information of the public: and Mount Kembla Colliery has never been included.
12919. *Q.* For the reason that, beyond those two instances, you have never had any official knowledge of it? *A.* That is so.
12920. *Q.* Or any knowledge at all? *A.* Yes.
12921. *Q.* You remember that Quinn, Silcock, and Broadhead, and, since that time, a number of other miners, have given evidence of having found gas from time to time? *A.* Yes, I have.
12922. *Q.* Did you ever, until the Inquest, or until this Inquiry, hear of any of those instances? *A.* No, I did not.
12923. *Q.* And they had never come to your knowledge in any way until those two inquiries? *A.* No.
12924. *Q.* Now, if these discoveries that have been put before the Coroner's Court, and this Court, had been brought to your knowledge, what could have been done; and what probably would have been done? *A.* I think it would have given me an opportunity, and the Inspector of the district, to thoroughly investigate such matters: and the Department would probably have taken some action, it is possible, to effect the introduction of safety-lamps, and so have avoided such a calamity as has happened.
12925. *Q.* And you want to state that, if, instead of keeping this knowledge to themselves, the miners had brought this directly or indirectly under your notice, this disaster might have been prevented? *A.* I think so; but there appears to be a fear on the part of the miners that the officers will divulge their names; but I may say that every care is taken to avoid that.
12926. *Q.* By the Department? *A.* Although on some occasions the particular complaint is of such a character that it is almost impossible to investigate it, even without mentioning the man's name, in such a way as not to direct the attention of the management to him.
12927. *Q.* And if you receive information in regard to the presence of gas in any mine, although it may come to you anonymously, you act upon it? *A.* Yes, in the same way as though it was a signed document.
12628. *Q.* I may take it generally from you again, that, since your arrival in September, 1897, and prior to the explosion, you had neither seen fire-damp in Mount Kembla, nor had its presence been reported to you, either by the Inspectors, or the colliery officials, or the workmen? *A.* That is so.
12929. *Q.* Or anonymously? *A.* Or anonymously.
12930. *Q.* Now, I want you to explain to the Court something with regard to coal-dust explosions. Will you just mention to the Court the first reference to coal-dust, as an element of danger in the coal-mining industry? This is just a short history of the coal-dust theory? *A.* Yes. The first reference which I have been able to obtain was by the Rev. J. Hodgson, in describing the Felling Colliery Explosion in

1812: and Mr. John Buddle, an eminent mining engineer of his time, referred to it after the Wallsend (England) Colliery Explosion in 1835. Then came Lyell and Faraday's report in 1844 on the Haswell explosion.

12931. *Q.* I think you consider an extract from that report of Lyell and Faraday's would be useful to the Commission? Those are Lyell and Faraday, the well-known scientists? *A.* Yes. They were appointed by the Government to make an investigation; and I thought an extract would be of interest to the Commission.

12932. *Mr. Bruce Smith.*] I will read it:—

> In considering the extent of the fire for the moment of the explosion, it is not to be supposed that fire-damp is its only fuel; the coal-dust swept by the rush of wind and flame from the floor, roof, and walls of the workings would instantly take fire and burn, if there were oxygen enough in the air present to support its combustion; and we found the dust adhering to the face of the pillars, props, and walls, in the direction of and on the side towards the explosion, increasing gradually to a certain extent as we neared the place of ignition. This deposit was in some parts half an inch, and in others almost an inch, thick. It adhered together in a friable, coked state. When examined with the glass, it presented the fused, round form of burnt coal-dust; and when examined chemically, and compared with the coal itself reduced to powder, was found deprived of the greater part of the bitumen, and in some cases entirely destitute of it. There is every reason to believe that much coal-gas was made from this dust in the very air itself of the mine by the flame of the fire-damp, which raised and swept it along; and much of the carbon of this dust remained unburnt only for want of air.

12933. *Q.* What was the date of the Haswell explosion, do you remember? *A.* 1844.

12934. *Q.* I think, just in parenthesis, that Mr. Hamlet, the Government Analyst here, is making some investigation? *A.* Yes; he has some samples of coked dust, or coked coal, taken from the face of the back heading, and also a sample of the coal from the seam itself in that vicinity.

12935. *Q.* And, bearing upon this extract from Lyell and Faraday, in which they speak of certain coal-dust, when examined chemically, being found to be deprived of the greater part of the bitumen, this analysis of Mr. Hamlet's may throw some light upon the question, if doubtful at all, whether there was actual flame of fire in the mine? *A.* Yes, no doubt it will. He will be able to say what percentage of the volatile parts of the coal have been driven out.

12936. *Mr. Robertson.*] We have had the reports on the coal-dust. I was wondering if it would be of any advantage to Mr. Atkinson if he had it now?

12937. *His Honor.*] Mr. Hamlet wants to compare the analysis of the dust with the analysis of the coal itself, so that is why a sample of the coal was taken and sent to him. We have received the analysis of the dust, but not that of the coal.

12938. *Witness.*] With further reference to this matter, I might say that, about the time of the inquest, I had samples collected by Mr. Watson, and a report made by Mr. Mingaye, the Analyst to the Mines Department—several samples of dust collected on the No. 1 Right; and, if the Commission think that it will assist them in any way, Mr. Mingaye is prepared to give evidence.

12939. *Mr. Robertson.*] *Q.* Those were microscopical tests? *A.* Yes.

12940. *Q.* Not analytical? *A.* Not analytical.

12941. *Mr. Bruce Smith.*] *Q.* That is quite apart from the samples handed to Mr. Hamlet? *A.* Yes.

12942. (By direction of the Commission a letter to the Government Analyst, dated 19th December, 1902, asking him to test two samples of coal-dust, and his report thereon, was put in and marked Exhibit No. 17).

12944. *Mr. Bruce Smith.*] *Q.* Now, going on with your history of this coal-dust theory, I think in France something was done some years ago? *A.* Reference to the influence of coal-dust on colliery explosions was made in two reports, dated 1855 and 1861, concerning an explosion at Firminy Colliery.

12945. *Q.* Where is that? *A.* I think it is in the north of France. They state that the coal-dust aggravated the effects of the inflammation of the gas.

12946. *Q.* And I think reference was made later than that by French writers? *A.* Yes, in 1864 and later, in several reports on colliery explosions.

12946½. *Q.* Now, apart from the three references you have given to the Rev. Hodgson, Buddle, and Lyell and Faraday, are there any notable references to coal-dust as an element of explosions prior to 1880? *A.* Well, very little had been said up to that time. In that year the Seaham Colliery explosion took place; and Sir Frederick Abel was deputed by the Government to make tests in order to see what part coal-dust had taken.

12947. *Q.* Now, I understand that, from 1880, the coal-dust question has occupied a great deal of attention, since Sir Frederick Abel dealt with it in that explosion? *A.* It has—yes.

12948. *Q.* You might mention other sources of information? *A.* Well, Professor Galloway, and several of the Inspectors, have taken a leading part in making known the dangers of coal-dust: Institutes of Mining Engineers have experimented very largely: and we have a good deal of literature on the subject since that time.

12949. *Q.* Have explosions taken place since that time—1880—notwithstanding? *A.* They have, unfortunately.

12950. *Q.* Many? *A.* Yes.

12950½. *Q.* Now, can you tell the Court the first occasion in which coal-dust was referred to in any finding? *A.* That was in the verdict of the Usworth explosion.

12951. *Q.* Usworth Colliery is in the county of Durham? *A.* Yes. The explosion was in 1885. The verdict of the jury was to the effect that the explosion was caused by the firing of a shot igniting coal-dust.

12952. *Q.* Now, what is the next one that you know of? *A.* Well, since that time juries on several occasions have given similar verdicts pointing to coal-dust, without any gas, as the cause. There was the Camerton explosion in 1893, which occurred in a colliery which had been worked for about 100 years, and in which fire-damp had never been seen, nor were they able to detect it after the explosion by the most careful tests.

12953. *Q.* Well, what conclusion did that lead to among experts? *A.* The cause of that explosion was the firing of a shot on a haulage road igniting coal-dust; and it had the effect of greatly strengthening the theorists on the coal-dust question.

12954. *Q.* To what effect? *Q.* That they might have explosions of coal-dust entirely without any gas.

12955. *Q.* What was the first occasion upon which the Legislature in England dealt with this question? *A.* The Coal Mines Act of 1887 is the first time at which coal-dust is referred to in any Coal Mines Act.

12956. *Q.* And what provision was included in that Act bearing upon the possibility of explosion of coal-dust? *A.* General Rule 12 in our Act here is the same as that which was in the 1887 Imperial Act.
12957. *Q.* What did that deal with? *A.* Blasting and coal-dust.
12958. *Q.* I think you have tabulated it—the nature and description of the explosives permitted? *A.* That was in the later Bill.
12959. *Q.* Then, in 1896 something further was done? *A.* In 1896 a short Amending Bill was passed which gave the Home Secretary certain powers.
12960. *Q.* What were those powers;—the power to propose new special rules? *A.* Yes; it gave the Home Secretary power to propose new special rules with respect to the following:—(*a*) The nature and description of the lights or lamps to be used in the mine, and the custody and the mode of using and trimming them.
12961. *Q.* There is no such power in our Act, is there? *A.* No.
12962. *Q.* No such power in anybody corresponding with the Home Secretary to make rules determining those things? *A.* No. Of course the Department can propose special rules so long as they do not infringe upon the present Act.
12963. *Q.* I understand that the power of making rules given in our Act is the same as that which was contained in the 1887 English Act? *A.* That is so; yes.
12964. *Q.* But the 1896 English Act gave the Minister power to make rules such as there is no power to make here? *A.* That is so.
12965. *Q.* And the first of these is (*a*) to determine the nature and description of the lights or lamps to be used in the mine, and the custody and the mode of trimming and using them? *A.* Yes.
12966. *Q.* What is the second heading under which he has the power to make rules? *A.* (*b*)The description of explosives to be used in the mine, the mode of using and storing such explosives, and of making and stemming holes, and the times at which, and the manner in which, shots are to be fired in the mine.
12967. *Q.* Has the Minister the power to make rules here to that effect under our Act? *A.* Well, the only provision is contained in General Rule 12, with reference to explosions.
12968. *Q.* Well, then, the third? *A.* (*c*) The number or class of persons, if any, to be permitted to remain in the mine, or any part thereof, whilst shots are being fired; (*d*) the watering or efficient damping of the mine, or any ways or places therein; (*e*) generally, the precautions to be adopted for the prevention of accidents from inflammable gas and coal-dust.
12969. *Q.* Well, that power, given in 1896, is much more comprehensive, is it not, than the power which the Minister has here? *A.* It is; yes.
12970. *Q.* And deals with a number of matters which at present here are left to the discretion of the management of the mine? *A.* Yes, partly.
12971. *Q.* Now, has that power to determine that safety-lamps shall be used, been largely exercised in England? *A.* No; it has been very little exercised. Under this 1896 Act they have generally been able to get safety-lamps introduced without that power.
12972. *Q.* Without exercising the power under that Act? *A.* Yet it has been exercised in one or two cases, according to the reports.
12973. *Q.* I might just ask you there whether you have endeavoured in some cases to get safety-lamps used without success? *A.* Yes; on several occasions.
12973½. *Q.* You have brought whatever influence you could to bear, and what you have desired has not been adopted? *A.* In some cases we have ultimately been able to get them to do so.
12974. *Q.* But in some cases you have not succeeded in inducing them to do so, although you have made representations? *A.* Yes.
12975. *Q.* Well, now, since that 1896 Act, have any other alterations of an important character been made with regard to blasting? *A.* Yes; the Home Secretary has exercised his power by issuing the Explosives in Coal Mines Orders from time to time.
12976. *Q.* What is the effect of those orders that have been issued? *A.* Well, it has had the effect of absolutely prohibiting the use of gunpowder in certain mines, and some other explosives.
12977. *Q.* What is your own opinion in regard to the use of gunpowder in mines in which gas is found to be present—firing with gunpowder? *A.* Well, I think it is a great source of danger, especially in dry and dusty mines.
12978. *Q.* And I might ask you this in passing: of the two possible sources of danger by explosion which, in your opinion, is greater, that of firing shots with gunpowder or opening a safety-lamp in order to fire a shot with gunpowder? *A.* Well, the flame from a shot of gunpowder is, no doubt, one of the worst forms of naked light which you could have; and is, no doubt, much worse than the naked lamp flame.
12979. *Q.* So that I may take this from you: that as long as the practice is continued of firing shots in gaseous mines by gunpowder, the opening of a lamp is really not as great a danger as the firing itself? *A.* That is so.
12980. *Q.* Now, what is the purport of those rules—those orders which have been promulgated by the Home Secretary? *A.* Well, it is given under two heads, which are as follow:—
12981. *Mr. Bruce Smith.*] I will read those:

(1) In all coal-mines in which inflammable gas has been found within the previous three months in such quantity as to be indicative of danger, the use of any explosive other than a permitted explosive, as hereinafter defined, is absolutely prohibited in the seam or seams in which the gas has been found.

(2) In all coal-mines which are not naturally wet throughout, the use of any explosive, other than a "permitted explosive," as hereinafter defined, is absolutely prohibited in all roads, and in every dry and dusty part of the mine.

12982. *Q.* I think the list at present adopted of "permitted explosives" is given in a sort of published statement? *A.* Yes; there are a very considerable number of them.
12983. *Q.* I think you will put a copy of this before the Commission? *A.* Yes.
12984. Mr. Bruce Smith then handed in a printed copy of "The Explosives in Coal-mines Order of the 24th July, 1899," which was put in and marked *Exhibit No.* 18.
12985. An order of the 24th March, 1902, was put in and marked *Exhibit No.* 19.
12986. An order of the 10th October, 1902, was put in and marked *Exhibit No.* 20.
12987. *Mr. Bruce Smith.*] *Q.* Now, that is what you have to say with regard to the history of coal-dust theory? *A.* Yes.
12988. *Q.* Now, will you say something to the Court about the characteristics of explosion by coal-dust? *A.* Yes.

12989.

12989. *Q.* Quoting any authorities that you think will be of value to the Commission? *A.* Well, the theory is explained in many parts of the Chamberlain Royal Commission.
12990. *Q.* What we have called the Chamberlain Commission is a Commission of which Mr. Chamberlain was chairman? *A.* Yes; correctly called, it is the Royal Commission on Coal-dust, from 1891 to 1894.
12991. *Q.* Have you that here? *A.* I am afraid not. We can send for it.
12992. *Mr. Bruce Smith.*] I will postpone, your Honor, the references to that until I get the book here.
12993. *His Honor.*] Very well.
12994. *Mr. Bruce Smith.*] *Q.* Will you just say where, in your opinion, the most dangerous class of dust is found in the roadway of a mine? *A.* Generally on the haulage roads, and on the ——[*Interrupted*].
12995. *Q.* What part of the haulage roads? *A.* And on the timbers and upper parts, rather than on the floor.
12996. *Q.* Why do you regard that as the most dangerous kind of dust? *A.* Well, it is the finest and the purest. The floor dust is very often mixed with stone impurities.
12997. *Q.* And this, which has lodged on the sides, and the roof, and the timbers, is the lighter, finer kind, which has floated in the air and gradually accumulated on any shelving position? *A.* Yes; and it is regarded as most dangerous.
12998. *Q.* Well, is there any theory of the power of this dust to absorb any chemical property? *A.* Yes. With constant currents of air passing over it, it is thought that it absorbs oxygen, and thereby becomes more dangerous, making it more sensitive to explosion.
12999. *Q.* Now, as to the quantity of dust that is considered sufficient to become an element of danger, I think Galloway expresses a rather definite opinion, does he not? *A.* He has stated that 1 pound of dust for 160 cubic feet in an airway with a sectional area of 40 feet may be dangerous, and sufficient to carry on the explosion.
13000. *Q.* One pound for 160 cubic feet in an airway with a sectional area of 40 feet. I think you have made a calculation. What is that equal to per linear foot in a roadway 12 feet wide and 6 feet high? *A.* About 7·2 ounces per linear foot.
13001. *Q.* Roughly 7 ounces per linear foot distributed right across the roadway, up the walls, and on the timbers, is sufficient to be dangerous? *A.* Yes.
13002. *Mr. Robertson.*] 7·2 ounces per linear foot?
13003. *Mr. Bruce Smith.*]That is per linear foot of the roadway. So that, Mr. Robertson, if 1 foot of the roadway right across the roadway, and up the walls, and on the timbers, holds in the aggregate 7·2 ounces of dust, it is, in the opinion of Galloway, a dangerous quantity. It seems very small.
13004. *Witness.*] In another calculation it comes out to $_2\frac{1}{2}{}_8$th of an inch thick.
13005. *His Honor.*] *Q.* Average thickness on the floor, is that? *A.* Average thickness, all round the section.
13006. *Mr. Bruce Smith.*] *Q.* Ceiling and all? *A.* Ceiling and all.
13007. *Q.* Now, I think Professor Bedson, who is an authority, analysed a sample of after-damp from Usworth explosion? *A.* Yes; he found it to contain 2·48 per cent. of carbon monoxide.
13008. *Q.* Now, what is the most notable characteristic of coal-dust explosions as regards the indications of force? *A.* Evidence of contradictory forces is quite a common feature of coal-dust explosions.
13009. *Q.* I think that was well described in that same Commission? *A.* Yes; by the Permanent Under-Secretary now, Sir Godfrey Lushington.
13010. *Q.* That is on page 7 of what we call the Chamberlain Commission? *A.* Yes.
13011. (The passage referred to was read later in the day by Mr. Bruce Smith. It is as follows:—

"115. *Q.* I do not know whether you told us; but, supposing that the dust theory were accepted, what would be the nature of the legislation which would then be necessary to provide against the danger? *A.* I could only point out the various proposals which have been put on the table, so to speak, for discussion; one is to stop all blasting; another to have no naked lights; a third, that, if you allow blasting, all the men that are not engaged in blasting operations are to be removed from the pit; and the fourth is, that all the dust is to be watered or to be removed. Now, you can understand what a formidable operation that is, when this floor extends for miles and miles in a colliery; but, when removal or watering is to be applied, not only to the floor but to the sides and the roof, it is almost an insuperable difficulty. Then you have a modified form of proposal; which is, that at certain intervals the dust should either be watered, kept damp, or removed. These intervals would operate in a mine very much as separate watertight compartments do in a vessel.")

13012. *Q.* Can you tell me of any other characteristic? *A.* Well, the passage of flame is very erratic in its course, there frequently being no traces of flame on roads where the explosion has passed, although easily inflammable articles were present.
13013. *Q.* Well, that is referred to, I think, in "Explosions in Coal-mines," on pages 25, 26, and 48? *A.* Yes.

The passages referred to were read later in the day by Mr. Bruce Smith. They are as follow:—

The coking of the dust is an indication often wanting over long lines, where great force and flame have passed. It is more noticed at the working faces than on the haulage roads. It was not observed at the shaft limit of an explosion. A chemical and microscopical examination of dust on haulage roads, in the absence of coking, affords reasons for asserting the passage of flame.

. . . . . .

No coked dust was observed on the main haulage roads, where flame had evidently passed, and where force had been greatest. At the extremities of the explosion coked dust was abundant, and the force exerted less.

13014. *Mr. Bruce Smith.*] *Q.* Are there any particular parts of a mine in which coal-dust is found in larger quantities than in others? *A.* Well, generally on the haulage roads.
13015. *Q.* Is the quantity larger or less near the faces? *A.* It is, generally speaking, less near the faces.
13016. *Q.* Less near the faces than ——? *A.* Do you refer to the coal-dust or the coked dust?
13017. *Q.* The coked dust. You are speaking now of after a coal-dust explosion;—I mean the coked dust? *A.* I say there is generally an absence of coked dust on the haulage roads; it is not so frequently found as it is near the face.
13018. *Q.* Where, I presume, it has been driven? *A.* Yes. I thought in the first place you were referring to coal-dust.
13019. *Q.* No. I was continuing with regard to the phenomena of coal-dust explosions. Can you tell me of anything Galloway says as to the class of mines or the characteristics of mines in which coal-dust explosions have taken place? *A.* Well, all the great explosions, causing a large loss of life, have taken place in dry and dusty mines.
13020. *Q.* That is a conclusion Galloway has arrived at? *A.* Yes.

13021. *Q.* That all explosions causing great loss of life have taken place in dry and dusty mines? *A.* Yes.
13022. *Mr. Bruce Smith.*] That is mentioned, your Honor, by Galloway, in his book "Lectures on Mining," at p. 16 of the Lecture on Colliery Explosions, as follows:—

I had made a special study of the subject of explosions, both in wet mines in the West of Scotland, and in dry and dusty mines in South Wales, while acting in the capacity of an Assistant Inspector of Mines during the years 1873, 1874, and 1875; and during the course of those studies I had observed two remarkable facts, namely:—

1. That a fire-damp explosion in a wet mine never by any chance assumed the character or proportions of a great explosion.
2. That all great explosions took place in dry and dusty mines.

During the same period I had also made many experiments with fire-damp, and, in the summer of 1875, some with coal-dust, and had discovered, in making the latter experiments at Llwynpia Colliery, on the 3rd of July, 1875, that a mixture of air and coal-dust became inflammable, and could be ignited at the flame of a Comet lamp, when a very small proportion of fire-damp was added to it.

13023. *Q.* And I think that conclusion that all explosions causing great loss of life have taken place in dry and dusty mines is confirmed in the report of the Chamberlain Commission? *A.* It is—yes.
13024. *Q.* On page IX? *A.* In the second report.

Later in the day Mr. Bruce Smith read the passage, which is as follows:—

The Coal-dust Theory.

We have now brought the history of the question down to the time of the appointment of the present Commission, and we proceed to describe the theory of coal-dust agency in explosions, based on the facts and inferences above stated, which have been presented to us by the witnesses favourable to it.

It may be summarised as follows:—

1. The circumstances of many explosions, and especially of explosions on a very large scale, and covering a great length of the workings, cannot be fully explained by reference to fire-damp or gas alone.
2. The presence of coal-dust, and especially of fine dust, may be the sole cause of an explosion.
3. If the coal-dust is in sufficient quantities, it will certainly extend the effect and increase the intensity of an explosion caused by any other means.
4. Fire-damp in small quantities—so small as not to be dangerous *per se*—may be highly dangerous in the presence of coal-dust.

13025. *Mr. Bruce Smith.*] *Q.* Now, in the Chamberlain Commission report, there are particulars, are there not, of an explosion that took place in a coal-hopper? *A.* Yes, there are. It took place at the Brancepeth Colliery.
13026. *Q.* Will you just describe that, as we have not the volume here;—what was the nature of that explosion there? *A.* Yes. This hopper or box contained the fine coal which had been crushed ready for the manufacture of coke.
13027. *Q.* Was not it empty at the time? *A.* This accident happened on a pay Saturday, when the mine was idle, and in consequence the loading of the ovens could only be completed by collecting all the fine dust off the ledges of this box or hopper; and for that purpose workmen were sent into it, who were carrying large torch lamps, for the purpose of cleaning out the box entirely.
13028. *Q.* Sweeping it down? *A.* Whilst they were doing this, sweeping the dust off some of the ledges near the top, the lights were somewhere near the bottom of the box, and there was a thick cloud of dust in consequence of the sweeping. Whilst they were sweeping there was an inflamation, or explosion of the dust, as it has variously been termed, which had the effect of burning several of the men to such an extent that four of them died as the result of the accident.
13029. *Q.* This hopper was above the surface of the ground, outside the mine? *A.* Yes.
13030. *Q.* And at the top of it there were openings? *A.* There were several places where any gas might have escaped, had there been any accumulation of gas—openings through which the machinery worked, the elevator buckets.
13031. *Q.* Through which any gas could have escaped? *A.* Yes.
13032. *Q.* So that there was every reason for saying that there was no gas present in this hopper to co-operate with the coal-dust in producing this explosion? *Q.* I think it was a very reasonable conclusion to come to.
13033. *Q.* Now, it is right to say that, in the report of the Chamberlain Commission, although this instance was brought under the notice of the Commission, they found contrary to the inference which one might draw from that? *A.* Yes, they had the full knowledge of this accident when they made their conclusions.
13034. *Q.* They came to the conclusion that coal-dust, of itself, without the presence of gas, was unlikely to be the cause of an explosion? *A.* Fired by a naked light underground.
13035. *Mr. Bruce Smith.*] I cannot find in the report, Your Honor, which is very short, any reason for ignoring that Brancepeth case.
13036. *His Honor.*] The finding was that it was unlikely, not impossible.
13037. *Mr. Bruce Smith.*] Yes. When I have it here, I will quote the particular passage from the report, in which they seemed to negative the inference which one might draw from that.

(Later, Mr. Bruce Smith read the passage which is quoted above.)

13038. *Mr. Robertson.*] I think there was a doubt as to the gas. There might have been some little gas present in spite of the openings.
13039. *Mr. Bruce Smith.*] The statement appears as though, if the gas rose, as it usually does, there was every possibility of its getting out. I have not the statement here; but I will have it when I get those books.
13040. *Q.* Now, with regard to explosions of dust, is it not a well-known fact that explosions take place in flour mills where there is a great quantity of dust? *A.* Yes, that has happened on several occasions.
13041. *Q.* And is it not a fact that in modernly-constructed flour mills an arrangement exists which prevents the dust from spreading over the whole building? *A.* Yes. I think also in certain places they enforce the use of either electric light or safety-lamps in such cases.
13041½. *Q.* Well, have you any reason to suppose that there could be any gas of an inflammable nature in a flour mill? *A.* No, I think not.
13042. *Q.* I am not asking you whether there is, but whether you think so, from what you know? *A.* In my opinion, I think not.
13042½. *Q.* And I think there is reason for stating that, in bone crushing, explosions have taken place? *A.* Yes, I think there is a reference in my notes.

13043. *Mr. Bruce Smith.*] I will read it. It is an extract from page 281 of volume 6 of the Proceedings of the Federated Institute of Mining Engineers, being part of the Presidential Address of Mr. A. L. Steavenson for the year 1893 :

> The coal-dust question has agitated the minds of all connected with Collieries in the last few years, and there are some, I believe, who still shake their heads and refuse to admit the possibility of any of our great explosions having originated through dust alone.
>
> The matter seems so clear to me that I have taken very little interest in the later discussions on the subject. There is, and can be, no dispute of very serious explosions having occurred repeatedly where no gas could possibly have been present. I will mention a few cases just to confirm my statement. In 1896 an explosion occurred in flour mills at Leith, when three persons were killed and four injured. In 1882 an explosion occurred in a flour mill at Macclesfield; a large part of the mill was levelled with the ground; and damage to the extent of £5,000 was done, the engine-man being killed. In 1887 an explosion occurred in the United States in some wood-working establishments at a point where the dust and shavings were gathered together; the roof of the shaving-house was blown off, and two of the workmen killed. In 1885, an explosion took place in a rag-mill at Drighlington, causing the death of two workmen. This was an explosion of the dust at what was described as "The shaker."
>
> There was no possible gas present in these cases, and when we remember that explosion is only a rapid form of combustion, to which the fineness of the particles makes it peculiarly susceptible, and that coal-dust, if heated, contains 10,000 cubic feet of gas to the ton, it is difficult to conceive how any one can still harbour a doubt on the subject. The case seems analogous to that of those who, for many years, whenever a boiler explosion took place, insisted that there was something about boilers we did not yet understand; and it was often asserted that electricity had something to do with it. To such we can only extend our sympathy.

13044. *Q.* There is a further reference, in the evidence of Mr. Galloway, in the first report of the Commission on Accidents in Mines (Imperial)—is that what we call the Chamberlain Commission? *A.* No.

13045. *Q.* The Commission on Accidents in Mines (Imperial), 1881, page 445, questions 13551 to 13557 and question 13573.

(Later in the day, Mr. Bruce Smith read the evidence of Mr. Galloway, as follows) :—

"13551. *Q.* Are you acquainted with the experiments that have been made in America with flour and other combustible powders? *A.* Yes, I have read an account of them.

"13552. *Q.* Do you think that we can rely on those accounts? *A.* I do. I made some experiments myself, which have not yet been described, with coal-dust, gas, and air. They are not completed. They are similar to the American experiments; and were probably made before these experiments. My experiments were made in August, 1878, and I think that the accounts of the American experiments were published towards the end of the same year, or in the beginning of the year following.

"13553. *Q.* You are aware that explosions which ended in the destruction of large buildings in America, and, I believe, in Scotland also, have been ascribed to that ignition. Is this correct? *A.* I think so.

"13554.-5. *Q.* Do you think that we may rely upon the conclusion that the diffused combustible dust could produce mechanical effects so violent? *A.* Not the quantity of dust usually contained in the air.

"13556. *Q.* I refer now to the particular cases described in America and Scotland? *A.* After the disturbance has once been begun, and the fine dust has been mixed largely with the air, then I think that the mixture would be inflammable and explosive.

"13557. *Q.* In the special case that I am referring to the explosion was so violent as to ruin a mill, and to project masses of iron, and other heavy substances, to a very great distance. Do you think that the dust of flour diffused in the atmosphere and ignited has the power to produce effects of that kind? *A.* I have not made any experiments with the finer kinds of dust of flour; but, judging by the effects of coal-dust under similar circumstances, I do think we can depend upon the accuracy of those reports.

"13573. *Q.* You stated, with reference to the investigations which have been made as to the explosions that have occurred in flour-mills, investigations which were commenced originally by the late Professor Rankin a few years ago, that you did not consider that the ordinary dust from flour would produce explosions extending to a considerable distance; but I presume the difference was only a difference in the state of division of the particles? *A.* I do not think I explained myself sufficiently. What I meant to say was that in the atmosphere of a mill you will always find a little dust floating about. There is not sufficient dust in that atmosphere at ordinary times to produce an explosion.

13046. *Q.* Now, Mr. Atkinson, you wish to speak of the precautions which are recommended to prevent, as much as possible, explosions by coal-dust? *A.* Yes.

13047. *Q.* Will you just tell me, first of all, when coal-dust becomes dangerous underground? *A.* When it is raised in a cloud by means of, first, and explosion of fire-damp; or, second, an explosion of a blasting shot, more particularly of gunpowder. Where fire-damp is present, the use of safety-lamps is a precautionary measure against an explosion of fire-damp, and also against the occurrence of underground fires, which are so frequently caused by the use of naked lights.

13048. *Q.* The flame from a shot by gunpowder, which you say is a great danger in the presence of coal-dust, is itself a means of raising that coal-dust, which it is likely to ignite? *A.* Yes; the force of the blast is sufficient to raise a cloud of dust.

13049. *Q.* It raises it, and then shoots itself into the cloud? *A.* Yes.

13050. *Q.* Well, how, in your opinion, may the dangers from explosions by blasting due to coal-dust be to some extent prevented? *A.* They may be partially prevented by careful watering, as required by General Rule 12; by careful preparation and tamping of the shot-hole with a non-inflammable substance; by careful inspecting in the vicinity for fire-damp, by a competent person, as required by the above rule; and greater precautions may be adopted by using the same methods as to watering, &c., and, in addition, using a "permitted explosive" fired electrically.

13051. *Q.* The "permitted explosives" do not, I understand, send any flame or sparks into the air? *A.* Well, none of them have been shown to be absolutely safe; but they are considered very much safer than blasting powder. I do not know of any that is absolutely without any signs of flame when fired under certain conditions.

13052. *Q.* You heard a witness yesterday say that, even with the use of the cap, sparks were emitted? *A.* He was referring to the fuse.

13053.

13053. *Q.* From the fuse? *A.* Yes.
13054. *Q.* That is, even when the cap was used on the fuse? *A.* That is what he said.
13055. *Q.* Do you think that probable or possible? *A.* Well, I think it would only take place with a wrong adjustment of the cap or of the fuse.
13056. *Q.* Then the adjustment of the cap even, requires considerable care? *A.* No doubt; yes.
13057. *Q.* Now, I think you have considered this accumulation of coal-dust from two points of view? *A.* Yes; first, the prevention of accumulations; and, second, precautions to render coal-dust innocuous after it has accumulated.
13058. *Q.* Now, taking the prevention first? *A.* Several suggestions have been made to assist in this direction, but with, so far, varying success.
13059. *Q.* You might mention what suggestions have been made? *A.* Tubs built dust-tight, so as to prevent dust being scattered on the roads; sprays of water at the screens, or in the downcast shaft, to prevent dust entering from the surface; care to prevent overloading of tubs; watering the top of each tub by a sprayer before leaving the "flat" on its passage to the shaft; the periodical removal of accumulations.
13060. *Q.* That is to prevent accumulations? *A.* Yes.
13061. *Q.* And several methods have been actually tried, have they not? *A.* Yes; several methods to render it harmless.
13062. *Q.* To render it innocuous, as you have called it. What are they? *A.* First, mixing deliquescent salts with the dust on the roadways. This has proved both inefficient and very costly. Second, sprays of water under pressure. Third, sprays of water under pressure, combined with compressed air. Fourth, tubs with pumps, &c., attached for spraying water. Fifth, instead of watering the whole length of dusty roads, some mining engineers have done so only on selected lengths, believing that explosions will not pass over wet lengths of road 100 yards and over.
13063. *Q.* Now, what is the effect of thoroughly watering coal-dust, in your opinion? *A.* It renders it harmless so far as explosions are concerned.
13064. *Q.* Do you recommend it? *A.* So far as it is practicable.
13065. *Q.* Well, you might name the circumstances under which, in your opinion, it is impracticable? *A.* Yes. First, the effect of water on some roofs is to cause falls of a serious character; and it also, in some cases of soft floors, causes trouble.
13066. *Q.* Of what kind? *A.* It causes the floor to lift.
13067. *Q.* It interferes with the levels for hauling and so on? *A.* Yes.
13068. *Q.* Any other feature? *A.* It may be impracticable to thoroughly water coal-dust in some cases, owing to an inefficient supply of water. This was experienced at some Northern and Southern collieries during the drought last year.
13069. *Q.* Now, a careful, systematic method of watering has been carried out in Great Britain, I think, and in Germany? *A.* To some small extent.
13070. *Q.* Has anything yet been formulated beyond General Rule 12? *A* No law has been passed beyond General Rule 12, and the requirements in the Explosives Order with regard to dealing with coal-dust, in Great Britain.
13071. *Q.* That is the one I read a little time ago? *A.* Yes.
13072. *Q.* So that the requirements have never, so far, been very accurately defined? *A.* No, not beyond that.
13073. *Q.* It is a matter of discretion based upon the knowledge of the danger? *A.* Yes; there is a great variety of opinion on the subject even now.
13074. *Q.* Even as to the benefits to be derived from watering? *A.* Yes.
13075. *Q.* Is there any difference of opinion as to the benefits of watering where shots are going to be fired? *A.* None at all.
13076. *Q.* I mean the opinions of experts are unanimous as to the necessity of watering where shots are to be fired? *A.* Yes, in dry and dusty places.
13077. *Q.* And has it formulated itself into any recognised distance to which the watering should be carried from the shot? *A.* Twenty yards is the distance required by the rule.
13078. *Q.* I think that question was dealt with in several of the official English reports? *A.* The opinions with reference to the utility or otherwise of watering coal-dust?
13079. *Q.* Yes. *A.* Yes.
13080. *Q.* And more particularly with regard to shots? *A.* Yes.
13081. *Q.* You have not those reports here? *A.* No.
13082. *Q.* One is the report of Mr. H. Hall, 1901? *A.* Yes. Mr. Hall is the Inspector of Mines for the Liverpool District. The reference is to page 18 of the report.

Later the report was obtained, and the following passage was read:—

Coal Dust.—How best to deal with the coal-dust in deep dry collieries is beset with difficulties, and it is not to be wondered at when we consider the large quantity of dust constantly being produced in the working places and on the roads along which the coal is hauled on its way to the pit's shaft. It is quite clear that to remove the dust altogether from the mine is impracticable; hence recourse has to be had to some means of rendering it innocuous.

The application of water by water-tanks or by stand-pipes, under pressure, fixed at intervals along the road, is only partially successful, whilst it entails very considerable labour and expense. Suggestions have been made that, if sections of the roadways were kept constantly wet, such wet part might prevent an explosion spreading. I imagine that, at any rate, in a coal-dust explosion, there will always be a pioneering cloud of dust travelling forward in advance of the actual flame, sufficient to feed the explosion for some distance, when passing over ground either damp or free from dust. I remember that in the Pen-y-graig explosion in 1880 the explosion travelled throughout two distinct sections of the colliery. I examined the single road which connected these two sections, most of which was tunnel through a "fault," and extending a distance of 150 yards or more, and found no sign that any explosion had passed through this road. The road was entirely free from coal-dust, being excavated in stone clear of the coal seam; it was dry. I believe it is possible to elucidate this question of the efficacy or otherwise of watering dust by actual experiment. In this inspection district, attempts to deal systematically with the dust throughout the mine by means of water have been abandoned. The vicinity of shots on main haulage roads alone is damped immediately before the firing takes place; this precaution being required by No. 12 General Rule, and by the Explosives Order.

13083. *Mr. Bruce Smith.*] *Q.* Another report dealing with that question is by whom? *A.* Mr. J. S. Martin, Inspector of Mines, on the Llanbradach Explosion, page 8.

The

Witness—A. A. Atkinson, 4 February, 1903.

The following extract from the report referred to was read by Mr. Bruce Smith later in the day :—

The method of watering by barrels is in use very extensively in the district, and has been maintained to be satisfactory, the water being distributed by flexible pipes attached to a barrel, or by buckets. It is a system which would allow of the places being thoroughly watered ; but it has never presented itself to me as altogether satisfactory, owing to the human element in the arrangement, which seemed likely to render what was "possible," "not probable." I have, however, always been told that the watering was done thoroughly whenever I raised the question, casually, upon making inspection at mines. There no longer seems any ground for considering it satisfactory ; and I think colliery managers and workmen must in the future more thoroughly recognise the danger arising from dust, and introduce some satisfactory means for bringing a jet of water to play upon the roof and sides. Where the water has to be conveyed in barrels or tanks, they must see that a much greater supply is provided, and that some kind of hand-pump is used for applying it. It must also be borne in mind that, where there is much dust, water takes little effect at first, and that it must be very liberally distributed for its use to be efficient.

13084. *Witness.*] Reference is also made to this question in a report by Professor Galloway on the explosion at the Universal Colliery in 1901, page 12 ; and by Mr. Evans, quoting Mr. Robson, Inspector, in the same report, on pages 23, 24, and 25. There are many other opinions, too, in other reports : but those are the most recent.

Later in the day Mr. Bruce Smith read the portions of the report referred to by the Witness. They are as under :—

Extract from the Report of Professor Galloway on the Explosion which occurred at the Universal Colliery, Glamorganshire, on 24th May, 1901.

Means of Preventing Coal Dust Explosions.

The remarkable immunity of the western side, and northern end, of District B from traces of flame can be due to nothing else but natural dampness ; and this fact shows conclusively that dampness, whether natural or artificial, will prevent a great explosion from occurring at all if the dampness is at the origin of disturbance, and will arrest it completely if it is anywhere else, provided the length of the damp part is so great that the flame is unable to cross it.

Artificial dampness or wetness may be produced by means of any of the following devices, all of which have been employed in practice for the purpose of watering mines in the South Wales coal-field and elsewhere :—

1. Water tanks hauled along the mine railways, provided with a pipe pierced with holes, the same as that of an ordinary water cart at the surface.
2. Sprays produced from very small nozzles fixed to vertical stand-pipes 3 or 4 feet high, at distances of 15 or 20 yards apart, each stand-pipe fixed to a water-pipe laid along one side of the haulage way.
3. Similar sprays in which compressed air is employed for the purpose of pounding the water into very fine particles (Mr. W. H. Martin's patent).
4. A water hose, 30 or 40 feet long, attached at one end to a short stand-pipe connected to a water-pipe lying alongside the road, and provided with a spray producer at its other end. There must be a stand-pipe every 80 or 100 feet.
5. The exhaust steam of a constantly working engine, such as the engine of the ventilating fan, introduced into the intake air as it descends the downcast shaft. (Employed at Pochin Pit, Tredegar, at one time, and recently proposed to me again by Mr. Smart.)

It has been suggested that watering the floor is not sufficient to prevent dust from lodging on the timbers and on ledges of coal and rock at the sides of the road. The objection is a purely speculative one, and not founded on experience. I have, myself, seen a coal-dust explosion (Pochin) arrested by the dampness produced by the leakages of a water barrel employed for transporting water from dip workings ; and elsewhere (Llwynypia), I have sought in vain for dry coal-dust on the timbers and ledges of a road in which the floor only was watered by a water tank.

The objection to fine sprays is that the apertures in the nozzles are liable to become stopped by particles of sand, and that the workmen dislike being wetted in passing them. There is, however, no objection to the use of a hose pipe. Steam turned into the downcast shaft keeps the whole mine damp, but raises the temperature of the air in it and renders it less comfortable and more relaxing to the workmen. Water applied in any way has, on the contrary, a cooling effect.

Much objection was raised by some of the witnesses before the Royal Commission on Coal-dust against the general use of water underground, on the plea that the floors of many seams of coal would be thereby softened, and would consequently swell up into the roadways and cause them much trouble and expense.

It is doubtful whether the small quantity of water required to lay the dust, if applied judiciously, would ever produce the effect anticipated ; but, supposing it is liable to do so in any case, another alternative remains, namely, to prevent the accumulation of coal-dust altogether by employing perfectly dust-tight waggons, and not filling them above the level of the upper edges of their sides.

Waggons which were very nearly dust-tight were employed in Altofts Colliery, Normanton, before the explosion, and were not filled above the level of the tops of their sides, with the result that the dust accumulated very slowly, and the consequence was that the explosion did not reach the working places at any point, but was exclusively confined to the main haulage roads, which were also the intake airways.

If the coal could be conveyed from the working faces to the winding shaft without falling out of the waggons on to the roadways, either in the form of original dust, or in pieces that are soon crushed into dust by the traffic, the hauling roadways would be in the same condition as the return airways ; that is to say, they would contain principally stone dust and insufficient coal-dust to carry on an explosion.

There are thus two methods of preventing the occurrence of great colliery explosions :—

1. To lay the dust by watering it. This precaution has been voluntarily adopted by many of the colliery owners in the South Wales coal-field ; but, as it is not made compulsory by Act of Parliament, and thereby cannot be enforced by the Inspectors of Mines, it appears to be frequently neglected, or done only perfunctorily by some of the Managers.
2. To employ dust-tight waggons, filled only to the level of the upper edges of their sides, and, when a waggon containing coal is accidentally overturned, or coal is otherwise accidentally spilt on the roadway, to gather it up carefully and strew small stones over the place from which the coal has been lifted.

The existing regulation as to watering for 20 yards on each side of a shot-hole before firing the shot, if enforced under severe penalties—say, £50 for each case in which it is neglected or carelessly carried out—is sufficient to prevent the ignition of coal-dust by a blasting shot ; but, as an additional security, the distance might, perhaps, be extended to 30 yards in the direction towards which the shot-hole is pointing.

Extract from the Report of Mr. S. T. Evans, K.C., M.P., on the Explosion at the Universal Colliery, Glamorganshire, on 24th May, 1901.

As to the Coal Dust on the Main Roads.

There was evidence that there was a considerable quantity of coal-dust lodging on the main intake roads, and on their roofs and sides. The return airways were free from such dust ; and Professor Galloway in his report points out how, generally speaking, the return airways enjoyed an immunity from the devastating force of the explosion.

I have before observed that there was a unanimity of opinion that the explosion was carried on, to its terrible extent, by the inflammation of the dust.

Some of the statutory obligations for watering the mine in proximity to the place where a shot is fired have been above referred to.

But up to the present no statutory provisions have been made regulating the clearing of dust from the roads, or requiring the main travelling roads in the mine generally to be efficiently watered. It

It is necessary to call public attention to the desirability and importance of taking all reasonable precautions for clearing, not only the bottom of the roads, but also the sides and roof, where the finest and most easily inflamed dust lodges, and of adopting proper systems of watering the dust regularly. The importance of these matters was not, in my view, sufficiently appreciated by those responsible for the management of this mine.

It was said that some men were told off to clear the dust; but I am not satisfied that this was regularly or efficiently done.

As to the Watering.

A system of watering the roads by pipes and sprays had been adopted in part, but had not been carried into the workings as it should have been, as will hereinafter be pointed out.

This system was shortly as follows:—Pipes of 1½ inches in diameter were laid along the main haulage roads for a distance of about 850 yards on the west side of the pit, and about 600 yards on the east side; water-cocks were inserted in the pipes at distances of 40 yards apart; the waterman carried a short length of hose, 6 or 8 feet long, fitted with a brass spray at one end, and a screw at the other, which fitted on to the water cock. The hose pipe was fastened on to the cocks, and the pressure put on; thus a spray of water at high pressure was obtained, which could moisten the dust in all directions.

This system is a good and well-approved one.

But the pipes had not been laid sufficiently far into the mine. They had not been extended for twelve months past before the disaster, whereas they should be extended from time to time. At the time of the explosion they fell short of the proper distance in each direction by many hundreds of yards.

The watering by means of these pipes was only done by day, and, of course, only for the regions through which the pipes had been laid. Such watering as was done beyond the ranges of pipes was done by conveying casks of water along the roads, and letting out water by removing a plug at the bottom. Even where these casks were taken, this would only water the centre of the road. No special person was entrusted with the duty of doing this work; but it was stated that the master-hanliers by night were to see that this watering was done by someone.

It was clear, however, that large portions of the colliery road were not watered at all; and that the watermen did not, and, so far as appeared, had no instruction to, water the roofs or sides at all, either by day or by night, at any rate beyond the limits of the pipes.

In my opinion, the provisions for watering, beyond the watering by pipes during the day, was quite inadequate both by day and by night; and those responsible for the management either had not duly appreciated the necessity of these precautions, or had failed to see that they were observed.

Before the date of the explosion, the pipes should have been extended a distance of about 500 yards further towards one district of the colliery (the Pretoria and No. 2 South); about 200 yards further towards another district (the Kimberly and Mafeking); about 400 yards further towards another district (the Ladysmith); and about 200 yards further into the workings on the east side. The grave importance of efficiently watering the roads will be realised when it is pointed out that, in the opinions of the Mines Inspectors and others well qualified to form an opinion, if the roads had been properly watered, the loss of life would have been very much less than it unfortunately was. Assuming, for example, that the explosion originated in the west part of the mine, the men in the east part—all of whom were killed—would, in all human probability, have escaped altogether; and, similarly, if it originated in the east, those men who worked in the west would not have lost their lives.

To put the matter still more cogently, I may say that Mr. Gray, the Inspector, gave it as his opinion that, if the explosion started in the Pretoria District (which theory he favoured), and if the main roads, No. 2 South and No. 3 South, and the road up to the Ladysmith District, had been efficiently watered, the explosion would have been confined to the district of Pretoria, and to the bottom of the No. 2 South. The death roll then would have been 17 only; and the lives of the other 64 men who perished would have been saved. If the explosion had occurred when the 240 night men were all in the mine, or in the day time, when about 450 men would be below ground, it will be seen that upon the efficiency of the watering of the coal-dust might have depended hundreds of lives.

In order again to call attention publicly to this extremely important measure of precaution, the gravity of which, in their own interest, as well as in that of the workmen, mine-owners and managers have not sufficiently realised, I put to Mr. Robson the following questions, to which he gave the appended answers:—

Mr. S. T. Evans.] *Q.* Suppose the main road had been thoroughly watered, in your opinion would the men on the east side have been touched?

Mr. Robson.] *A.* I think not; I think the men on the east side would have escaped, if the west had been thoroughly watered up to the top of No. 2, it would have saved the other side of the pit.

Q. And if the roads from there on had been thoroughly watered by the extension of pipes or otherwise, in your opinion would the explosion have been confined to the end of the little seam and to the Pretoria District? *A.* Yes; I think it would have been confined to this (viz., a small portion of the Pretoria and contiguous district), if all the main roads had been well watered, and I think the explosion, wherever it happened here (in that district) would have been confined to this part, and *only a few men*, and not the whole men in the colliery, would have been touched.

Q. The description of watering by cask has been given, either by pouring it out on the top of the incline or carrying it along. In your opinion, could that do much good in stopping an explosion? *A.* No; I think it has little or no effect on the dust in the road. Generally, of course, dust goes to the bottom, but there is plenty of top dust on the sides and timbers, and that is really the most dangerous dust.

Q. There is no statutory obligation with regard to general watering of a colliery. Will you give me your opinion whether there ought to be? *A.* Yes, it is very desirable, very necessary, that there should be very stringent regulations as to general watering, instead of leaving it to people's ideas.

Q. When the Coal Mines Regulation Act was passed, people did not know so much about dust in explosions as we know now? *A.* I have, myself, felt strongly on the matter.

Professor Galloway, who has performed such valuable experiments, and has pursued deep researches into the question, expressed similar views.

The Jury, upon this subject, added the following rider to their verdict:—

> The Jury do not consider that the system of watering the roadways beyond the pipes by means of casks, and allowing the water to run along the centre of the road, is in any way sufficient, and in this case also suggest the use of appliances similar to the one suggested by Mr. Gray. The Jury urges the Members of the British Parliament to make it strictly compulsory to have the bottom, sides, and top, of roadways in collieries so well watered as to make it impossible for coal-dust to spread on an explosion.

I have made such comments as I have deemed necessary. While there was some laxity upon the matters to which reference has been made, I do not think there was established any breach of specific statutory duties, to which the explosion was due; and I do not recommend any prosecution.

In conclusion, I may be allowed, without transgressing the limits of the province entrusted to me, to enforce the recommendations of the Jury by reference to the lessons again learnt at this inquiry. It appears to me to be most desirable that stricter regulations should be made for the control and use of explosives in mines, and for limiting, as far as possible, or practicable, shot-firing during shifts; and especially that provision should be made for preventing the accumulation of coal-dust, and for the regular and efficient watering of the roads, roofs, and sides in the main haulage and travelling ways in mines which are dry and dusty.

13086. *Mr. Bruce Smith.*] *Q.* You have something special to say with regard to Australian coal-dust, have you not? I think that, having in view the Bulli and the Dudley explosions, you took some steps to get authoritative opinions on the explosibility of New South Wales coal-dust, did you not? *A.* Yes; with the approval of the Minister for Mines we had samples taken from the various collieries.

13087. *Q.* In what year was that? *A.* In the year 1901.

13088. *Q.* About twelve months before the Mount Kembla explosion? *A.* Something like that.

13089. *Q* And I think this is the letter which you sent to the Home Office, through the State Government, requesting them to take steps to have the different samples of coal-dust from the different New

South Wales Coal-mines tested at the recognised testing station at Woolwich in England? *A.* Yes; that is so.

13090. *Q.* And I think you received from the officer in charge of the Home Office Testing Station the following letter:—"Experiments carried out at the Home Office Testing Station at Woolwich during the months of August and November, 1901, to ascertain whether various samples of coal-dust from collieries in New South Wales were capable of causing an explosion when raised by the firing of a charge of blasting powder." I think the Commission have seen it.

13091. *His Honor.*] Yes.

13092. The letter referred to was put in at the Coroner's Inquest, and marked *Exhibit Q.* It will be found at page 74 of the printed report of the Inquest.

13092½. *Mr. Bruce Smith.*] Then I will not read it.

13093. *Q.* You sent home thirty-four samples of coal-dust, did you not? *A.* Yes; they took two shots from each sample. There would be two shots from the sample from each mine, but only one box from each mine.

13094. *Q.* They made two experiments with each sample? *A.* Yes.

13095. *Q.* You received that report from the testing station at Woolwich; and then, in April, 1902, which is three months before this explosion, you sent this letter to all the different coal-mines, did you not? *A.* Yes.

13096. *Q.* "By direction of the Secretary for Mines, I have pleasure in enclosing herewith, for your information, copy of a report by the authorities at Woolwich Testing Station, England, with reference to the explosibility of certain coal-dusts collected in this State during last year, which were sent Home for testing purposes." You sent a copy of that report to every coal-mine Manager in New South Wales? *A.* To all the large collieries.

13097. *Q.* That showed, did it not, that the Mount Kembla coal-dust was, in both cases, the cause of a violent explosion? *A.* Yes; under the conditions under which they tested it.

13098. *Q.* And I may put this generally, that in reporting the different degrees of explosibility of these dusts, the testing station adopted four standards—explosion, mild explosion, violent explosion, and very violent explosion? *A.* Yes.

13099. *Q.* And the Mount Kembla dust showed the second highest degree of explosibility? *A.* Yes.

13100. *Q.* You sent a copy of that circular, as you say, to the Manager of every coal-mine in New South Wales? *A.* All the large collieries.

13101. *Q.* Including Mount Kembla? *A.* Yes.

13101½. *Q.* And you added this paragraph to your letter:—"From this report you will see that, under the conditions specified, in all cases was an explosion produced, the intensity only varying. Having regard, therefore, to the fact that large colliery explosions are sometimes produced by blasting, and propagated by means of coal-dust alone, it is necessary, in the event of blasting taking place in your colliery in dry and dusty places, that the requirements of General Rule 12, Section 47, Coal Mines Regulation Act, should be strictly complied with, and the vicinity of the shot thoroughly watered, as required by that rule"? *A.* Yes.

13102. *Q.* These "Explosives in Coal-mines Orders" (*Exhibits* 18, 19, *and* 20) were issued in 1899, March, 1902, and October, 1902? *A.* Yes; those are the most recent orders.

13103. *Q.* Now, I think you have enumerated, in a return, the different fires which have occurred in the Southern and South-Western District collieries during 1902? *A.* Yes.

13104. *Q.* As bearing upon this? *A.* Question of naked lights, largely.

13104½. Mr. Bruce Smith then read a statement of fires in the Southern and South-Western district collieries during 1902, which was put in and marked *Exhibit No.* 21.

13106. *Mr. Bruce Smith.*] *Q.* What do you mean by "bottom" fire-damp? *A.* Fire-damp which issued from the floor.

13107. *Q.* Now, if any further information is wanted on those, you can let the Commission have the reports? *A.* Yes.

13108. *Q.* I think you have prepared a similar statement of the fires in the northern district collieries in 1902? *A.* Yes.

13109. *Q.* I need not go through them? *A.* No; there are some of them which I might mention, which have no direct connection with the naked light; such, for instance, as Greta, the first, which was a gob fire.

13110. *Q.* At all events, you have summarised them there for the information of the Commission if it desires it. There were eight in the Northern District during 1902? *A.* Yes; nine, I think, to be correct.

13111. A statement of fires in the Northern District collieries during 1902 was read by Mr. Bruce Smith, put in and marked *Exhibit No.* 22.

13112. *Q.* You have a copy of the report of Inspector J. T. Robson on an explosion which occurred in Ferndale Colliery, Glamorganshire, which was asked for by the Commissioners? *A.* Yes.

13113. *Q.* When was that asked for? *A.* During last month, since the Commission started to sit.

13114. *Q.* What does it bear upon? *A.* Upon the possibility or probability of explosions being caused by falls of roof, independently of naked lights.

13115. *Q.* That is the one that was referred to, I think, by Mr. Wade, was it not? *A.* Yes; I think it will be the same.

13116. Mr. Bruce Smith then read an extract from pages 9 and 10 of Mr. J. T. Robson's report on the South Wales district for the year 1902, which was put in and marked *Exhibit No.* 23, together with the correspondence leading to its production.

13120. *Mr. Bruce Smith.*] There was another one asked for, Inspector Robson's report on the Deep Navigation Colliery. I will read that.

13121. Mr. Bruce Smith then read an extract from Inspector J. T. Robson's report on the South Wales district for the year 1897, which was put in and marked *Exhibit No.* 24.

[At 1 p.m. the Commission adjourned until 2 p.m.]

AFTERNOON.

(On resuming at 2 p.m. Mr. W. R. Pratt attended to take shorthand notes of the evidence and proceedings.)

Mr. A. A. ATKINSON, previously sworn, was further examined, as under :—

13123. Mr. Bruce Smith read a number of extracts from various mining authorities, which were included in the report of the evidence given by Mr. Atkinson during the morning.

The examination of Mr. A. A. Atkinson was then continued as follows :—

13124. *Mr. Bruce Smith.*] *Q.* Have you gone carefully into the nineteen suggestions put before the Commission by Mr. Lysaght on behalf of the Miners' Lodges, and which were spoken to in the evidence of the different members of the Delegate Board? *A.* I have.

13125. *Q.* You have missed out one recommendation—that is, as to the cancellation of the certificate of Mr. Rogers, as you consider that you have nothing to do with that? *A.* Yes.

13126. *Q.* Recommendation No. 1 is : "Managers, under-managers, deputies, and shot firers, to hold certificates of competency by examination, and to have had five years' practical mining experience, before being eligible for their respective positions." What do you say as to that? *A.* Managers and under-mangers now hold certificates, either of competency by examination or of service in virtue of actual management of a colliery, prior to the passing of the Coal Mines Regulation Act in 1896 (Secs. 5, 6, 7, 8 and 9, of the Coal Mines Regulation Act, 1902).

13127. *Q.* In the case of a mine in which not more than twenty persons are employed, what is the condition? *A.* It is only necessary for the Manager to hold a permit from an Inspector, without holding either a certificate of competency or of service.

13128. *Q.* That is under section 4. *A.* Yes.

13129. *Q.* There are a number of mines, are there not, in New South Wales in which small numbers of miners are engaged? *A.* There are about forty mines, I think, in which under twenty persons are employed.

13130. *Q.* What have you to say with regard to the suggestion as it affects managers and under-managers who have certificates of service? *A.* Capable Managers and under-managers, who have certificates of service, may have reached such an age that they might be unable to pass a theoretical examination in order to gain a certificate of competency, and on that account to take away their certificate of service, might produce very inequitable results and deprive them of their only means of making a living without effecting any compensating advantage. In course of time the class of Managers holding certificates of service will cease to exist, and in the meantime provision is made in section 10 of the "Coal-mines Regulation Act, 1902," whereby the certificates of Managers and under-managers proved to be incompetent may be cancelled.

13131. *Q.* In view of the state of the law, and under all the circumstances, what opinion do you form about the suggestion? *A.* I do not think that any change in the law is necessary in regard to Managers and under-managers.

13132. *Q.* How are deputies and shot firers at present selected? [*No answer.*[

13133. *His Honor.*] *Q.* Are there in New South Wales any men holding those service certificates who have not actually put them into operation by becoming Managers? *A.* I think there are a few.

13134. *Q.* Would you suggest that in these cases something might be done without leading to any injustice, seeing that these gentlemen have not taken advantage of their certificates? *A.* It would be difficult to make any distinction with regard to these men, who, although they may not be in active service, may be competent, but incompetent to pass an examination.

13135. *Q.* Would you suggest that some further inquiry might be made with a view to these gentlemen undergoing some further examination before they have the right to have these certificates recognised? *A.* It might be necessary in the case of men who have not been doing efficient duty for a number of years.

13136. *Q.* It might be a little risky, under these circumstances, to trust to service certificates? *A.* Yes, the time during which a man might be unconnected with colliery management might make him a little rusty.

13137. *Mr. Bruce Smith.*] *Q.* There might be cases in which men had been out some six months? *A.* There might be.

13138. *His Honor.*] *Q.* I mean where a service certificate has been obtained but never used?

13139. *Mr. Ritchie.*] *Q.* They can get service certificates yet. I mean that persons who have occupied the position of Manager can get a service certificate by applying for it? *A.* I do not quite follow you.

13140. *Q.* A service certificate can even now be granted to a person who has been a Manager within five years of the passing of the Act? *A.* Yes, from 1891 to 1896.

13141. *Q.* Suppose a man was the Manager of a mine for twelve months, four years before the passing of the act, he could still get a certificate? *A.* Yes, if he proves his qualifications.

13142. *His Honor.*] Mr. Ritchie has put a much worse case than the one I gave. I was not thinking of a case where a man could now procure a certificate because of past services ; but of cases where men procured service certificates immediately after the passing of the Act and have never taken advantage of them.

13143. *Mr. Bruce Smith.*] *Q.* Some bill is now before Parliament dealing with this question? *A.* Yes.

13144. *Q.* Is it instigated by the Department? *A.* I do not know whom it is instigated by.

13145. *Q.* Is it instigated by the Minister? *A.* Yes.

13146. *Q.* What will be the effect of it, if it is passed? *A.* The effect of it will be to compel Managers, who hold certificates of service, to pass examinations.

13147. *Mr. Ritchie.*] *Q.* Was not that Bill introduced by Mr. Estell? *A.* I think it was.

13148. *Mr. Bruce Smith.*] *Q.* Now, with regard to the case mentioned by Mr. Ritchie in which a man, now without a certificate, may obtain it at any time on the strength of experience gained between 1891 and 1896—would that come within the scope of the case suggested by His Honor—that a man should be refused a certificate unless he has been engaged in practical work within a certain number of years? *A.* It is a difficult question, but that is the only reasonable way in which it can be fixed.

13149. *Q.* You do not wish to champion the cause of men who are unfit by want of modern practical work to occupy positions in which the lives of so many people are at stake? *A.* Certainly not.

Witness—A. A. Atkinson, 4 February, 1903.

13150. *Q.* But at the same time you do not want to see men well advanced in years, and possessed perhaps of considerable ability, deprived of the means of earning their livelihood, unless some advantage is gained *A.* That is my evidence.
13151. *Q.* Now, with regard to men who occupy the positions of deputies and shot-firers, how do they stand at present? *A.* They are selected by the Managers, and are supposed to be competent persons for their duties, as indicated by General Rules 4 and 12, section 47.
13152. *Q.* Would you propose any alteration in view of the evidence given before the Commission? *A.* Managers will naturally select the most competent men available for these positions. It may, however, sometimes happen that Managers for some reasons which we do not know, may select persons who are not altogether competent, and as these are very responsible positions, and in order to test their competency by some means in addition to those adopted by the Manager, I would suggest that an oral, practical examination by the Board of Examiners now appointed under the Coal Mines Act to examine candidates for Managers and under-managers, should be made.
13153. *Q.* Such examination would, I suppose, be confined to a summary of the duties laid down in the Rules applicable to these people? *A.* Yes.
13154. *His Honor.*] Would you suggest that the examination should be made for the purpose of allowing a man to obtain a certificate which he could hold until some offer was made to him, or do you suggest that, before a man is appointed by a manager to a position of deputy or shot-firer, he should undergo an examination as to his qualifications? *A.* In the event of a man being appointed, I would suggest that in addition to an examination by the Manager he should undergo a verbal examination by the Board.
13155. *Q.* For that particular purpose? *A.* Yes, for that particular purpose.
13156. *Q.* When a Manager thinks of appointing a man, therefore, he would have to be sent to the Board to undergo an examination before he could be appointed? *A.* That matter might be arranged by the Board sitting a little more frequently. The Board might sit twice as often as it does now.
13157. *Mr. Robertson.*] *Q.* How would that work in practice. If I wanted to appoint a deputy to-morrow, I would have to go without making an appointment until the man I sought to appoint had appeared before the Board, which might hold a meeting three months hence. Would it not be better that these men should have certificates in the same way as the Managers or under-managers? *A.* No doubt the suggestion I made at first might be unworkable.
13158. *Q.* Would it not be better for a man to qualify for a certificate; and then he could be appointed after obtaining it? *A.* It certainly would be.
13159. *Q.* Do you see any necessity for drawing any distinction between a deputy and a fireman? *A.* I think that their duties are so intimately connected with each other, that one examination would be sufficient, as it would be fixed up on the same basis.
13160. *Mr. Bruce Smith.*] *Q.* You think that a man might have an examination which would fit him for either of the posts? *A.* Yes.
13161. *Q.* What conclusion have you come to with regard to the difficulty presented to you by Mr. Robertson, that if a Manager wishes to choose a man as deputy, he might have to wait until that man had undergone an examination. Would it not be better to have a standard oral examination, and to let anybody go up for it who is ambitious enough to fill such a position, and then to require Managers to choose firemen who have passed the examination? *A.* I see the difficulty, and I think it would be better to adopt the plan suggested.
13162. *Q.* You think the work could be done by the existing Board of Examiners, without creating a new Board? *A.* Yes.
13163. *Q.* In connection with that certificate, what would you recommend for the guidance of shot-firers. *A.* At present General Rule 12, section 47, is very involved, and it is very difficult for the ordinary lay mind to understand it, and I think it would be well to lay down a set of instructions for the guidance of these men.
13164. *Q.* I ought to give you the chance of prefacing your evidence by saying that you are expressing your opinion now subject to the right of modification, in matters of detail after you have heard what the Managers of the mines may say with regard to the practicability of the suggestions made. *A.* Yes.
13165. *Q.* You are giving evidence so that the Managers may know what you are prepared to recommend in the absence of any evidence from them? *A.* Yes.
13166. *Q.* Recommendation No. 2 is that "Inspectors should be vested with absolute power to order the use of safety-lamps." You remember the various opinions expressed on this matter? *A.* I do not approve of the absolute form of the recommendation.
13167. *Q.* What do you propose? *A.* I would propose that the Chief Inspector should have power to enforce the use of safety-lamps, subject, however, to arbitration, as provided by the Coal-mines Regulation Act, section 25.
13168. *Q.* Why would you make that qualification for arbitration instead of giving absolute right to the Chief Inspector? *A.* I think that the other side should be heard as well. Both miners and owners should be heard with reference to the proposal.
13169. *Q.* You take it that the proprietors or the Manager might be able to show that the information communicated to the Inspector was incorrect? *A.* They might be able to show that.
13170. *Q.* And you think that it would be a fair solution of the question to allow both sides to be heard, and to let the Arbitration Court be the tribunal for the purpose of settling the matter? *A.* I think that would be a fair solution of the difficulty.
13171. *Q.* Pending the finding of the Arbitration Court what do you propose to be done? *A.* I think the manager should put in safety-lamps.
13172. *Q.* Do you think that the Manager ought to be required to do this? *A.* Yes.
13173. *Q.* Supposing your suggestion is adopted, would that not be a more favourable one with regard to the interests of the proprietors than the practice in England at the present time. I think, there, that the Home Secretary has absolute power, which comes to him from information supplied to him by the Inspectors to order the use of safety-lamps in any mine. *A.* That is so.
13174. *Q.* The third Recommendation is, that Ventilation by furnace should be prohibited, and fans substituted?" *A.* Yes.

13175. *His Honor.*] *Q.* I might ask whether, in case of emergency in a large mine, you would recommend that the Mines Department should be bound to supply lamps temporarily, pending inquiry by arbitration, some fee, possibly, being chargeable against the Company? *A.* I think an arrangement like that might be come to.

13176. *Mr. Robertson.*] You see that a large number of safety-lamps could not be purchased within the colony. You might get fifty, but it would be impossible to get 500.

13177. *Q. Mr. Bruce Smith.*] The Department might obtain a supply of the lamps, and if they were not required by the Company they could go back to the Department. If they were required by the Company, permanently, they could be bought from the Department, and the Department could obtain more.

13178. *His Honor.*] I think that could be arranged for.

13179. *Mr. Bruce Smith.*] I was referring to the recommendation that "Ventilation by furnace should be prohibited and fans substituted." What have you to say with regard to this matter? *A.* Fan ventilation, especially in shallow mines, is no doubt more efficient and regular, than that by means of the furnace. Where inflammable gas is known to be given off in a mine, and the ventilation is found to be unsatisfactory, and more than thirty persons are employed underground at one time, it might well be required that a fan be erected.

13180. *Q.* Speaking more particularly about Mount Kembla. You heard the evidence of the miners on this question, and you also know something of your own knowledge? *A.* As regards Mount Kembla, where the upcast shaft is over 400 feet deep, and the quantity of air circulating is more than 80,000 cubic feet per minute, the ventilation, if properly conducted to the working places, is in my opinion sufficient to meet the present requirements of the mine; and after hearing all the evidence, I do not think its unsatisfactory nature has been sufficiently demonstrated to justify me in recommending an immediate change to fan ventilation. Further extension and development may demand an increased ventilating power in the future.

13181. *Q.* Where a demand is made that fans should be substituted for furnaces, what would you propose should be done? *A.* I would recommend that any such cases should be brought within the scope of section 25 of the Coal-mines Act.

13182. *Q.* You recognise that the change from furnace to fan may involve very large expenditure? *A.* It may.

13183. *Q.* And where an Inspector has come to the conclusion that a fan should be substituted for a furnace you would allow a Company to have a say in the matter and refer it to the tribunal under the Act? *A.* Yes.

13184. *Q.* Would not that be the case now under the Act? Could not the Inspector require a mine owner to put in a fan? *A.* Not with reference to ventilation. That is dealt with in the first General Rule.

13185. *Q.* Then it does not come under the Arbitration provisions of the Act? *A.* No.

13186. You would bring the matter under the Arbitration provisions. *A.* Yes, that is my idea.

13187. So that it will rest with the Inspector, if he comes to the conclusion that the ventilation is unsatisfactory, to require the Company to "show cause" why they should not substitute a fan? *A.* Yes.

13188. *His Honor.*] *Q.* You would simply remodel that provision which has reference to matters already provided for? *A.* Yes.

13189. *Q.* I suppose that provision continually hampers the action of the Inspector? *A.* Yes.

13190. *Mr. Bruce Smith.*] I think that the words "Matters not already provided for," could be struck out and that would bring in the question of both fans and safety-lamps.

13191. *His Honor.*] Or anything else. Why should the action of the Inspector be hampered in this manner?

13192. *Mr. Bruce Smith.*] Mr. Wood informs me that the present wording is the result of too closely copying the English Act of Parliament, which has already been altered in many ways, and, therefore, these parenthetical words in the Act might be taken out.

13193. *Q.* There are some special circumstances connected with the Mount Kembla case in connection with the Sydney water supply? *A.* The Kembla upcast shaft is on the catchment area of the Sydney water reserve.

13194. *Q.* You may mention if that affects the Board in any way? *A.* The Metropolitan Board of Water and Sewerage object to mining operations on the surface of this area. In fact, it is understood between that Board and the Mines Department that any leases of that area shall only be granted on the understanding that no mining operations are conducted from the surface.

13195. *Q.* Does that provision apply to any other mine besides Mount Kembla? *A.* Yes, to several on the coast.

13196. At present no building is involved on this area or the presence of any workmen, or any sort of work on the surface? *A.* No.

13197. *Q.* There is merely a hole in the earth and a funnel? *A.* Yes.

13198. *Q.* Where a mine is so situated geographically that a fan would be away some hundreds of feet up a mountain, will you tell the Commission if there would be any practical objection, more especially if any motive power were necessary, to having the fan in that remote part, away from the Manager, the undermanager, and all the other working operations of the mine? *A.* It would not be likely under those circumstances that a fan would be under the daily supervision of the officials in the same manner that the furnace now is.

13199. *Q.* How many men would it involve for the actual working of a fan? *A.* Three.

13200. *Q.* Three men continually? *A.* One on each shift.

13201. *Q.* So that there would be one man there only at a time, and he would be far removed from the administration of the mine, and upon him alone the ventilation of the whole of the mine would depend? *A.* Yes, unless some other arrangements were made.

13202. *His Honor.*] I was just asking Mr. Ritchie whether anybody would ever dream of putting up an engine on the top of a hill, so far away from the general workings; and he says no.

13203. *Mr. Robertson.*] *Q.* In the event of a fan, you do not want this shaft at all? *A.* The top of the upcast shaft would in this case be the best position in which to place a fan, having regard to the workings, and the shaft being in a central position.

Witness—A. A. Atkinson, 4 February, 1903.

13204. *Q.* In the case of Kembla the shaft is already there, and in a favourable place where a fan could be put. In the event of starting a new colliery, would you not make arrangements to bring the return air to the fan near to the tunnel mouth? *A.* You would have to do that in the first working of a mine, whatever was done in the future.

13205. *Mr. Bruce Smith.*] *Q.* I am keeping myself to Mount Kembla? *A.* I am only speaking of Mount Kembla as it stands at present.

13206. *Q.* Do you admit that if they were starting another Mount Kembla, or any other mine, it would be possible to arrange a fan so that the ventilation would be near the entrance? *A.* Yes.

13207. *Q.* And bring the return air back so that the arrangements could be within the province of the General Manager? *A.* Yes.

13208. *His Honor.*] *Q.* The question is, what Mr. Atkinson thinks should be done in the present case, and whether it would be reasonable to put a fan on the top of a mountain to keep the present system as it is? *A.* The better place for a fan would certainly be at the top of the upcast shaft—that is, of course, accepting all conditions as they are at present.

13209. *Mr. Robertson.*] *Q.* And having regard to the arrangements underground? *A.* Yes.

13210. *Mr. Bruce Smith.*] *Q.* Under any circumstances would you confine the work of attending to a fan to one man? *A.* No, I think it would be more reasonable to have at least two men about.

13211. *Q.* You do not think that the ventilation at Mount Kembla at the present time is shown to be unsatisfactory, and therefore you do not recommend any change? *A.* I do not think it is unsatisfactory at present. And I may say that I think the difficulty of getting fan shafts will present itself in other collieries on the catchment area, and if the Commission could make any suggestions or recommendations which would assist the Board in this matter it would be a good thing.

13212. *His Honor.*] *Q.* Is it not usual, where fire is employed, to go in for level ventilation? *A.* At some of the mines, whose properties extend much further back, it may be necessary for them to have some ventilation shaft further back, such as Mount Kembla has.

13213. *Q.* A true upcast. *A.* Yes. Where these mines have to go 3 or 4 miles back they will require some shaft on the catchment area.

13214. *Q. Mr. Bruce Smith*: *Q.* And that will be quite irrespective of any return of air to the front of the mine? *A.* Yes, irrespective of that.

13215. *Q.* And you suggest that the Department of Mines should have power to deal with this matter in a way that would harmonise with the desires of the Water and Sewerage Board. *A.* Yes.

13216. *Q.* With regard to Recommendation No. 4 "waste workings to be absolutely sealed off and surrounded by returned airways for fear of emissions, such return airways not to come in contact with the airways." What do you say with regard to that? *A.* The proposal to absolutely seal off waste workings is opposed to the best principles of the best mining authorities.

13217. *Q.* Are there any circumstances in which you would seal off a waste working? *A.* Unless to seal off a fire or anticipated fire, all waste workings and goaf edges should be left open to return airways, the former being ventilated as far as practicable, and the edge of the latter swept by a ventilating furnace. In this way noxious and inflammable gases would be regularly dispersed, instead of being allowed to accumulate.

13218. *His Honor.*] *Q.* I do not catch what you said about sweeping the edge of the goaf by a ventilating current. I suppose you would leave the waste open to the return airways? *A.* What I said was that unless it was to seal off a fire, all waste workings and goaf edges should be left open to return airways.

13219. *Q.* I see, you mean the return airways? *A.* Yes.

13220. *Q.* But you provide for any special inlet of air? *A.* No, only the return air—that is, after it has been round the mine; but in some cases fresh air might be necessary.

13221. *Mr. Bruce Smith.*] *Q.* Would it act as a draw? *A.* The object is to carry away any noxious gases.

13222. *Q.* You do not propose to pass the intake air through the goafs at all! *A.* No.

13223. *Q.* You suggest then that the goaf should be sealed off on the intake side? *A.* Yes, there should always be a sealing off between the intake and the return air. But there should not be a sealing off in such a way as is, I understand, proposed by this recommendation.

13224. *Mr. Ritchie.*] *Q.* Do you mean that no intake air should pass the edges of these goafs? *A.* Yes.

13225. *Mr. Bruce Smith.*] *Q.* The return air would be at that stage when it would not have to go on to any men? *A.* Yes.

13226. *Q.* But it might be returning from some men, and passing on to other men? *A.* If it is, it should not be allowed to go through the goaf.

13227. *Q.* I suppose you would not call it return air if it went on to any other men? *A.* No.

13228. *Mr. Ritchie.*] *Q.* Return air is air that is done with? *A.* Yes.

13229. *Mr. Bruce Smith.*] *Q.* You mean after it has been to all the men and at the time when it is going to no more men? *A.* Yes.

13230. *Q.* You have heard witnesses speak of the way in which the waste workings have been inspected in the Kembla mine? *A.* Yes.

13231. *Q.* How ought they to be inspected? *A.* I think that the inspection of waste workings and goaf edges should be made with a locked safety-lamp in all cases.

13232. *Q.* Would you leave that a matter of discretion? *A.* No.

13233. *Q.* How does that matter stand now;—are all mines using locked safety-lamps for the purpose? *A.* Yes.

13234. *Q.* Then the practice is generally adopted? *A.* Yes.

13235. *Q.* Do you think, as you saw Mount Kembla, that the 35-acre goaf was left open to the intake? *A.* I only saw it after the explosion. I am not sure about all the places on the north edge of that goaf.

13236. *Q.* Did you not see it some months after the explosion. Was the 35-acre goaf then open to the intake? *A.* It was some days after; I did not see it on the November or December visits; but I quite agree with the objections offered to the practice of allowing a goaf to be open to an intake.

13237. *Q.* The fifth Recommendation is, that "All places except prospecting drives should have cut-throughs not more than 30 yards apart"? *A.* I think the principle embodied in the recommendation is undesirable, especially in deep mines, because (1) it might have the effect of making the pillars too small to carry the superincumbent

superincumbent strata, and (2) each opening, although temporarily closed by means of a stopping, affords an avenue for leakage of air, which over long distances amounts to a large percentage of the total volume, and on that account openings by means of cut-throughs should be avoided as much as possible.

13238. *Q.* Has the practice of placing cut-throughs near to one another led to any results in New South Wales? *A.* Yes, the practice of pillars being too small has led, in many cases, to creeps, which have resulted in the loss of a large quantity of coal.

13239. *Q.* You have heard witnesses speak of the loss of 2,000 or 3,000 tons of coal in the 35 acre goaf, in consequence of the want of adequate support? Was that feasible? *A.* It might have been caused by leaving small pillars.

13240. *Q.* What is the weight of the ordinary strata overlying the coal? *A.* The weight of the ordinary strata overlying coal-seams is equal to 1 lb. to the square inch to every foot in the altitude.

13241. *His Honor.*] *Q.* Do you mean for every vertical foot? *A.* Yes. It is equal to 1 lb. per vertical foot per square inch.

13242. *Mr. Bruce Smith.*] *Q.* You do not think that cut-throughs are necessary to give satisfactory ventilation? *A.* Not so long as the ventilation is carried to the face.

13243. *Q.* What is the extent to which pillars are left in Great Britain? *A.* They vary to a considerable extent according to the depth of the mine. In some cases they are 100 yards square; and in other cases pillars 66 yards square, or 44 yards square, are common.

13244. *Q.* You think that, if cut-throughs are placed too close to one another there would be a constant source of leakage, if they were not effectively stopped? *A.* Yes.

13245. *Q.* It is proposed in Recommendation No. 6 that "there should be an inspection with locked safety-lamps in all cases"? *A.* I think that is a necessary precaution, and should be made universal in view of the uncertainty as to when inflammable gas may make its appearance.

13246. *His Honor.*] You heard the evidence given by Mr. May on that point, perhaps Mr. Atkinson might like to say something about that?

13247. *Mr. Bruce Smith.*] I do not remember what Your Honor refers to.

13248. *His Honor.*] Mr. May was evidently under the impression that, if a flare lamp was used in a mine, the safety-lamp should not only be unlocked, but should also be used for marking the roof with—for burning a mark on the roof.

13249. *The Witness.*] I have heard of that suggestion; but I do not approve of it.

13250. *His Honor.*] I suppose that is founded upon some old practice.

13251. *The Witness.*] It is founded upon the practice of burning gas—actually setting fire to it—which is described in Galloway's book.

13252. *Mr. Robertson.*] *Q.* A practice which obtained some time in the last century, I suppose?

13253. *Mr. Bruce Smith.*] We had two witnesses who said that they set light to gas in order to get rid of it.

13254. *Q.* Recommendation No. 7 is, "Monthly examination and report by deputy and District Inspector with the hydrogen flame"? *A.* In the first place, this recommendation is indefinite as to the scope of the examination. I do not approve of putting hydrogen lamps into the hands of every deputy, as they require most careful manipulation, and in the hands of inexperienced persons might become a positive danger.

13255. *Q.* What is the principle of the lamp? *A.* The principle of the lamp is the attachment of a cylinder of highly-compressed hydrogen (1,500 lb. to the square inch), and the excessive liberation of this gas might easily burst the lamp, and so expose an open flame, perhaps under most dangerous conditions.

13256. *Q.* Is the recommendation differential? *A.* It is not differential? Nothing is stated as to whether hydrogen lamps should be used in shale-mines, and other mines in which fire-damp has, as far as I know, never been seen, as in the west.

13257. *Q.* It is made universal in the recommendation? *A.* Yes, I take it that the intention is to make it universal.

13258. *Q.* Talking about the examination of deputies and firemen, would you make a recommendation that they should be examined with regard to the hydrogen lamp? *A.* There would be no harm in examining them on the subject; but, generally speaking, it would be better to leave the matter in the hands of more experienced men.

13259. *Q.* You have received a letter from Mr. J. S. Martin, H.M. Inspector of Mines for the Southern District of England, in which he refers to the use of the hydrogen lamp? *A.* Yes.

13260. *Q.* Does he not state in this letter:—

> It is very little used in this country, and for my own part I hold that the lamp ordinarily in use in a mine is the one upon which action should be taken. It is to my mind the indicator at the disposal of the ordinary officials and workmen; and they should act on and in accordance with it. I do not go so far as to require, or act on, the hydrogen lamp indications, if not visible in the other.

That letter was written to you, I believe, on the 15th of December last? *A.* Yes.

13261. *His Honor.*] *Q.* Which make of lamp does Mr. Martin speak about? *A.* He makes no reference to any particular make of lamp.

13262. *Mr. Ritchie.*] *Q.* I suppose he means any particular safety-lamp which may be in use in a mine? *A.* Yes.

13263. *Mr. Bruce Smith.*] *Q.* Recommendation No. 8 is—"A minimum of 500 cubic feet of air per minute to be provided for every horse, instead of 100 as at present"? *A.* With reference to that I may say that the Act now provides for an average of 100 cubic feet for every man, boy, and horse. The air required by a horse at work is equal to 200 cubic feet per minute, and every man requires 42 cubic feet per minute. With twenty-five horses and—say—300 men, as at Mount Kembla, the present minimum provides double that which is actually consumed, but allowing liberally for vitiation, there still would be an ample margin.

13264. *Q.* Is the actual supply confined to the minimum? *A.* No, generally speaking the actual supply is never confined to the statutory minimum; and, having reference to the powers of the Inspector under General Rule 1, section 47, I do not see any necessity to alter the law in the direction suggested.

13265. *Q.* Recommendation No. 9 is—"All doors to be erected so as to close and remain closed of their own motion." Is that an alteration in the existing requirements? *A.* No. The special rules now require this to be done.

Witness—A. A. Atkinson, 4 February, 1903.

13266. *Q.* Can you name any mines in England in which the same special rule is observed? *A.* There are a very large number of mines where the rule is enforced.
13267. *Q.* Do I understand that if there are any doors in existence in any New South Wales mine which do not close automatically, it is against the special rule? *A.* Yes.
13268. *Q.* Mines in which this rule is enforced in England are among some of the largest? *A.* I think that there was some slight modification of the rule at the Metropolitan Colliery to suit the local circumstances.
13269. *Q.* Is the rule generally observed? *A.* It has always been observed.
13270. *Q.* I suppose that if the doors were to close automatically that ought not to render the miners less careful to see that they are closed and that no pieces of coal, or anything else, are allowed to keep them open? *A.* I do not think that it would remove the responsibility from the workmen of seeing that the doors are actually closed. In fact, where the rule has been in force persons have been prosecuted for not attending to it.
13271. *Q.* Here? *A.* No, not here.
13272. *Q.* I have heard a suggestion that the rule is not in force here—is that true? *A.* It is in force here.
13273. *Q.* And is there a rule in force here under which men could be prosecuted for leaving such a door open? *A.* Yes.
13274. *Q.* Recommendation No. 10 is that there should be "Double doors on drives between main intakes and returns, and on main headings"? *A.* I think it is required that this should be done now—except perhaps in main headings. I know it is in main intakes and returns.
13275. *Q.* A special rule has been made since the Mount Kembla disaster? *A.* Yes.
13276. *Q.* Are there special rules in England requiring double doors? *A.* Yes, in nearly all districts.
13277. *Q.* What is the exception you spoke of? *A.* The way the special rule is framed is to require double doors on drives as between main intakes and returns. This recommendation also mentions main headings. I think that having double doors between main intakes and returns has been usual so far as drafting the rule is concerned, but it may be necessary to carry it a little further in some cases.
13278. *Q.* Do you see any objection to carrying it further? *A.* The only objection would be that of altering the rule just after it has been passed.
13279. *Q.* If there are a number of other alterations being made it could be done? *A.* It could be done then.
13280. *Q.* Would there be any difficulty in including the main headings in the practice? *A.* You would not require double doors in the last cut-through near the face. You would have to draw the line somewhere, and it is difficult to say where the line should be drawn.
13281. *Q.* Recommendation No. 11 is that "A weekly measurement of air should be taken in each section and a report thereof sent to the Inspector." What is the present practice? *A.* At present the air is measured and recorded by—(1) Management, monthly, as per General Rule 1, section 47; (2) Inspectors during the ordinary visits of inspection; (3) by the check-inspectors on behalf of the workmen.
13282. *Q.* Would the proposal made in the recommendation increase the safety of the mine? *A.* No. Having regard to what I have stated, and to the fact that the proposal if put into operation would not, in my opinion, ensure increased safety to the workmen, whilst it would add largely and unnecessarily to the work of the management, and considerably increase the clerical work of the Inspectors, I cannot recommend a change in the manner indicated.
13283. *Q.* Recommendation No. 12 is: "An extra supply of safety-lamps and their requisites equal to one-third of the number of persons employed below ground to be kept constantly in good order and ready for use." What do you say about that? *A.* Having regard to the evidence that has been given in connection with the Kembla explosion, I would recommend that for the use of rescue parties in the event of accident, where safety-lamps are not required to be used for ordinary work, there should be kept a supply equal to one-fifth of the number of underground workers. Where safety-lamps are required for ordinary purposes, and where, therefore, a certain number of those ordinarily used would be available in the event of accidents, I would recommend that additional safety-lamps be kept in excess of ordinary requirements equal to one-tenth of the number of underground workers.
13284. *Q.* You heard the evidence of the difficulty experienced at Mount Kembla with regard to obtaining lamps to go to the rescue of the men? *A.* I did.
13285. *Q.* And your recommendation is, to some extent, based on that? *A.* Yes.
13286. *Q.* Do you remember with regard to the accident at Stockton, what took place? *A.* That was before my time, but I understand that a number of rescuers were lost in attempting to recover men from the mine.
13287. *Q.* Did they have safety-lamps? *A.* They would not have safety-lamps but naked lights.
13288. *Q.* What would probably be the cause of this accident to the rescuers? *A.* Sometimes it is the danger of too many persons, especially inexperienced persons, rushing into a mine.
13289. *Q.* You think that the happy medium is required? *A.* I think that care should be exercised in selecting those who might be allowed to go in. There should not be an indiscriminate rush of men, and possibly of inexperienced men.
13290. *Q.* You heard some of the witnesses say that during certain hours the whole of the safety-lamps would be in use in a mine? *A.* Yes.
13291. *Q.* Is that why you require a fifth and a tenth extra? *A.* Yes.
13292. *Q.* In the case of the Mount Kembla Mine it would give thirty extra lamps, on the assumption that the whole of the lamps were in use? *A.* Yes.
13293. *Q.* You think that would be quite enough? *A.* Yes.
13294. *Q.* What about the material. Would you require the lamps to be kept ready trimmed, like those of the wise virgins, all ready to be lighted? *A.* Not as long as there is a supply of oil and wicks, and as long as the lamps are otherwise ready. If the lamps were filled with oil and allowed to remain unused for some weeks, they could not afterwards be used immediately.
13295. *Q.* You merely require that a supply of material should be kept on hand? Yes.

[At 4 p.m. the Commission adjourned until 10 o'clock the following morning.]

THURSDAY,

THURSDAY, 5 FEBRUARY, 1903.

[*The Commission met at the Land Appeal Court, Darlinghurst.*]

Present:

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq, (Commissioner). | D. RITCHIE, Esq., (Commissioner).

Mr. Bruce Smith, Barrister-at-Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf of the Crown.

Mr. A. A. Lysaght, Solicitor, appeared on behalf of—

(*a*) the representatives of deceased miners, wheelers, &c. (victims of the explosion);
(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.); and
(*c*) the Illawarra Colliery Employees' Association (the Southern Miners' Union).

Mr. G. J. Barry, Solicitor, appeared on behalf of the Mount Kembla Coal and Oil Company (Proprietors of the Mount Kembla Mine).

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings.)

Mr. A. A. ATKINSON, previously sworn, was further examined, as under:—

Examination-in-chief by Mr. Bruce Smith (*continued*):—

13296. *Q.* You were just going to start Recommendation No. 13, as to the watering of the haulage roads and other places necessary. What opinion have you formed with regard to that? *A.* Well, I have already suggested that, where practicable, coal-dust should be watered; but I should like to hear what the mine managers have to say with reference to the matter; and when I give evidence again, probably towards the end of the Commission, I shall be in a better position to submit some proposal to the Commission for their consideration.

13297. *Q.* I think you have gone very fully into this, in your own mind, have you not? *A.* Yes.

13298. *Q.* And I think that you have recognised the difficulty of laying down any hard-and-fast principle, applicable to all mines? *A.* I have.

13299. *Q.* I will lead you this far; I think you recognise that each mine must be treated according to its own peculiar conditions? *A.* Certainly, yes.

13300. *Q.* And I think the present leaning of your mind is this—see if I put it properly—that this question of watering should be one to be brought within the province of that clause which allows the Inspector to make some additional requirement to anything that may be done by the management; and, in the event of the management not approving of that, to let it be determined by arbitration under that provision? *A.* Yes, I think that would be a commendable and reasonable course to accept.

13301. *Q* That is your present feeling in regard to it; but, after the Managers have heard that general statement of your opinion, and have given evidence, you will be prepared to lay down some more definite proposal? *A.* Yes.

13302. *Q.* Some of the mines, to your knowledge, have a practically unlimited supply of water always at hand? *A.* Some few; but they are decidedly in the minority.

13303. *Q.* And some, you know, have so little supply that they would have to bring anything required for the purpose from outside? *A.* That is so.

13304. *Q.* That is one reason why it is a little difficult to lay down any general rule which would be applicable to all mines.

13305. *Q.* Now, leaving that for the time being, and passing on to Recommendation No. 14. That is a proposal that managers should be compelled to give more personal time and attention to the management of their collieries. What do you say about that? *A.* Well, at present, either the manager or the under-manager is required by the Act to give daily personal supervision to the mine; but I think that in some cases, there is a tendency on the part of the manager to delegate most of the underground work to the under-manager.

13306. *Q.* And what is your opinion of the duty of a manager under ordinary circumstances? *A.* Well, under ordinary circumstances, I think that a manager should endeavor to go underground, and visit some of the workings, returns, &c., two or three times a week; and it would be advantageous if they were required to make a report in a book for the purpose, indicating the general result of their investigations, and the parts of the mine inspected.

13307. *Q.* You feel the same difficulty, in regard to that, in laying down any hard-and-fast rule, do you not? I mean, as to how much of the mine they should visit; or how often they should see it! *A.* Well, I do not exactly see the same difficulty as in the other question.

13308. *Q.* Not to the same extent, no. *A.* I have suggested that, generally speaking, two or three times a week they should endeavour to visit underground.

13309. *Q.* To be in the mine? *A.* To be in the mine and visit the underground workings. There might be occasions when that would not be possible. That is my general idea of what they should endeavour to do, having regard to other work and responsibilities attached to them.

13310. *Q.* Then you will put your proposal in regard to that in a more definite form, after you have heard the Managers' evidence? *A.* Yes, if it is desired to do so.

13311. *Q.* Recommendation No. 15 is a suggestion that instruments should be placed at the bottom of the upcast to determine variations of heat and air pressure? *A.* Well, at present, a barometer and thermometer are required to be kept above ground in a conspicuous place near to the entrance of every mine, according to General Rule 34, section 47; and, in addition, a water-gauge, where a fan is in use. I cannot recommend any other instruments for the purposes suggested.

13312. *Q.* Regarding this manhole suggestion, No. 16, what have you to say? *A.* The present size of the manholes required by General Rule No. 14, is 6 feet high, 3 feet wide, and 4 feet deep. I think this is ample size, and have heard no evidence that leads me to recommend any change.

Witness—A. A. Atkinson, 5 February, 1903.

13313. *Q.* Now, with regard to Recommendation No. 18, a proposal that the employees should be instructed regularly as to the means of escape, what have you to say? *A.* In view of the possibility of explosion, fire, or inundation, underground, it is no doubt desirable that miners and other employees should be conversant with all the possible roads out of a mine; and, in some cases, managers have taken means to inform them, both by allowing them to travel the different routes, and by indicating the routes by means of guide boards. I would recommend that, whenever a party of six underground workers request to be shown the different routes out of the mine, it should be the duty of the manager to allow them to go, accompanied by a competent official; so long as this request is not made more than once in three months.

13314. *Q.* You did not mean to limit it to once in three months for six men? *A.* The same six men not to go more than once in three months.

13315. *His Honor.*] *Q.* Or any of the same six? *A.* Or any of the same six, not more than once in three months.

13316. *Mr. Bruce Smith.*] *Q.* Well, in connection with this matter, I think there is some statement made by Mr. Hall, Inspector of the Liverpool District, England? *A.* Yes, in connection with the fire which took place at the Bamfurlong Colliery in 1892.

13317. *Mr. Bruce Smith.*] I will read it:—

> Mr. Woods, one of the Miners' representatives at the inquest, laid stress on the importance of having some method of making known to the workmen generally the position and whereabouts of the return air-roads, so that, should the necessity arise, they might be enabled more speedily to avail themselves of such roads for escape. This is, no doubt, very desirable; and it is, perhaps, a matter which has not received the attention it ought. I would suggest, with this object in view, that batches of the workmen should, from time to time, be compelled to return from their work by way of the return air-roads, and thus become familiar with them.

13318. *Q.* Well, Recommendation No. 19 was that question of a black-list. What do you say about that? *A.* Well, as this is a matter not affecting in any way the safety of the persons employed in or about mines, I am of opinion that it should not have any place in the Coal Mines Regulation Act. As to whether the question should be dealt with by legislation is a matter for the Commission.

13319. *His Honor.*] *Q.* It is too general a question? *A.* Yes, your Honor.

13320. *Q.* It would apply to other industries just as much as to the mining industry? *A.* Yes: it does not refer to questions of safety in any way.

13321. *Mr. Bruce Smith.*] *Q.* Now, the 20th suggestion is that safety-lamps should not be unlocked for shot-firing. How does that stand, in the present state of the law? *A.* This practice is at present permitted by General Rule 10. There are, however, safer methods of firing shots; and it would, in my opinion, be advisable to prevent lamps being opened for the purpose. It may, however, be pointed out that it is not so dangerous to open a safety-lamp as to fire a gundowder shot in a working place; one being a small, steady flame; the other sometimes of considerable length, and always accompanied with force. I would like to add, in connection with this matter, that safety-lamps are frequently opened for the purpose of re-lighting lamps, which is permitted by General Rule 10, at stations specially appointed for the purpose. I have some little evidence on the question of opening lamps to fire shots, taken from the Royal Commission on Accidents in Mines, 1881, which might be of some interest to the Commission to hear the opinions therein expressed.

13322. *Mr. Bruce Smith.*] Perhaps your Honor will take a note of this: it is another reference and to be found in Bulman and Redmayne, on "Colliery Working and Management," page 164. I will just read the evidence from the Royal Commission referred to, which is as follows:—W. Lishman, Mining Engineer to the Earl of Durham, was asked:

> "*Q.* You always fire by means of a naked flame, the cap of the lamp being taken off? *A.* Always. I believe, when I stated the number of shots fired daily by us, I said 500, if I mistake not. The average number is really 677."

Mr. W. Wright, a miner at Dinnington, and Seaton Burn Collieries, was asked:

> "*Q.* How are they fired where you have been? *A.* The deputy examines the place; and as soon as he discovers no gas or no danger, then, of course, he takes his own lamp off and fires the shot.
>
> "*Q.* He takes the top off the lamp and fires with the flame of the lamp? *A.* Yes.
>
> "*Q.* Are you speaking of places where the safety-lamps are used in the colliery that the deputy goes in and takes his lamp-top off in preference to straw or touch-paper? *A.* Yes; of course it is well known there is very little gas, and the lamps are simply used as a precaution; and where that is done nobody has seen gas, but they are afraid that some gas might be near."

Mr. W. T. Craig, Mining Engineer in North and South Staffordshire, and North Wales, gave the following evidence:—

> "*Q.* And, in the cases where you have a lamp there, how do you set fire to the fuse? *A.* The fireman takes his lamp-top off after examination, and gives the man the light; and he fires the fuse. The fireman and he retires for some distance, and the shot is fired; and then the fireman returns and looks round to see if it is all right, and to see that no brattice or timbering wants attention. Both the life of the fireman and the man depend upon the accuracy of that examination, and there is the safeguard against general neglect of ventilation in firing the shot. If there is gas, he is not obliged to work there. If that gas is from very defective ventilation, generally, air-roads are attended to; and there is no fear of their being neglected if this examination is carried out. I have worked fiery seams in North Wales as well as Staffordshire."

13323. *Q.* Well, notwithstanding the widespread adoption of this practice, what do you think ought to be done? *A.* I think that it leads to lax discipline, by giving, possibly, the miners and other employees an idea that, if an official may be allowed to open a lamp for the purpose of firing a shot, they might claim the same sort of permission for themselves. Therefore, I think it should be avoided, and some better means of firing shots adopted.

13324. *Mr. Bruce Smith.*] Mr. Atkinson, your Honor, has just tabulated a number of authorities which might be useful to the Commission. I will hand them in. They are authorities on mining, particularly in reference to colliery explosions; references and authorities on the coal-dust theory; opinions *re* watering coal-dust; references as to the quantity of water required for watering coal-dust; advantages of watering coal-dust; damp places arresting explosions; the quantity of dust that is dangerous; the weight of coal-dust; papers referring to coal-dust in the transactions of the Federated Institute of Mining Engineers; and references from "Explosions in Coal Mines," by W. N. and J. B. Atkinson.

13325. *His Honor.*] *Q.* Are references to the passages given in that list? *A.* References to the passages are given in some cases.

13326. *Mr. Ritchie.*] *Q.* Are the whole of these matters referred to in the parcel of books put in yesterday? *A.* No; there is a whole library referred to here.

13327. *Mr. Bruce Smith.*] I think Mr. Atkinson could supply the Commission with any of the books that are wanted.

13328. The list of references referred to was put in and marked Exhibit No. 25.

13329. *Mr. Bruce Smith.*] Your Honor will remember that I intimated that Mr. Atkinson thought it fair to express his opinion upon those twenty recommendations, in order that Mr. Wade, or somebody in his place, might have a general idea of the trend of Mr. Atkinson's mind; so long as Mr. Atkinson was allowed to reserve to himself the right to a final expression of opinion after the Managers had expressed their views on those twenty recommendations. Now, he has done that; but there are a good many matters dealt with in the evidence of the miners which will, no doubt, be answered much more fully by the mine-managers; and Mr. Atkinson thinks it equally fair that he should express his opinion upon some of those questions—they are very few—in order that the Managers may know what his opinion is on those also; but to again reserve his right to come in afterwards, in case their evidence may have the effect of modifying his present opinions, and of expressing himself definitely and finally then. I think that is a fair arrangement.

13330. *His Honor.*] It is just as well that they should know what Mr. Atkinson thinks, because Mr. Atkinson is representing the independent party, the Department.

13331. *Mr. Bruce Smith.*] In regard to these matters, Mr. Atkinson has not written out his opinion; and the members of the Commission may like to ask him some questions during his examinations.

13332. The first is that some stress was laid upon the possibility of black-damp acting as an agent in deranging the furnace. You remember Mr. Maguire gave some evidence about that.

13333. *Q.* You might express to the Court your opinion upon that possibility? *A.* Having regard to the large quantity of air which was circulating over the furnace, I think that it is highly improbable that any such discharge of black-damp would be likely to be given off as would put out the furnace. There were between 80,000 and 100,000 cubic feet of air passing per minute; and, seeing that it requires 15 to 16 per cent. of black-damp to extinguish a light, I think it is almost impossible to anticipate such a quantity. I have never heard of a furnace having been put out by black-damp.

13334. *Q.* I suppose it is, physically, possible? *A.* It is physically possible. In France they have had one or two cases of outbursts of black-damp, or carbonic acid gas.

13335. *Q.* In the vicinity of the furnace? *A.* I do not know whether it was in the vicinity of the furnace; but, had it occurred in the vicinity of the furnace, such an occurrence might have the effect of putting the furnace out; but I am not aware of anything of that sort having occurred in this district.

13336. *Q.* Do you think, then, that it is a possibility which should have any weight in denouncing the furnace method of ventilation? *A.* Not in my opinion.

13337. *Q.* You remember that some evidence was given about what they called "mixed lights" in mines. Would you express your opinion as to what the phrase "mixed lights" really means? I mean to say, there are certain methods of working a mine with different lights, some open and some closed, that you do not think come under the definition of "mixed lights." I would like you just to tell the Court what your opinion is on that matter? *A.* I think there seems to be some misapprehension or conflict as to what "mixed lights" refers to. In the Old Country it is generally recognised that "mixed lights" meant part of the working faces being worked with open lights, and part of the working faces being worked with safety-lamps. That case, which I have put, would be, in my opinion, a true case of "mixed lights." In other cases, all the faces and working places might be worked with safety-lamps, but naked lights be permitted on the main intake air roads from the shaft bottom up to certain points, beyond which naked lights were not allowed to pass. That is a case which I do not think has generally been suggested as a case of "mixed lights," although I believe it is so recognised in this State.

13338. *Q.* Now, take the first class of mixed lights, the practice of having some of the faces worked with the naked light, and same of the faces and working places worked with safety-lamps—in your opinion is that safe or desirable? *A.* Well, it may be safe; but I think it is undesirable, as there are opportunities for persons working with naked lights, perhaps accidentally or unintentionally, going into places which should be worked with safety-lamps.

13339. *Q.* Then there is a danger about it? *A.* Yes.

13340. *Q.* A danger of lax conduct? *A.* Yes.

13341. *Q.* Now, with regard to the other practice, of working the faces with safety-lamps, and using naked lights on the main intake, on what you call the Flat? *A.* Up to the Flat very often. I think it is desirable that in that case some more definite rule should be given as to the limit to which naked lights should be allowed, from either the tunnel mouth, or the bottom of the downcast shaft, as the case may be.

13342. *Q.* Mr. May said, on page 464 of the notes, "I am speaking of Durham and Northumberland, where the whole face is almost invariably worked with open lights, and the goafs with safety-lamps." Well, is that the case now? *A.* No. Some of that might be going on when Mr. May was in England, in the county of Durham.

13343. *Q.* How many years ago, roughly? *A.* Fifteen years. Where they use safety-lamps in any portion of the face, it is an almost universal custom to use them in all of the faces. Of course, there are collieries, towards the out-crop, in the county of Durham, and also in Northumberland, where they use only naked lights, entirely.

13344. *Q.* Then he was asked, further, "*Q.* Are you aware that the mixed light system has been condemned by competent authorities"? and he says, "*A.* It all depends on the authority. Take Durham, where, I think, they produce 40,000,000 tons of coal; and the system has been open lights at the face, and safety-lamps at the goaf." Well, that is a repetition? *A.* Yes; the practice has been condemned by the best authorities in the county of Durham, and other mining districts generally; especially by the Inspectors of Mines, who have opportunities of seeing all the collieries.

13345. *Q.* Now, you have heard a number of witnesses speak of the occasional reversal of the air in Mount Kembla. Will you just express your opinion as to how that might come about, and as to the probability of its being frequent or serious? *A.* Well, in the case of a mine, such as Kembla, with an upcast shaft 400 feet deep, even with strong westerly winds, I am surprised that such a thing should occur; and I can only account for it on the assumption that, at the time, the furnace had not been properly attended to.

13346. *Q.* With a shallower upcast? *A.* With a shallower shaft I should not be so surprised to hear that such a thing had occurred as the reversal of the air, as has been described by several of the witnesses.
13347. *Q.* And you think that a shaft 400 feet deep is a sufficient guarantee that it will not be produced by a mere change of wind, unless there is some other influence operating? *A.* I think it would not occur if the furnace was properly attended to continuously.
13348. *Q.* That is simply a matter of discipline in the mine? *A.* Yes.
13349. *Q.* The evidence that you have heard of the reversal of air in Mount Kembla, which does not seem, so far as the evidence itself is concerned, to have been attended with any injurious results—would that affect your opinion that the Mount Kembla mine should be allowed to continue the present system of ventilation? *A.* No. I think that the colliery people would require to be asked to see that the furnace was regularly attended to.
13350. *His Honor.*] *Q.* Have any satisfactory means ever been invented yet, by means of fans operated on by the wind, or anything of that kind, to cause wind motion to neutralise a downward tendency in a shaft? *A.* Not that I am aware of.
13351. *Q.* They have, as you know, been tried with chimneys to a very great extent? *A.* Yes. I do not know of anything that has been similarly tried at the top of furnace shafts.
13352. *Q.* Practically speaking, they are impracticable, as far as you know? *A.* I should think so.
13353. *Mr. Bruce Smith.*] *Q.* I suppose, if the furnace of a boiler by which a fan is driven were neglected, the effect on the ventilation might be just the same as by the neglect of the furnace in an upcast shaft? *A.* Quite so, yes.
13354. *Q.* I mean to say that the motive power falls away, the revolutions of the fan are reduced in number, and the current of air is affected? *A.* Quite so, yes.
13355. *Q.* So it really depends, to a great extent? *A.* On human agency.
13356. *Q.* And that is a matter of discipline whether it is a case of a furnace in the shaft, or a case of a furnace under the boiler? Yes.
13357. *Mr. Robertson.*] *Q.* Do I understand you to say that you disapprove of naked lights on main roads? *A.* Well, I think that there is a tendency to allow these lights to go too far; and it would be desirable if some distance, perhaps, from the downcast shaft or tunnel mouth could be fixed by the Commission.
13358. *Q.* For instance, it has been suggested that this Kembla disaster was caused by a naked light on a main road? *A.* Quite so.
13359. *Q.* Which shows the danger of the practice, does it not? *A.* Yes, quite so. In the neighbourhood of goafs, or where falls may take place and so cause an issue of fire-damp.
13360. *Q.* And your own opinion is, that the naked lights, if permitted in a mine at all, should be confined to the vicinity of the downcast shaft or the tunnel mouth? *A.* Yes; or within a reasonable distance, for shaft siding operations.
13361. *Q.* But this explosion itself exemplifies the danger of a naked light, even on a main road? *A.* Yes, certainly it does. I might mention that, in Mr. Hall's report for last year, there is a special rule, which they have brought into force, with reference to the use of safety-lamps; and he gives a distance there of 200 yards from the downcast shaft, beyond which naked lights should not pass.
13362. *Mr. Bruce Smith.*] *Q.* I referred just now to the evidence which had been given by quite a number of the miners on this proposal that Managers should visit the mine more often. I see I have a reference here to a remark by Mr. McDonald—I think he was a witness whose demeanour entitled him to some consideration. He was asked "What is the average time you see the Manager in your place"? and he said, "*A.* Well, Mr. Jones has been there, at the mine, for twelve months or so; and I have seen him in my working place three or four times." Do you think that the miners themselves, who are working at the face, can form any idea of the time which a Manager spends in the mine by the number of occasions upon which they have seen him? *A.* No, I do not think they can tell it in that way. They can only ascertain from information received from persons who may see the Manager going in and out of the mine.
13363. *Q.* I mean that, in the intermittent way in which a Manager has to visit a mine, I take it, he might go into one part of the mine a great many more times than into another, and be seen very often, perhaps, by one set of men, and, perhaps, not at all by others? *A.* That might be so. He may be paying particular attention to one part of the mine; and visiting that a good deal more than others.
13364. *Q.* And he may have need to do it? *A.* He may have need to do it at times.
13365. *Q.* And therefore, a man working in a very safe part of the mine, which gives the management no anxiety, might measure the Manager's attendance in the mine very unfairly by estimating it according to the number of times he saw him? *A.* Yes, he might gain a wrong impression in that way.
13366. *Q.* And I take it that the evidence of the working miners, as to how often they see the Manager in their working places, is no criterion as to how much time the Manager spends in a mine? *A.* Generally speaking, not.
13367. *Q.* Now, you remember Mr. May dwelling for some time upon some single door theory of his, by which he said he could "co-relate"—I use his own word—the Mount Kembla and Bulli and Burwood disasters. You heard his evidence? *A.* Yes.
13368. *Q.* Now, I ask you, after hearing the whole of his evidence, can you point to any single part of it in which he shows that those three explosions had any common origin, either in fact or in theory? *A.* No, I cannot see any direct connection or comparison between the three, so far as doors are concerned.
13369. *Q.* And from your knowledge of the Bulli disaster, the Burwood disaster, and the Mount Kembla disaster, can you, yourself trace the three of them, or any two of them, to exactly the same cause in connection with a door? *A.* No. In so far as the Bulli explosion is concerned, it took place a number of years before I arrived in the State; and I only know of that from my reading of the report; but, from the information afforded in that report, it does not appear to me that the explosion was caused, either directly or indirectly, by a single door. As regards the Burwood explosion, that certainly had no connection with single doors.
13370. *Mr. Bruce Smith.*] Does your Honor remember the name of the mine which Mr. May referred to? It is here (in the notes) as "Burwood," and I think it was Dudley.
13371. *His Honor.*] It was Dudley.
13372. *Mr. Bruce Smith.*] *Q.* You were here at the time of the Dudley explosion. From your knowledge of the circumstances surrounding that explosion, would you attribute it in any way to any door? *A.* No.

Mr.

Mr. May did not give evidence at the inquest on the Dudley explosion; and I am not aware whether he was down the pit; but, if so, I do not know how far he was down, nor whether he saw the ventilation; but he has referred on several occasions to a single door on a cross-cut, some 150 or 200 yards from the downcast pit bottom. There was no evidence taken at the inquest to show that that door had been open, or had contributed to the accident in any way.

13373. *Q.* Was any evidence given at the subsequent inquiry, at which Mr. Wade presided as Commissioner? *A.* No.

13374. *Q.* None whatever? *A.* No.

13375. *Q.* Then, coming from those two to this explosion, have you heard any evidence so far, either at the inquest, or before this Commission, which points to any door as having been, directly or indirectly, accountable for this disaster? *A.* No.

13376. *Q.* Then you do not understand what Mr. May means? *A.* Well, I take it, that he means, in general, an objection to single doors.

13377. *Q.* That is, in the abstract? *A.* A principle which I share with him to the fullest extent.

13378. *Q.* Quite so; I will ask you about that. But do you understand what he means by "co-relating" these two disasters with the Mount Kembla disaster, as having originated from some identical or similar cause connected with a door? *A.* No; I do not think that the circumstances warrant such a connection.

13379. *Mr. Bruce Smith.*] I do not know, of course, and I cannot assume, Your Honor, how much importance the Commission attaches to Mr. May's evidence.

13380. *His Honor.*] Perhaps it is as well not to express any opinion.

13381. *Mr. Bruce Smith.*] No; but I want you to understand why I ask these questions. As Mr. May is there, and as he occupies that position, I want to ask Mr. Atkinson a few questions; because Mr. May may be, and I think he is, held in high estimation by the miners themselves; and, therefore, it is as well to answer anything he puts forward.

13382. *Q.* In regard to the proposal Mr. May made as to establishing independent Inspectors, he seemed to think that that was a sort of panacea for troubles of this kind—what have you to say about that? *A.* As a matter of fact, the Inspectors have separate collieries allotted to them at present.

13383. *Q.* It is the same, almost as having separate districts, as proposed by Mr. May? The collieries are grouped? *A.* Yes, and distinctly allotted to the separate Inspectors, so that there shall be no overlapping and no clashing of duties.

13384. *Q.* And no overlapping of jurisdiction? *A.* No overlapping of jurisdiction. But, if I gather rightly what Mr. May intends, it is to be able to mark on a map the districts allotted to the several Inspectors.

13385. *Q.* Well, is there any utility in that? *A.* There is nothing in it, that I can see, seeing that the Inspectors have now separate collieries definitely allotted to them, which is, in effect, quite the same.

13386. *Q.* The only difference between his suggestion, as put before the Commission, and the existing state of things is that, in addition to there being independent Inspectors for different groups of mines, there is a Chief Inspector who has a supervising control over all the other Inspectors? *A.* That is so.

13387. *Q.* And is not that the same state of things that exists in Great Britain at the present time, or in England? *A.* Yes, there are twelve Chief Inspectors for the various districts, and about twenty four Inspectors assisting them.

13388. *Q.* And then over all? *A.* Well, of course, the Home Secretary is over all.

13388½. *Q.* Is not there a Chief Inspector? *A.* For some years there was one of them selected as the senior Inspector. That was the late Mr. Wardell; but I am not aware whether there is, at the present time, any senior officer.

13389. *Q.* Then what official is it who supervises the general administration under these Inspectors? *A.* The Home Secretary.

13390. *His Honor.*] I think Mr. May said that the system in England was about as bad as it could possibly be.

13391. *Mr. Bruce Smith.*] I think he did.

13392. *Q.* Do you remember Mr. Hicks giving this piece of evidence, in answer to Mr. Lysaght—"I can show, from Mr. Atkinson's report for 1900, that, during the year, fire-damp was reported under general rule 4 at collieries, which included the Metropolitan, Bulli, Corrimal, Bulli Pass, and Mount Pleasant, in the Southern or Illawarra District. I propose to show to you that the Inspectors had knowledge of the existence of gas, and took no steps whatever to prevent any outbreak of it, although they knew of it in the various mines"? *A.* Yes.

13393. *Q.* Now, first of all, dealing with that generally, is it true? *A.* I think it is better, rather than to give a yes or no, to explain it.

13394. *Q.* Taken as a general statement, is that correct? *A.* No.

13395. *Mr. Lysaght.*] I object to that being taken as a general statement, because he can only answer for himself. He cannot answer for Mr. Bates, who was the Inspector at the time of the Mount Kembla disaster. I submit that a general statement like that should not be permitted by the Commission.

13396. *His Honor.*] You can cross-examine on that.

13397. *Mr. Bruce Smith.*] I am going to ask Mr. Atkinson to deal with each mine.

13398. *Witness.*] I cannot remember the details of each report.

13399. *Mr. Ritchie.*] Was that report put in evidence at the time the witness made that statement?

13400. *Mr. Bruce Smith.*] No; but I did not object to Hicks' saying that it contained such a passage, because Mr. Atkinson knows that he did draw attention, in that report, to the occurrence of gas in those mines.

13401. *Q.* Can you remember a reference in your report of 1900 to the finding of gas in the Metropolitan Mine? *A.* Yes.

13402. *His Honor.*] We had better have the report.

13403. *Mr. Bruce Smith.*] I thought, perhaps, it would take too much time. I thought Mr. Atkinson could probably deal with it, and show what was done.

13404. *Q.* Can you remember—if you cannot we will get the report—what took place with regard to that? Was it not reported that gas had been found in the Metropolitan Colliery? *A.* Yes. I might say, as I think I have already said, that, in order to show to the public and the mining community generally the extent to which fire-damp has been found in mines during the last few years, I have requested the Inspectors

to

to ascertain from the reports, and to give to me, the names of those collieries where fire damp has been reported under general rule 4; and I have inserted that in the Annual Report.
13405. *Q.* Well, under the law as it exists, could anything more have been done than has been done, in the cases of those mines in which gas has been found? *A.* No, I do not think it could.
13406. *Q.* Now, with regard to the Metropolitan, if you can remember, we will take that, as it comes first—prior to your issuing your 1900 report gas was found in the Metropolitan Mine? *A.* Yes.
13407. *Q.* What was done? *A.* Well, it is a mine in which safety-lamps are exclusively used.
13408. *Q.* Were they used at that time? *A.* Yes.
13409. *Q.* And safety-lamps are exclusively used in that mine? *A.* Yes.
13410. *Q.* Can you suggest anything further being done with regard to gas than is being done in the Metropolitan at the present time—I mean with regard to the appearance of gas, the presence of it in the mine? *A.* Well, there was some suggestion made by one of the witnesses that gas was not reported when it ought to be.
13411. *Q.* But I am asking, as far as the gas that came to your knowledge was concerned, or as far as the gas was concerned that came to the knowledge of the Inspectors, was there anything further that should be done that was not done? *A.* No. Safety-lamps were used, and everything possible was done, as far as I am aware: every care was taken; strict discipline is observed, and is in force.
13412. *Q.* Take Bulli; can you remember your reference to the Bulli Mine in your 1900 Report? *A.* I think Bulli has generally been mentioned.
13413. *Q.* What was done in Bulli? *A.* In 1900? I would suggest, as I cannot remember all the circumstances, it would be as well if we had all the papers. They can speak for themselves.
13414. *Mr. Ritchie.*] I think it would be better to have the papers.
13415. *Mr. Bruce Smith.*] *Q.* Do you, yourself, know of any failure on the part of any one of your Inspectors to take whatever steps were necessary in the case of those mines where gas was found? *A.* I do not.
13416. *Q.* Has any dereliction of duty been brought under your notice with regard to the Inspectors within whose groups those mines came at that time? *A.* I do not remember any.
13417. *Q.* I think you consider it desirable to draw the attention of the Commission to the evidence of Mr. Scott, page 704. I will read it. He was asked—"Your practice is to make no report of any gas"; and he answered, "My practice is to make no report on gas." He was then asked—"Are you going to continue that practice"? and said, "As far as I know, I will." Then he was asked—"If you find gas, you will not report it"? and replied, "It depends on circumstances." Well, as far as that attitude is concerned, Mr. Atkinson, you are quite helpless, are you not? *A.* Yes. He should know that it is a duty of his, by the special rules, to report gas; and I think it is a most regrettable attitude for a miner to take up.
13418. *Q.* You can do nothing in the matter, can you, where a man deliberately refuses to report gas in that way—what power have you? *A.* Well, I might have a talk with the man.
13419. *Q.* That is influence; that is persuasion. I am talking of power. Have you any legal power at all; or is there any legal power vested in any one by which such a man can be punished? *A.* Well, if he were doing the same thing again, if it came to the knowledge of the Manager, he could proceed against him.
13420. *Q.* You would then have to prove that he knew it, and did not report it? *A.* Yes.
13421. *Q.* You would have to prove that he knew it, by some admission of his, or in some other way? *A.* Yes.
13422. *Q.* Then, as regards his saying that he had frequently seen it but had not reported it to this day, you can do nothing? *A.* No.
13423. *Q.* Do you remember Mr. Wynn being in the box, the gentleman who posed as an expert on these matters? *A.* Yes.
13424. *Q.* Do you remember this part of his evidence, speaking of the measurement of air in mines, page 970: "*Q.* Where would you suggest that such measurements of air should be taken? *A.* I do not know that anything better can be arranged than what you have at present, with the instruments you have. My own rule was to measure the air as near the working face as I could get; but I found that that was not the rule with the Government Inspector. I often went to 100 yards nearer the face to take my measurements than the Inspector did." Now, will you tell the Court what is the recognised practice applicable to Inspectors? *A.* Well, they measure the air in all the splits; and, if there is any doubt in their minds as to whether the minimum is getting into the faces, they endeavour to measure the air as near to the working place as possible; sometimes on the outbye side of the first working place, sometimes in the split itself in the centre of the working places, and sometimes at the return airways.
13425. *Q.* That is the recognised practice, which you expect every Inspector to adopt? *A.* Yes.
13426. *Q.* Is that the same as the English practice? *A.* Yes.
13427. *A.* Well, men may differ in opinion as to whether it is necessary to go up to the face, may they not; I mean sometimes you will find such a quantity of air at say a distance of 100 yards from the face ——? *A.* Well, when there is a doubt about a leakage.
13428. *Q.* Is it not possible that one man may think there is no doubt about that, and that there is no need to go right up to the face? *A.* Yes. There is no doubt it is a matter of opinion as to which is the best place to measure the air.
13429. *Q.* He says here, "I often went to 100 yards nearer the face to take my measurement than the Inspector did." That is quite compatible with there being enough air in the Inspector's opinion? *A.* Yes.
13430. *Q.* That practice is the same as that in use in England? *A.* Yes, when I left.
13431. *Q.* I mean, when you left, the practice there was the same as that adopted here now? *A.* Yes.
13432. *His Honor.*] Wynn specially spoke, if I remember rightly, about the impossibility of measuring small quantities, for instance, 100 cubic feet or so with the machines at present in use—anemometers.
13433. *Mr. Bruce Smith.*] Yes. He said the anemometer would not show it.
13434. *His Honor.*] He also spoke about the averaging, objecting to measure the velocity in the centre of an air-course. Those questions might be of importance.
13435. *Mr Bruce Smith.*] *Q.* Well, with regard to those questions—first as to the anemometer, in measuring very small speeds or quantities of air, what is the average power of the anemometer? *A.* I do not think you can depend upon it to measure a velocity of less than 1 foot per second; and, unless you contracted the air going in to the face of a working place into a small section by a box or a pipe, the anemometer, as now constructed, will not measure the air passing across the face, unless the velocity is something considerably more than 1 foot per second.

13436. *Mr. Robertson.*] *Q.* As a matter of fact, is not the correction of the anemometer for friction thirty revolutions per minute: that is to say, it takes thirty revolutions to turn the anemometer; and when you take your measurement you add thirty revolutions for friction? *A.* Yes.
13437. *Q.* Is it not possible, in nearly all cases, to get a measurement of air in some part of the road where the velocity is sufficient to act upon the anemometer? *A.* Do you refer to near the working place?
13438. *Q.* Nearly everywhere, there is some part of the mine where you can take fairly accurately the velocity of the air? *A.* Oh, yes, certainly.
13439. *Mr. Bruce Smith.*] But I understand, Mr. Robertson, this is the objection offered by Wynn, and by a number of the witnesses, that, although the aggregate quantity of air may be going into the mine, the leakages in various ways are so very great that the proper quantity of air does not reach the working places; and Wynn goes on to complain that the Inspector did not measure right up to the faces, as he did; but sometimes only measured as far away as 100 feet. Mr. Atkinson says this anemometer will not measure these small quantities unless you concentrate the air into a small space. Therefore you must be satisfied to know that the aggregate quantity is going in up to the point at which the anemometer ceases to be a test; and you must trust to your arrangement of your canvases and stoppings and so forth, and, I suppose, to the practical feelings of the men, to satisfy yourself that that air is getting up to them.
13440. *Mr. Robertson.*] Of course it must be distinctly understood that the fact of not being able to register the velocity on the anemometer does not necessarily mean that the cubical quantity of air is not going in to the men.
13441. *Mr. Bruce Smith.*] No. Wynn complained that the Inspector sometimes took the measurement 100 yards from the face.
13442. *Mr. Ritchie.*] He said that the Inspectors took it at the splits, and that he often went 100 yards nearer the face than they did. Where the air splits they have generally got a mark about where they take the register. At this place the mine officials regularly take their register. Wynn's contention was that this place was too far from the face; and he said he went nearer to the face to take his measurements.
13443. *Mr. Robertson.*] But is not the measurement of the air 100 yards nearer to the face, after all, simply the difference between tweedledum and tweedledee?
13444. *Mr. Ritchie.*] Of course there might be leakage.
13445. *Mr. Bruce Smith.*] If there were a big leakage in the 100 yards it would be important; but, if the Inspector satisfied himself that there is no big leakage in that 100 yards, the difference would be neither here nor there. I take it that the Inspector would not take the measurement at the splits if there were, in the next 100 yards, defects or obstructions which would affect the quantity of air going through.
13446. *Mr. Ritchie.*] I think Wynn thought that some law should be made to compel measurements to be taken as near the face as possible.
13447. *Mr. Bruce Smith.*] The conclusion I come to is that when you bring unscientific minds to bear on instruments of this kind, whether anemometers or safety-lamps, or hydrogen lamps, they expect them to do infinitely more than they will do. They expect extraordinary results from them. For instance they expect hydrogen lamps to be used to make a complete examination of the mine once a month; yet a big Inspector in England says—he does not say it is useless, but he says that, for his part, he thinks that when the gas is so small in proportion that only the hydrogen lamp will measure it, it is really not worth measuring; and that the safety-lamp is sufficient for practical purposes. We know that the hydrogen lamp is unsafe—as unsafe as a gun. The miner, on the other hand, seems to think that the salvation of his class lies in this hydrogen lamp being taken everywhere round the mine.
13448. *Mr. Ritchie.*] They advocate that as an additional safeguard; but they do not propose that it should be relied upon wholly. I would suggest that Mr. Atkinson should tell you the distances that these split measurements are generally taken from the workings.
13449. *Mr. Bruce Smith.*] *Q.* What opinion have you formed about that: have you heard any evidence which points to the fact that the Inspectors are in the habit of taking this air carelessly, or at places which are not a fair guide? *A.* No, I have no reason to think so.
13450. *Q.* Is it any more trouble to an Inspector to take it at one point than at another, except the walking over the 100 yards? *A.* No, not so long as the anemometer will register, no more trouble.
13451. *Q.* You heard Mr. Wynn speak of the difference between taking the measurement of air in the middle of the road, and taking it at the side? *A.* Yes.
13452. *Q.* Can you say anything about that? *A.* There is no doubt that the velocity of the air in the centre of the place is greater than that at the side, in the same way, as, with water in a river, the velocity is greater in the centre than at the sides, where there is friction; but the ordinarily accepted method of measuring the air is in the centre of the place. For a more scientific and accurate purpose the section of the gallery is sometimes divided by strings into sixteen different small areas, and the anemometer is held in each of these areas for half a minute, or a miuute, as the time may be read, in order to ascertain more accurately the quantity of air.
13453. *Q.* And the average is taken of all those readings? *A.* Yes.
13454. *Q.* That is the same course as is pursued in measuring the velocity of a stream in hydraulics? *A.* Yes, I suppose it is.
13455. *Q.* But it is not carried to a precise pitch in actual practical working? *A.* Only for experimental purposes, where they are accurately testing the efficiency of a fan.
13456. *His Honor.*] *Q.* Do I understand that the system adopted is to measure in the centre, to hold the anemometer in the centre? *A.* Yes; that is the usual plan.
13457. *Q.* That would be adopted where the velocity is pretty high, and the friction comparatively small. If you multiplied that measurement in the centre by the sectional area you would get a very much larger result than if you measured against the wall? *A.* Not a very much larger result; and I think regard is had in the construction of the anemometer in the first place to the fact that the usual method is to measure the air in the centre of the place.
13458. *Mr. Robertson.*] *Q.* As a matter of fact, the velocity in mines in roads of large sectional area is usually comparatively low? *A.* Where the area is very large no doubt it would get down to 1 foot per second, or less. The ordinary speed in working faces, or a recognised reasonable velocity, is from 2 to 4 feet a second.
13459. *Q.* I take it that, if your inspectors, in taking their measurements, found that the ventilation in the mine was sailing rather too close to the wind, as to the minimum quantity, they would probably take pains to take an accurate measurement? *A.* They do. They take care to get nearer the working places. 13460.

13460. *Q.* And as a rule the quantity is largely in excess of the statutory requirements? *A.* Yes, generally that is so.
13461. *Q.* So that there is not that need for the utmost precision in taking their measurements? *A.* No, I think they can generally tell by their senses, to a certain extent, whether the air is getting to the face; and, where naked lights are used, by the deflection of the flame the miner can generally tell whether he has a reasonable quantity of air.
13462. *Mr. Bruce Smith.*] *Q.* I suppose it is open to the check-inspector to measure where he likes? *A.* Yes.
13463. *Q.* There are no restrictions upon him? *A.* No.
13464. *Mr. Bruce Smith.*] *Q.* He can take his measurements at the side, can he not? *A.* Yes.
13465. *Q.* Yesterday you stated that you were prepared to recommend that deputies and shot-firers should be required to have a certificate before they could be considered qualified for appointment? Yes.
13466. *Q.* Now, if deputies and shot-firers have a certificate, would not you also provide that, in the event of any breach of duty, they should be liable to have their certificates suspended or cancelled? *A.* Yes, that should follow as in the case of a Manager or under-manager.
13467. *Q.* And that would be a check upon these men in case of their not reporting gas? *A.* Yes.
13468. *Mr. Ritchie.*] *Q.* In whom would you have the power vested to suspend or cancel these certificates? *A.* The same sort of power which is now arranged for the Manager and under-manager; the same sort of tribunal.
13469. *Mr. Bruce Smith.*] It simply brings two more classes under the operation of section 10.
13470. *Q.* I think you did observe that a great many of the witnesses seemed to draw a distinction between discovering gas, and discovering an accumulation of gas: several of them said—"I did not report it, because it was not an accumulation"? *A.* Yes.
13471. *Q.* Is not that expression used somewhere in the rules—"An accumulation of gas"? *A.* I think it may probably be in the special rules.
13472. *Q.* Is not that an element of danger, that men should be able to escape from the responsibility of reporting by saying, "Oh, I certainly discovered gas; but I did not discover an accumulation of it; it was not, in my opinion, an accumulation." I think you have formed the opinion that that might be altered in some way? *A.* Well, General Rule 4 does not mention any quantity at all. It says that they had to report, specifying whether noxious or inflammable gas, if any, was found present.
13473. *Mr. Bruce Smith.*] Your Honor sees that that special rule makes it too elastic. A man may say—"I discovered gas; but I did not discover an accumulation of gas; I did not think it sufficiently important." If these deputies and shot-firers are to be required to have certificates, the amount of gas, or the way in which gas indicates itself, which they are required to report, ought to be very distinctly stated, so that they would not be able to say, bye and-bye, "I did not report it when the miner told me, because I did not think it sufficiently important."
13474. *Mr. Robertson.*] *Q.* In the case of a gassy mine, where gas is given off, and known to be given off, at any part of any working face, and where you can find it issuing from the face, by putting your lamp against the face, would not the effect of reporting gas be practically to stop the mine? *A.* I do not think so.
13475. *Q.* But if, according to the rule, you have got to clear away the gas you have found, how can you clear away the issuing of the gas? *A.* You can only clear it away as it does issue.
13476. *Q.* You know you have to clear the gas away before you admit the men into the place; and, if you report having found gas, what do you do before you admit the men? *A.* Well, under General Rule 4, I do not see how you can draw the distinction between a large quantity of gas and a small quantity.
13477. *Q.* Quite so; but if you can find gas issuing in a gassy mine at any part of the day, how are you going to admit the men into the places; do you not see the difficulty? *A.* I think that the rules generally say something about a strong blue cap.
13478. *Q.* Quite so. I say, take a mine where you can find gas issuing sufficient to show a blue cap on a safety-lamp in any place at any time of the day, how are you going to admit the men to work? *A.* Well, the rule seems to be so constructed as to admit them to work. You cannot work impossibilities.
13479. *Q.* But, under those circumstances, you have to report the finding of gas, and you have to clear it away before you admit the men? *A.* Well, it is clear that you cannot clear the issuing away. You can only clear the gas away as it does issue.
13480. *Q.* But then you say that under those circumstances you must report the issue; not the accumulation, but the issue; that being so, you would have to be reporting all day, and you could not possibly admit the men into the place? *A.* I can only say what I read in the rule. It makes no distinction as to the quantity. I see the difficulty which arises; but I do not see any objection to mentioning a trace of gas in every working place in the pit.
13481. *Q.* But do you not see the difficulty; if you go into a place, and do not find a capful, but find gas issuing from the coal, you cannot admit the men? *Q.* Well, then, I think the rule should be altered so as to make it that you can admit them.
13482. *Q.* Quite so. You see the difficulty? *A.* Yes, I fully recognise the difficulty, and know that in some cases you can get gas in all the working places by a careful adjustment of the safety-lamp, by shoving it right into the cut.
13483. *Q.* As a matter of fact, is not that rule intended to apply to accumulations? *A.* I do not see that. I cannot agree with you there. Of course it says that the rules have to be observed, so far as is reasonably practicable; but it makes no distinction as to whether the gas is from an issue or whether it is an accumulation; or whether it is a small quantity, a thimbleful or a bordful.
13484. *Q.* Of course I quite see the importance of reporting the smallest issue or appearance of gas in a mine where it is not generally known to exist; but if you have a gassy mine, where it is admitted to exist, and known to exist, and to be found in any working place? *A.* Yes. I take it that the term "no accumulation" means that it is admitted that gas is given off all over, but there is no accumulation in any working place.
13485. *His Honor.*] Perhaps, after all, Mr. Bruce Smith, it may be that that distinction between gas and accumulation of gas was only in the check-inspector's report. It may have arisen from that. I do not find it here in the special rules; but the words "No accamulation of gas" were used in the check-inspector's report.
13486. *Mr. Bruce Smith.*] Wynn pointed it out. Wynn objected that they did not report gas, whether it accumulated or not.

13487. *His Honor.*] Yes; but I think that question of gas or the accumulation of gas arose in the check-inspector's report.
13488. *Mr. Bruce Smith.*] Quite so; but I think your Honor gleaned from the conversation between Mr. Atkinson and Mr. Robertson that the phrase "accumulation of gas" is used in the Helensburgh Special Rules.
13489. *Mr. Robertson.*] No. Wynn said that the deputies systematically reported "no accumulation of gas." Of course there is no dispute that gas is continually given off. We do not deny it.
13490. *Q.* Do you not think, Mr. Atkinson, that the general rule should be altered so that, where an admission is made that gas is given off from the seam, the term "gas" should apply to an accumulation of gas? *A.* I do not see any objection to reporting it every day, so long as the special rules are framed in accordance with that.
13491. *Q.* Do you not see the difficulty that, if you report finding gas, you cannot admit the men into the place until the gas is cleared away; and you cannot clear the gas out of the coal? *A.* I know you cannot.
13492. *Mr. Bruce Smith.*] Your Honor remembers that, in those reports which we read, these men reported over and over again that there was no accumulation of gas, but they admitted that they found gas, and that they knew gas was there; and Mr. Wynn said that he thought that the mere discovery of gas, whether, in the opinion of the deputies, it was an accumulation or not, should be reported. Now, I understand Mr. Robertson to offer this objection, that, if they are required to report the issuing of gas, which is a chronic state of things in some parts of a mine, it would require the men to be withdrawn under the existing rules. Then Mr. Atkinson says, "No"; because if the provision requiring them to report extends to any quantity of gas, even though it be reported every day, the rules may be so amended that it will not be necessary to take the men out."
13493. *His Honor.*] That is exactly what Mr. Robertson contends for, that there ought to be some small amendment.
13494. *Mr. Robertson.*] Where there is a general admission that gas is being given off from the seam, it is quite unnecessary to report it every day, hundreds of times a year.
13495. *Mr. Bruce Smith.*] But the danger Mr. Atkinson points out is this, that, if it is left to the deputy's discretion to report or not report, according as he thinks it is an accumulation or not, he may see gas day after day for twelve months, and report negatively every time; and then, when he is asked, he may say, "Well, it was not an accumulation, in my opinion"; and it may be an accumulation, although he does not think so.
13496. *Mr. Ritchie.*] *Q.* Do you think it would be sufficient if they gave a qualified report stating that they had found gas, and stating whether it was an accumulation, or whether it was being carried off, and was no source of danger; might they not say that gas was found, but not a dangerous quantity; or that gas was found in certain quantities? *A.* It depends to a certain extent on the construction of the Special Rules of the Metropolitan or other collieries as to whether, even if that were done, men could be admitted to the working places. I think that Mr. Robertson's suggestion might be met by altering the rule so as to deal with an issue; and as regards the Metropolitan, where gas is acknowledged to be every day, there would be no harm; but I am afraid there might be a tendency in some places where issues are not regular and frequent, if such a clause were inserted, to take advantage of it at such places where issues appeared only occasionally, and naturally should be reported, but under this altered rule would not be necessary to be reported. I think that would be a possible danger at other places.
13497. *Mr. Robertson.*] I quite see the danger at a place where the gas is not being ordinarily given off. There it is so very important that the very smallest emission should be reported.
13498. *Mr. Bruce Smith.*] The exception you make is in the mines where it is a chronic condition.
13499. *Mr. Ritchie.*] *Q.* Do you think it would be inadvisable to make a general rule, applicable to all collieries, for such a case as that mentioned by Mr. Robertson; which, as a matter of fact, might have a direct bearing, in the way you put it, on one colliery only? *A.* It may be. Although it would have no bad results, if applied to the Metropolitan alone, it might have a bad effect in other cases.
13500. *Mr. Bruce Smith.*] *Q.* Mr. Ritchie puts it to you that you would not advise a general rule applicable to all mines? *A.* No.
13501. *Q.* You would differentiate between those that gave it off regularly, and those which gave it off intermittently? *A.* Yes.
13502. *Mr. Robertson.*] But you could not have a special rule at any particular colliery which would clash with the general rule.
13503. *Mr. Ritchie.*] *Q.* But the Act might give permission to the Minister to grant a Special Rule dealing with that? *A.* Yes, it might be done in that way, possibly.
13504. *Mr. Bruce Smith.*] However, we put the difficulties: it is for the Commission to solve them. Now there is another question.
13505. *Q.* You heard a number of witnesses say that they had not reported explosions in their working-places, because they considered that it was merely gunpowder smoke? *A.* Yes, I have heard that several times.
13506. *Q.* Well, that is rather a loop-hole, is it not? I would ask you first to tell the Commission what is your experience of this class of explosion, after a shot has been fired but has not completed its work, to which these men refer? *A.* Well, I might say that, personally, I have never seen it, although I have seen hundreds or thousands of shots fired with gunpowder; but I know that it is stated to have occurred, by both practical and scientific men: and it is considered to be due to the incomplete combustion of the powder, and, as a matter of fact, generally only results from what they call a standing-shot.
13507. *His Honor.*] *Q.* What is the definition of a standing-shot? *A.* It is a shot which has done its work, but the coal has not fallen.
13508. *Q.* Do you say "hanging-shot" or "standing-shot"? *A.* I think both terms are used. It is a shot that has done its work, but the coal has not actually fallen on the ground.
13509. *Mr. Bruce Smith.*] *Q.* And is it called a standing-shot because the coal still stands? *A.* Yes, sometimes standing-shot, and sometimes hanging-shot.
13510. *Q.* And what has been the cause of the gunpowder not having undergone complete combustion? *A.* I do not know that that has been explained. 13511.

13511. *His Honor.*] *Q.* A good deal may be due to the composition of the powder. There might be an excess of carbon, for instance? *A.* A good deal is due to that. As to the resulting gas, Professor Vivian Lewes says that, using 1¼ lb. of ordinary blasting powder, you get over 3 cubic feet of combustible gas, consisting chiefly of carbon monoxide; and this, mixed with a certain proportion of air, will give you 10 cubic feet of an explosive mixture.

13512. *Mr. Bruce Smith.*] *Q.* So that the idea is right that, after a shot, under certain circumstances, you do get an explosive material in the working place? *A.* Yes. It is quite possible that the explosive gases will amount to nearly 50 per cent. in some cases.

13513. *Q.* Well, is that due to that one form of explosive, gunpowder, or would that apply to the other explosives, which you have told us are permitted by the Home Secretary? *A.* Well, it is more pronounced in the case of gunpowder, although I believe, to a smaller extent, it is possible with some of the permitted explosives.

13514. *Q.* Well, then, that is an additional danger, apart from the opening of the light and the firing of a shot: the possible explosion of this gunpowder gas is an additional danger where there is coal-dust? *A.* Yes, no doubt.

13515. *Q.* All traceable to the powder? *A.* Yes.

13516. *Mr. Robertson.*] *Q.* Are you referring now to the comparative length of the flame, or to the inflammability of the gaseous products? *A.* To the latter; to the inflammability of the gases resulting from the shot.

13517. *Q.* But I thought most of those safety explosives were of such a character that the resultant gases were non-explosive? *A.* Well, Roburite comes under the heading mentioned, but I have seen particulars in some of the authors which have stated that some of the resulting gases are to a small extent explosive under certain conditions.

13518. *Mr. Bruce Smith.*] *Q.* But I take it that gunpowder produces the largest quantity of the most explosive gas? *A.* Yes.

13519. *Mr. Robertson.*] *Q.* That is another reason why it should not be used? *A.* Yes.

13520. *Mr. Bruce Smith.*] *Q.* Now, is it not difficult for an inexperienced person to distinguish between the gas which is produced by an incomplete gunpowder shot, and gas which might be emitted by the breaking down of the coal? *A.* I think it is impossible to distinguish, because they both give blue flames.

13521. *Q.* Well, ought that not to be reported in either case, if that is so? *A.* I think it would be better. It is certainly advisable.

13522. *Q.* And if the deputies and shot-firers are in future to be certificated, and if their certificates would be liable to cancellation or suspension for a breach of the rules, and if they are to be required to report gas, ought they not also to be required to report an explosion of that kind from gunpowder, or from another explosive? *A.* I think they ought to.

13523. *His Honor.*] *Q.* Partly for the reason that, if such explosions were reported, the management might think fit to use a different brand of powder? *A.* Undoubtedly.

13524. *Q.* Because the composition of the powder might have a good deal to do with it. An excess of carbon—or charcoal—may cause it? *A.* Yes, that may have a good deal to do with it.

13525. *Mr. Robertson.*] *Q.* Have you ever heard any instance of an explosion from the fumes or the gas of the safety explosives? *A.* I am not very clear about that; but I think there is some discussion or legal action going on at Home as to whether safety-fuses are really safe.

13526. *Q.* I mean safety explosives? *A.* Oh, the permitted explosives?

13527. *Q.* Yes. Have you ever known any instances of the gases from the explosion of a permitted explosive igniting in the way that gunpowder gas has been said to ignite? *A.* No, I have not. I do not know of any case; although, of course, one knows of cases where safety explosives have been recklessly used, and there have been explosions—such an instance as trying to break up a wheel by placing on it an unstemmed quantity of "Permitted" explosive ——[*Interrupted.*]

13528. *Q.* But as to the explosives themselves, you do not know a case where the gas resulting from the explosion of a permitted explosive has been lit? *A.* No, I do not know of any case.

13529. *Mr. Bruce Smith.*] *Q.* This gas resulting from the incomplete combustion of gunpowder really comes under General Rule 4, does it not: it says "A report specifying whether noxious or inflammable gas"—it would be included under that special phrase? *A.* Yes.

13530. *Mr. Ritchie.*] *Q.* Before you pass away from that, I understand Mr. Atkinson to say that the gas which may be generated as the result of a standing shot comes under General Rule 4, in reporting?

13531. *Mr. Bruce Smith.*] Well, he says that it could be brought under the general term.

13532. *Mr. Ritchie.*] The present General Rule 4 deals with the duties of the inspectors.

13533. *His Honor.*] The inspectors would not discover this gas.

13534. *Mr. Bruce Smith.*] But they might hear of it; and then it would be their duty to report it.

13535. *His Honor.*] It is a case which is clearly not contemplated by this rule.

13536. *Mr. Bruce Smith.*] No, but it comes under the general term. Suppose an Inspector, in the course of his inspection, saw a shot fired; and, in the course of the examination, he went into the place after the shot had been fired, and he saw this explosion of gunpowder, well, I take it that his instructions are general enough to include that, and he should report it. You, as a Commission, have to suggest how this shall be regulated; and I point out that the possibility of an explosion by gas should be reported under General Rule 4. Then, under Rule 9, the deputy, if he discovers any danger, shall instantly report to the overman, under-manager, or Manager.

13537. *Mr. Ritchie.*] That is in the special rules?

13538. *Mr. Bruce Smith.*] Yes.

13539. *Mr. Ritchie.*] Still, that does not cover the firing of shots. I want to know from Mr. Atkinson whether he thinks that General Rule 4 does deal with that.

13540. *Witness.*] No. I think it would come under Special Rule 41, which says that if workmen discover any defect or insecurity in their working place they must at once cease work and report.

13541. *Mr. Robertson.*] *Q.* Still, a deputy would be bound to report? *A.* Yes.

Q. As a matter of fact, such a contingency was never contemplated when that rule was formulated? *A.* No, I do not think it was. It might be useful to have an authority on that. I have a book here. Perhaps the Commission would like to see what Professor Lewes says about it.

13542. *Mr. Robertson.*] I know some people believe in it; but when that rule was formed such a contingency was never contemplated.

13543. *Mr. Bruce Smith.*] But it is general enough to cover it, if it should come under the notice of the Inspector. Then, also, Special Rule 41 says: "All employees must report to the Manager or official in charge any defect they may discover in the machinery or appliances, or any appearance of fire-damp, choke-damp, or other noxious gas, or any defect in the roof or sides of the mine, or any other indication of danger from any other cause." If the Court is going to make suggestions by-and-bye to minimise the chances of accident, it is as well to notice that, so long as these men, who are working in the mine, are allowed to pass over this rule by saying "Oh, it was not gas, fire-damp; it was only gunpowder, and therefore I need not report it," it is a loop-hole which becomes a very great danger.

13544. *Mr. Ritchie.*] It is, practically, a danger which has been pointed out before this Commission, and has not been pointed out before, as far as the rules and regulations are concerned.

13545. *Mr. Robertson.*] I do not think that, in any of the Royal Commissions that have sat at Home, any mention has been made by any witness, in any shape or form, directly or indirectly, as to the possibility of danger from gunpowder gas.

13546. *Witness.*] No, I do not remember having seen it myself.

13547. *Mr. Robertson.*] It is a very curious thing.

13548. *Witness.*] It is.

13549. *Mr. Bruce Smith.*] It will just show the Commission how carelessly men reason with regard to this. Here is Mr. Jubb, who is a well-known under-manager, a certificated man; and, when asked "Then, if you find anything after a shot is fired, you conclude that it is gas from the powder?" he says "Yes; unless it continues to give off." You see he recognises that there may be both, but, if one is merely ephemeral, that is from the gunpowder; and, if it continues to give off, it may be gas which is being emitted from the coal liberated by the fall.

13550. Now, here is the authority that Mr. Atkinson was referring to on this gunpowder case, volume IX of the "Transactions of the Federated Institution of Mining Engineers." [*The book was shown to the Commission.*]

13551. *Mr. Robertson.*] *Q.* Have you noticed the difference in the composition given by Lewes, and that given by Pamely. Pamely gives 50 per cent. of combustible gases; and Lewes gives 50 per cent. of carbon dioxide, 33 per cent. of nitrogen, and 10 of carbon monoxide, so that that is practically inexplosive? *A.* Yes. No doubt a great deal depends, as His Honor suggested, on the composition of the explosive.

13552. *Q.* Now, here is another powder, mining powder, carbon dioxide 32 per cent., carbon monoxide 33 per cent., nitrogen 19 per cent., sulphuretted hydrogen 7 per cent. Well, one would not think, at first glance, that that was explosive. You see it is so mixed. Here is a gas containing 32 per cent. of carbonic acid. Well, one would think it impossible to have an explosive mixture, even if you had 33 per cent. of carbon monoxide? *A.* I hardly think so, because I know of another case where you could get an explosion with 33 per cent. of CO_2, when you had 6 per cent. of fire-damp, and the rest air.

13553. *Mr. Bruce Smith.*] Does not that authority show that that gas is explosive?

13554. *Mr. Robertson.*] Well, it seems to me, that with 33 per cent. of carbonic acid, hardly any mixture would be explosive.

13555. *Mr. Bruce Smith.*] Have you got Pamely there?

13556. *Mr. Ritchie.*] Yes.

13557. *Mr. Bruce Smith.*] Does not he give that?

13558. *Mr. Ritchie.*] He gives the very same particulars.

13559. *Mr. Robertson.*] It is a very curious thing that the question has not been brought before any other Commission; considering the millions of shots that have been fired, one would think it was a matter of common knowledge.

13560. *Mr. Bruce Smith.*] But these men speak of it as a common thing.

13561. *Mr. Robertson.*] That is the remarkable thing about it.

13562. *Mr. Ritchie.*] They may be mistaken.

13563. *Mr. Bruce Smith.*] It may be gas.

13564. *Mr. Ritchie.*] Yes.

13565. *Mr. Bruce Smith.*] Mr. Jubb seems to have arrived at a sort of distinction which he draws between those which explode and finish, and those which explode and continue. He is a bit of a student from what I remember of his demeanour.

13566. *Mr. Ritchie.*] And then we have the evidence of Mr. Atkinson himself, who says it is practically impossible to distinguish the flame of one from the other.

13567. *Mr. Bruce Smith.*] At all events, it points to this conclusion inevitably, that, whatever they may think it, it ought to be reported.

13568. *Mr. Ritchie.*] Yes, that is so.

13569. *Mr. Bruce Smith.*] *Q.* Now, there is one question with regard to the difficulty which the men said they had experienced in distinguishing between gas and water in producing that singing noise. Are you able to say anything on that point? *A.* Well, I think that water itself might issue without the singing noise; but, when accompanied with the singing, I think it is due to gas.

13570. *Q.* Then, I understand that you think that the Commission may take it that, whenever men heard this singing noise in any mine, although they did not know whether it was water or gas, you think it may be taken to have been gas? *A.* That is so.

13571. *Q.* You think the water would not make that noise? *A.* No.

13572. *His Honor.*] *Q.* Water without gas cannot sing, I suppose; it is impossible? *A.* I think not.

13573. *Mr. Robertson.*] *Q.* It is really the expansion of the gas that causes the noise? *A.* Yes; the fighting of the gas and the water.

13574. *Q.* It is really like the roaring of steam out of an escape pipe? *A.* Yes; that is really an illustration of it.

13575. *Mr. Bruce Smith.*] *Q.* Now, you heard Morrison's evidence, the day before yesterday, in which he said that he had never been instructed to inspect these places, like the extreme end of No. 1 heading, because the men had not been working there. What do you say about that? *A.* Well, I think it is desirable that the law should be altered, either by altering General Rule 4, or the special rules, so as to include such places.

13576. *Q.* As the rules stand at present, would the deputy really be impliedly instructed to see those places; or would he be justified in saying that he had not received instructions, because he had not had special instructions? *A.* Well, General Rule 4 certainly does not require him to inspect those places, as it stands now.
13577. *Q.* Because it is not a working place, and it is fenced off? *A.* Because it is not a working place, or one in which persons were to pass.
13578. *Q.* The workmen are not likely to work or pass there, that is the phrase, is it not? *A.* Those are the words.
13579. *Q.* And that is what you say you think should be altered? *A.* I think so, yes.
13580. *Q.* Because that accumulation of gas, which you found in the back heading, might have gone on until the outer edge of it came past the fence—I mean, supposing it were left? *A.* In the absence of ventilation, that might take place.
13581. *Q.* Of course it is fair to say that the ventilation was all deranged at the time up at that part? *A.* Yes.
13582. *Q.* But still that inspection by a deputy is necessary to see that the ventilation is going on, so as to get rid of that accumulation? *A.* Yes, I think so; especially having regard to the fact that the air goes on to other men.
13583. *Mr. Robertson.*] *Q.* Mr. Atkinson, it is open to the Department to propose a special rule now to deal with this? *A.* Yes, it is.
13584. *Mr. Bruce Smith.*] Your Honor remembers that man, Sells, who was cross examined by Mr. Wade. He referred to a man named Waples; and I think your Honor said something about Wapels at the time; but I do not think it is very important. Sells said Waples was nearly blown up in Mount Kembla. I am not saying it is unimportant that he was nearly blown up.
13585. *His Honor.*] Mr. Atkinson may or may not know something about it.
13586. *Mr. Bruce Smith.*] *Q.* You remember that passage with regard to Waples? *A.* I do.
13587. *Q.* Do you think it is of any importance that he should be called? *A.* Well, I think we have had sufficient evidence of the same character; and, unless there is some special circumstance attached to it, I do not see any particular necessity.
13588. *His Honor.*] The witness went on to say that it was not brought to the notice of any official; and therefore it could not have percolated to Mr. Atkinson's knowledge.
13589. *Mr. Bruce Smith.*] I think that is all I want to ask Mr. Atkinson at present. I am afraid we are in a difficulty. I have counted upon either Mr. Lysaght or Mr Barry being prepared to take up Mr. Atkinson's examination or cross-examination, whichever it turns out to be; and I have no other witness here at present.

(Mr. Lysaght submitted that Mr. Barry should cross-examine first. Mr. Barry thought Mr. Lysaght should cross-examine first. Eventually Mr. Lysaght consented to commence his cross-examination at once, though he would have preferred to have waited until he had had time to carefully consider Mr. Atkinson's evidence in chief).

Cross-examination by Mr. Lysaght :—

13590. *Q.* I want to know why it is that you express no opinion on Recommendation No. 17, "Cancellation of the certificate of Mr. Rogers"?
13591. *His Honor.*] Oh, the Commission practically put that out of the question, because that is not a question which the Commission thought ought to be gone into at all, the question of the cancellation of the certificate of Mr. Rogers. That question was eliminated a long time ago. That is why Mr. Atkinson did not express an opinion—because he was not asked.
13592. *Mr. Lysaght.*] But I take it, Your Honor, that I can get his opinion as to certain things done by the Manager, showing that he was not a competent Manager, and that the practical management of the colliery was defective.
13593. *His Honor.*] Oh, you can go into that question.
13594. *Mr. Barry.*] A moment—do I take it that Your Honor holds that anything that may have been done by Mr. Rogers, irrespective of the cause of the disaster, can be gone into here?
13595. *His Honor.*] No, only matters connected with the disaster. The Commission have to find out whether anyone is to blame, and, if so, who. Of course, under that head of the duties of the Commission, Mr. Lysaght might ask some questions.
13596. *Mr. Lysaght.*] *Q.* You know that Mr. Rogers admitted that the inspection of the waste was only done once a month? *A.* Yes.
13597. *Q.* In your opinion, did the failure to inspect the waste once a week contribute in any way to the initiatory causes of the disaster? *A.* I cannot say that it would.
13598. *Q.* Would it be a circumstance that would, most probably, lay the conditions for the disaster? *A.* I do not exactly understand the question.
13599. *Q.* Would the failure to inspect once a week probably cause conditions to arise which did cause the disaster? *A.* I do not see how that could cause the disaster.
13600. *Q.* I will put it in detail. Taking your theory of an expulsion of gas and air from the 35-acre goaf, would not an inspection weekly of that goaf probably have prevented that accumulation of gas? *A.* I do not think I have suggested an accumulation of gas, Mr. Lysaght.
13601. *Q.* Well, would it not have prevented that quantity of gas that, in your opinion, was forced out from the goaf, being allowed to remain there undetected: had an inspection been made regularly every week, as required by the rules, is it not probable that the knowledge of gas in that goaf would have been easily ascertained? *A.* Yes, that is so.
13602. *Q.* And the knowledge of gas in that goaf being easily ascertained——[*interrupted*]? *A.* Near to the edge of the goaf—it might not be practicable or safe to go very far in, after the timbers had been drawn out.
13603. *Q.* And, having that knowledge, it is probable that the management would have been in a position to take steps which would probably have avoided the disaster? *A.* If there was an accumulation, doubtless it would.
13604. *Q.* Now, does not your theory assume that there was an accumulation in the goaf? *A.* Not necessarily. It might have been up in the strata when the fall took place.

13605. *Q.* But, in view of the evidence that the first fall had taken place a week before the disaster, do not you think that the accumulation resulted from the first fall? *A.* No, I could not say that that is very probable.
13606. *Q.* But is it not more probable that the gas that was forced out of the waste had been standing there for some days, and was not the immediate result of the then immediate fall? *A.* It is possible; but I cannot say that it is highly probable.
13607. *Q.* The inspection of the waste each week would have detected conditions that would have pointed to danger? *A.* If they discovered gas, yes.
13608. *Q.* Well, the fact that the deputy had discovered black-damp before pointed to a source of danger; and if an inspection had been made every week——[*Interrupted.*]
13609. *Mr. Barry.*] Might I ask this: he says that the deputy having discovered black-damp would indicate a source of danger: then he shoots off on another line.
13610. *His Honor.*] That ought to be put by itself.
13610½. *Mr. Barry.*] Mr. Lysaght asks three or four questions; and you get an answer down that does not convey exactly what the witness means.
13611. *His Honor.*] It is not fair to ask a question in such a way that the witness appears to answer more than he does.
13612. *Mr. Barry.*] I am sure Mr. Lysaght does not mean it; but he makes statements too.
13613. *Mr. Lysaght.*] *Q.* Is it not probable that, if that waste had been inspected every week, fire-damp would have been discovered in it? *A.* No, I cannot say that it is probable, or was probable.
13614. *Q.* And in view of the fact that only 2 feet of the roof had fallen, or that there had only been a fall of 2½ feet, would it not have been practicable for Morrison to have gone much further into the goaf to inspect than he did? *A.* Well, I do not know how far he did go.
13615. *Q.* Well he said he only went to the fence.
Mr. Bruce Smith.] No.
13616. *Mr. Lysaght.*] To the edge of the fall.
13617. *Q.* Well, in view of the fact that the fall was only 2½ feet, was it not practicable for him to go much farther, and make a more perfect examination? *A.* I think he might have gone beyond the fence and as far as it was safe to go.
13618. *Q.* And it was practicable to go farther, in view of the fact that the fall was only 2½ feet? *A.* It might be practicable; but it might not be safe, having regard to the fact that the timbers were all drawn, and a further fall was anticipated.
13619. *Q.* In a goaf like that 35-acre goaf was it not bad management to carry an intake air-way past it and on to the men? *A.* Without any separation between the intake and the waste?
13620. *Q.* At the north end of the goaf, the evidence is that there were five openings; and the intake air passed there, without any separation? *A.* Well, as I understand the plan (*explaining his evidence by the plan*) the intake air for these men (*pointing to Nos.* 90 *to* 101) was directed to them by means of canvas doors on the 5th Right rope road. There would be a certain scale (leakage) of air through the canvas doors, no doubt along the 5th Right rope road; and that would be for the purpose of keeping that road clear, and ventilating the wheeler.
23621. *Q.* I can put it this way: men had to get air that passed the openings on that goaf? *A.* Yes, the air passed along the 5th Right rope road, on the north side of that goaf.
13622. *Q.* And you know that there were about five openings on to that 5th Right rope road from the goaf? *A.* Yes, there are.
13622½. Is not that an evidence of bad management? *A.* If those openings had no stoppings of any kind in, I say "Yes."
13623. *Q.* And you did not observe any stoppings there? *A.* On the north side?
13624. *Q.* Yes? *A.* No, I did not; but they might have been there before the explosion.
13625. *Q.* But there were no stoppings there.
13625½. *Mr. Robertson.*] There is no evidence of that.
13626. *Mr Lysaght.*] I understood from Morrison that there were five openings that came out of that intake. I intended to put the question to him; and I understand that is what he said.
13627. *Q.* You heard the evidence of pillars having been left standing in that goaf, that they lost whole pillars—would not the presence of those pillars probably cause a considerable discharge of fire-damp? Is it not probable that a considerable discharge of fire-damp would come from those pillars that had been lost in that goaf? *A.* Well, I think it is possible that there might be a certain amount: I could not say a very considerable discharge.
13628. *Q.* And, with the knowledge in the management that those pillars had been left there, do you think that the failure to examine every week, and the substitution of the examination every month, was an act of great negligence; in addition to being a violation of a rule, was it not clearly an act of negligent management, knowing that pillars were standing there, to allow those wastes to be only inspected once a month? *A.* Well, it depends a great deal upon where the pillars were left as to whether the accumulation would be likely to reach anywhere near the outlet to the 4th Right. We had not any evidence of exactly where those pillars were left, except that it was somewhere in the 35 acre goaf. It might be in such a remote position that any fire-damp given off from those pillars would not reach the vicinity of the outlet to the 4th Right.
13629. *Q.* But, the pillars being left there, and the management knowing that, was it not an act of negligence in the management to have the inspections only once a month, instead of weekly?
13630. *His Honor.*] What Mr. Lysaght really means is, did it not make it still more incumbent on the management to be careful to keep up to the weekly inspection, as there was a hidden mystery, a buried pillar, somewhere about there?
13631. *Mr. Lysaght.*] That is it.
13632. *Witness.*] Yes, if the pillars were anywhere near the vicinity of the 4th Right I would say "Yes."
13633. *Mr. Lysaght.*] *Q.* And, in view of the fact that black-damp was discovered there a week before the disaster, was it not an act of gross negligence not to have that waste examined every week? *A.* Well, it was a breach of the rules.
13634. *Q.* In addition to being a breach of the rules, was it not an act of gross negligence in the management not to have it examined every week, having discovered the black-damp? 13635.

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13635. *Mr Bruce Smith.*] Does Your Honor think that a proper form of question, asking a witness whether he thinks it an act of gross negligence?
13636. *His Honor.*] There are too many adjectives.
13637. *Mr. Lysaght.*] *Q.* Was it an act of negligence? *A.* Yes, it was an act of negligence.
13638. *Q.* And, do you now say that that act of negligence was not a factor contributing to the disaster? *A.* I cannot see the connection.

(At 1 p.m. the Commission adjourned till 2 p.m.)

AFTERNOON.

(On resuming at 2 p.m, Mr. W. R. Pratt attended to take shorthand notes of the Evidence and Proceedings.)

Mr. A. A. ATKINSON, previously sworn, was further examined as under:—

13639. *Mr. Lysaght.*] *Q.* With the large area of the 35-acre waste roof standing, any fall would cause a large quantity of dust to rise in the 4th Right? *A.* Provided that there was a considerable quantity of dust and a considerable fall.
13640. *Q.* You know that there was a considerable quantity of dust, both on the 4th Right and on No. 1 travelling road, before the disaster? *A.* There was a certain quantity.
13641. *His Honor.*] *Q.* It has been stated during the course of the proceedings that one of the stoppings was blown out. What, in your opinion, was the probable effect that that dust would have if it were blown out into the engine road. Would you consider it an element in the matter? *A.* Do you mean, supposing the dust was of the finest quality, or merely pit slack?
13642. *Q.* Did you examine those stoppings to see whether the interior had been built up with small coal? *A.* There were a number of stones, and dirt, and slack. I could not say that there was much of the finer sort of dust that you meet on the timbers on the haulage road.
13643. *Q.* The material in these stoppings, then, would not be fine enough to call dust? *A.* Some witnesses have stated that they were filled with fine dust.
13643½. *Mr. Ritchie.*] *Q.* Would the fine dust be blown away by the time that you made your examination? *A.* Of course, I made my inspection after the explosion. There were deposits in certain places, but the deposits of dust after an explosion are not always true indications of the condition of the road before.
13644. *Q.* Would it be likely that the concussion blew the finer stuff away? *A.* If there was an opening at the top of the stopping, the lighter stuff would go first.
13645. *Q.* His Honor said that one of the stoppings had an opening at the top, and that this was blown out ——
13646. *His Honor.*] *Q.* I am alluding to a stopping which was actually blown out. It is a stopping north of the 5th Right, between the engine heading and the back heading, and it was blown out into the engine road. *A.* Yes.
13647. *Mr. Robertson.*] *Q.* Did it not consist of rough stone? *A.* I did not observe much of the finer stuff there.
13648. *Mr. Lysaght.*] *Q.* With the probability of a considerable fall in the 35-acre waste, raising a cloud of dust, and blowing out the dust of the stopping, and that such a fall was anticipated a week before the disaster, was it not negligence on the part of the management not to systematically water the 4th Right and No. 1 travelling road? *A.* There was no legal obligation.
13649. *Q.* Apart from legal obligations, was there not negligence on the part of the management of the colliery? *A.* Opinions are so divided as to the benefits or otherwise of watering dust, and it is not by any means general in this country yet; therefore I could not say that it could be called negligence in the way you suggest.
13650. *Q.* In your opinion was it not negligence not to systematically water No. 1 travelling road and the 4th Right ——
13651. *His Honor.*] Ask him, if he had been Manager himself, would he have thought it consistent with his duty, and a proper thing to do, to water these roads?
13652. *Q. Mr. Lysaght.*] What do you say to that? *A.* I hardly know how to answer it, because I have mentioned the legal obligation in connection with the question.
13653. *His Honor.*] *Q.* It is not a matter of legal obligation. What Mr. Lysaght is asking you is, supposing you had been Manager, and knew exactly how things stood, do you think that, as a matter of fair precaution, you would have watered the 4th Right and the No. 1 travelling road? *A.* Well, I think it would be a desirable thing to do.
13654. *Mr. Ritchie.*] Do you think that you would have done so? *A.* I cannot say whether I would or not.
13655. *Mr. Bruce Smith.*] *Q.* Do you know the condition of the dust at the time —— [*No answer.*]
13656. *His Honor.*] The question is asked on the assumption that it was a dry part of the mine.
13657. *Mr. Robertson.*] Quite the contrary; No. 4 was wet.
13658. *Mr. Lysaght.*] The evidence is that there was 1 inch of dust there.
13659. *Mr. Robertson.*] I think the evidence is that it was sloppy.
13660. *Mr. Lysaght.*] *Q.* Do you know what evidence had been given as to the dusty condition of the 4th Right before the disaster? *A.* Do you mean speaking from the evidence?
13661. *Q.* Yes. *A.* There is evidence that there is a certain quantity of dust in the neighbourhood of the 4th Right travelling road.
13662. *Mr. Robertson.*] *Q.* Is there any evidence of dust being in the outlet of No. 4 Right? [*No answer.*]
13663. *Mr. Ritchie.*] *Q.* You said that the state of the road at the present time is not to be compared with what it was before the disaster?
13664. *Mr. Robertson.*] He said the mine generally.
13665. *Witness.*] I know that after the accident I saw a quantity of dust in the neighbourhood of the 4th Right.
13666. *Mr. Robertson.*] *Q.* In the neighbourhood? *A.* Yes, I made a note of it at the time.
13667. *Q.* I have seen water running out of it? *A.* There is a certain amount of water there.
13668. *Mr. Lysaght.*] *Q.* Taking the authorities you have quoted to us, there was a dangerous accumulation of dust in the No. 4 Right and on the travelling road? *A.* Under certain conditions.

13669. *Q.* And is it a fact that a dangerous quantity of dust, such as you have specified from the authorities, can arise from one day's working in the ordinary course of a mine. Do the authorities say that one day would be sufficient to cause a dangerous accumulation of dust? *A.* The dust is only dangerous under conditions of shot-firing, or gas in the air mixed with dust.
13670. *Q.* You have given us certain measurements to show what proportions of dust are dangerous. Could this dangerous condition of dust accumulate in one day's ordinary working of a colliery? *A.* It depends on the quantity of mineral being passed over the road.
13671. *Q.* Take one of the main haulage roads. Would one day's work be sufficient to accumulate a dangerous amount of dust? *A.* Under certain conditions, it might.
13672. *Q.* The conditions being such as you have described, will you not admit that it was positive negligence on the part of the management not to systematically water the travelling road and the haulage road? *A.* I cannot say that it was.
13673. *Q.* Will you say, without it being positive negligence, that there was not negligence in not watering these roads under the conditions which you have described? *A.* No, I do not think it would be.
13674. *Q.* If it was not negligence on the part of the management then, would it be negligence on the part of the management now not to water under these conditions? *A.* I think it would not be until the law is altered.
13675. *Q.* I am not speaking of the legal obligation, but of the practical working of a colliery. Should not Mr. Rogers have had the travelling road and the haulage road watered? [*No answer.*]
13676. *Mr. Ritchie.*] *Q.* Would you have done so, had you been Manager, with the knowledge you have now? *A.* With the knowledge I have now, I think I would.
13677. *Mr. Lysaght.*] *Q.* Was it not neglect on the part of the Manager not to do it? [*No answer.*]
13678. *His Honor.*] *Q.* That is an inference that may be drawn, or not, by the Court. The answer of the witness is, that he would have done it himself in the exercise of his discretion with the knowledge he has now.
13679. *Mr. Robertson.*] *Q.* May I ask Mr. Atkinson if his view as to what constitutes a dry and dusty mine has been altered to some extent since this disaster? *A.* No.
13680. *Q.* Did you consider this a dry and dusty mine? *A.* Well, the term "dry and dusty" has never yet been defined. It is to a certain extent an open question. Although there are certain parts of the haulage road which may be described as being dry and dusty, I do not think that on the whole anyone can call it a dry and dusty colliery.
13681. *Q.* Perhaps since the explosion what we call a dry and dusty mine must be revised? *A.* There is no doubt that a much smaller quantity of dust is dangerous than was formerly thought to be the case.
13682. *Mr. Lysaght.*] *Q.* Was not all the knowledge as to the dangerous qualities of dust known as far back as 1886? *A.* Well, there had been several explosions attributed to coal-dust, with the presence of gas; but opinions were very much divided even in 1886, as you will see by a glance at the evidence given in the 1891–1894 Commission.
13683. *Q.* For seven years before the disaster the Commission emphatically pointed out the danger of coal-dust and the necessity for systematic watering? *A.* They suggested it, although the Legislature had not amended it beyond the Act of 1887.
13684. *Q.* And in various collieries in England for the last ten years, systematic watering has been carried out? *A.* Yes, I think so, on main haulage roads.
13685. *Q.* And in a number of collieries in this State? *A.* Systematic watering—do you mean of the whole of the colliery?
13686. *Q.* I mean of the travelling and haulage roads? [*No answer.*]
13687. *Mr. Bruce Smith.*] *Q.* What do you mean by systematic? *A.* Do you mean regularly?
13688. *Mr. Lysaght.*] *Q.* Do you know that? *A.* It depends on what you call systematic watering.
13689. *Q.* I mean the watering of the travelling road and the haulage road with sprays? *A.* No.
13690. *Q.* Do you know whether the Newcastle collieries have been watering systematically for the last six or seven years? *A.* No, they have not.
13691. *Q.* Do you know of any collieries in this State where the haulage roads have been watered systematically? *A* Do you refer to the roof and the sides, and the floor?
13692. *Q.* I am speaking at present only of the floor? *A.* I dare say the floor has been watered.
13693. *Q.* Do you know whether before the disaster there were any means of watering the floor, adequately, at Mount Kembla? *A.* I think there is evidence of some tanks being used for the purpose.
13694. *Q.* Will you not admit that the tanks were absolutely inadequate to water the floor, apart from the sides and the roof? *A.* I think, perhaps, they were.
13695. *Q.* Then, with the knowledge available to colliery managers for the past seven years of the danger of coal-dust, and the necessity of watering, will you not admit that the management was guilty of negligence in not watering? *A.* No, I cannot admit it; as it was not an acknowledged custom in the State.
13696. *Q.* I do not say whether it was an acknowledged custom or not. Here is the evidence of certain things that were dangerous. Would it not be negligence not to water Kembla Colliery? *A.* Yes, I think it would be now.
13697. *Q.* Well, was it not equally negligence on their part before the disaster? *A.* Well, with the recent knowledge of the explosion, I think it would be negligence now, although it could hardly be said to be negligence before the explosion.
13698. *Q.* With the knowledge of the explosion, and knowing as the management did of the presence of gas and the danger of coal-dust, would it not be equally dangerous then as now? *A.* I cannot say that it would.
13699. *Q.* Are you prepared to say that it was not? [*No answer.*]
13700. *Mr. Ritchie.*] The witness admits that it would be negligence now; would it not also be negligence before the disaster?
13701. *Mr. Bruce Smith.*] The matter of negligence is according to our own knowledge. You might say that the colliery managers of twenty-five years ago were negligent because of the manner in which they worked their mines.
13702. *Mr. Lysaght.*] *Q.* Would it not be negligence? *A.* I cannot say. The additional knowledge conveyed by the explosion alters the case.

Witness—A. A. Atkinson, 5 February, 1903.

13703. *Q.* Can you tell me any greater knowledge about coal dust which could be gained from the explosion? *A.* Oh, I think there was sufficient knowledge conferred by the explosions in England.
13704. *Q.* Sufficient knowledge of what? *A.* Perhaps you will put your question again.
13705. *Q.* I ask you what additional knowledge, with reference to the danger of coal-dust, has been afforded by the disaster, which was not already afforded by the English explosions? *A.* I do not think that there was any.
13706. *Q.* That being so, cannot we leave the Kembla disaster outside the question? *A.* I do not see how we can do that.
13707. *Q.* If the knowledge was available, as to dangerous conditions before the disaster, in what way does the disaster affect the negligence of the Company in not watering? Why should it be negligence not to water now and not negligence not to water before the disaster? *A.* Well, the effect of the explosion has brought the matter so keenly before everyone in the mining community, and before everyone associated with mining.
13708. *Q.* Is that the only reason? *A.* I do not know of any other.
13709. *Q.* Was it not brought sufficiently before the notice of mining managers and others by the common text books issued before the disaster? *A.* If they had read them.
13710. *Q.* Then you admit that the knowledge was available in the mining text books? *A.* Yes.
13711. *Q.* Will you not admit that it was negligence on the part of the Managers not to water ——
13712. *His Honor.*] Which was negligence? Not to water, or not to read the books?
13713. *Mr. Barry.*] Evidently the negligence was in not reading the books.
13714. *His Honor.*] The question is whether the omission to read the books constitutes negligence.
13715. *Mr. Lysaght.*] *Q.* I want to clear this matter up; and I accept your opinion as final as far as I am concerned. If it would be negligence not to water now, was it not also negligence not to water before the disaster?
13716. *His Honor.*] *Q.* Mr. Atkinson has answered that question before? *A.* Yes, I have answered it.
13717. *Mr. Lysaght.*] *Q.* Now, is it a fact that since the disaster the management at Kembla has adopted an improved system of watering? *A.* I do not know that you can describe it as an improved system; but they have adopted a system of watering.
13718. *Q.* Is it a system which meets with your approval? *A.* On the haulage roads—yes.
13719. *Q.* They have purchased sprays? *A.* They have tubs going round which operate pumps, and this causes sprays of water on the haulage road.
13720. *Q.* Before the disaster they had none of these appliances? *A.* No.
13721. *Q.* Did it not strike you with your knowledge of the danger of coal dust, that you should have made some recommendation as to the advisability of the Kembla Company watering their mine ——
13722. *Mr. Barry.*] Are you speaking of before or after the disaster?
13723. *Mr. Lysaght.*] *Q.* Before the disaster? *A.* I did make a recommendation to the Company before the disaster.
13724. *Q.* Did they carry out that recommendation? *A.* They might have done so. It only referred to the watering in connection with the firing of shots under General Rule 12.
13725. *Q.* Leave that alone for a moment. You confined your recommendation to the practice of watering in the vicinity of firing a shot. Did it not occur to you that in order to preserve the Kembla Mine from the danger of a dust explosion, it would be advisable to have all haulage and travelling roads watered? *A.* I sent a circular letter to the Manager; but it was in such terms as I considered were within the powers of the Inspector.
13726. *Q.* Apart from the powers you are speaking about, have you not a general power of ordering anything to ensure the safety of a mine? *A.* No; watering is specially provided for by a general rule.
13727. *Q.* Do I understand that you felt the want of power to give orders regarding watering at the Kembla Colliery? *A.* I cannot say that the matter came before me.
13728. *Q.* If you did not feel the want of power in the matter, will you tell me why you did not order the Kembla Colliery Company to water their roads in view of the danger which you knew existed from coal-dust? *A.* I did not have the power to do it.
13729. *Q.* You say you never felt the want of that power? *A.* I do not understand you.
13730. *Q.* Well, you say you could not do it? *A.* I cannot order a Colliery Manager to water the whole of the haulage roads and the travelling roads. I sent out a circular giving orders as far as I could.
13731. *Q.* Was not the direction contained in the circular of little value? *A.* Well, the course which you suggest has never been, so far as I know, adopted in the old country or here. I did not feel that I was justified in taking that course.
13732. *Q.* Will you not admit that, generally speaking, your circular was of no value with a view of preventing such a disaster as occurred at Mount Kembla? *A.* Yes.
13733. *Q.* So I may take it that you did nothing to suggest that directions should be taken with a view of preventing such a disaster as did occur? *A.* Not beyond sending out the circular, and giving the result of the testing of the dust.
13734. *Q.* When you sent out the circular giving the result of the testing of the dust, did you not consider that it was essential to have the travelling roads watered as well as the haulage roads? *A.* I do not know what I considered at the time.
13735. *Q.* Will you not admit that it was essential that the travelling roads should be watered as well as the haulage roads? *A.* There was no mention of the haulage roads in the circular.
13736. *Q.* Was not the firing on the haulage roads? *A.* The recommendation was not confined to the haulage roads. It referred to any dry or dusty place. That is, shots were not to be fired in any dry or dusty place without watering.
13737. *Q.* You knew that shots were being fired all over the mine? *A.* Yes, in the working places.
13738. *Q.* You knew that some parts of the mine were dry and dusty? *A.* Yes, on the haulage roads.
13739. *Q.* And that some parts of the working face were naturally dry and dusty? *A.* I could not say that.
13740. *Q.* Do you not know that work was going on in the highest part of the mine? *A.* Yes.
13741. *Q.* Do you not know that the 4th Left was a dusty section? *A.* I know that there was dust on the rope road of No. 4 Left.

13742. *Q.* Why did you not see that your recommendation about watering the place was carried out? *A.* I had nothing to tell me that it was not carried out.
13743. *Q.* Did you inquire? *A.* I had not time, in the interval between the sending out of the circular and the explosion, to visit the mine.
13744. *Q.* I do not care about your visiting the mine. Did you make any inquiry? *A.* I received reports from the Inspector, and expected him, naturally, to mention any irregularity, as he is instructed to do. I had no intimation of any irregularities of that kind.
13745. *Q.* Did you do nothing which would enable you to discover whether your suggestion was being carried out? *A.* I cannot say. I made no specific visit, or inquiries, beyond the reports I received from the Inspector.
13746. *Q.* In view of the fact that the Kembla dust was found to be "violently explosive," will you not admit that it was material to know whether the watering recommendations were being strictly carried out? *A.* Yes.
13747. *Q.* Can you give any explanation for not finding out whether they were being carried out? *A.* I would find out from the Inspector.
13748. *Q.* You found out in another way—by the explosion? *A.* I did not find out.
13749. *Q.* Have you got the reports of Inspector Bates for about six months previous to the disaster? *A.* Yes.
13750. *Q.* Can you produce them? *A.* Yes.
13751 .*Q.* Will you have the reports of Inspector Bates produced, Your Honor?——
13752. *His Honor.*] *Q.* Can you produce them? *A.* Yes.
13753. Then I shall be glad if you will have them here by Monday? Yes, Your Honor.
13754. *Mr. Lysaght.*] In Mr. Bates' reports, is there any mention of watering being done at Kembla? *A.* So far as I remember, there is not.
13755. *Q.* The reports afforded you no information with regard to the watering? *A.* The inference is, if the watering had not been done ——
13756. *Q.* I said that they afforded you no information? *A.* Not expressly, but inferentially they did.
13757. *Q.* Did Mr. Bates know of your communication to Mount Kembla? *A.* Yes.
13758. *Q.* I suppose you frequently saw Mr. Bates between the time of the making of the recommendation and of the disaster? *A.* Yes.
13759. *Q.* Did you ask him? *A.* I do not remember.
13760. *Q.* Did Mr. Bates ever, in writing or by word, make one single mention of the watering being done at Kembla? *A.* I do not remember whether he did or not.
13761. *Q.* Can you remember whether he made any mention of the dusty conditions which existed at Kembla? *A.* I do not know that he did.
13762. *Q.* On the 30th April, 1902, you wrote a letter to the Manager of the Kembla Company, from which the following is an extract:—

> It is necessary, in the event of blasting taking place in your colliery in dry and dusty places, that the requirements of General Rule 12, section 47, Coal Mines Regulation Act, should be strictly complied with, and the vicinity of the shots thoroughly watered, as required by that Rule.

And, on the 13th of May, you wrote to the Manager telling him that you would be pleased to hear from him in regard to the matter. I want to know what you, or your Inspector, did from the 30th of April to learn whether Rule 12 was being strictly complied with? *A.* Do you mean with reference to the Mount Kembla Mine?
13763. *Q.* Yes? *A.* I did not visit Mount Kembla in the interval.
13764. *Q.* What did you do to see that the General Rule was strictly complied with? *A.* The Inspector would visit the colliery, to see whether or not it was strictly complied with.
13765. *Q.* That is an assumption? *A.* Yes.
13766. *Q.* May I take it that you have no knowledge of having done anything specifically to see that General Rule 12 was strictly complied with? *A.* I have no knowledge that the rule was not complied with. I have knowledge that the Inspector visited the colliery before the explosion, and after the 30th of April.
13767. *Q.* Have you any knowledge of the Inspector's having visited the colliery when blasting was being carried out on the haulage roads? *A.* No.
13768. *Q.* Have you any knowledge that the Inspector visited the colliery when a shot was actually being fired, and was there to see it fired? *A.* I should think it very probable that he would be there.
13769. *Q.* Have you any knowledge that he was present when a shot was fired? *A.* I have no knowledge, but I should think it very probable that he was present.
13770. *Q.* You have no knowledge whether this request was carried out or not? *A.* I will not admit that.
13771. *Q.* But you cannot give me any knowledge that you have? *A.* I did not visit the mine.
13772. *Q.* Did you not hear Mr. Rogers admit that he never had the vicinity of a place watered, when shot-firing was going on, after having received that circular from you? [*No answer.*]
13773. *Mr. Barry.*] I do not think that there was any such evidence.
13774. *His Honor.*] Mr. Lysaght had better show it to the Court.
13775. *Mr Lysaght.*] *Q.* Here it is in the report of the evidence given by Mr. Rogers at the inquest:

> We have no apparatus at all for watering the roof, sides, and timbers, and we never have watered them; we have not fired shots in the roads for a considerable time; for nine or ten months, to the best of my memory, we have never watered in the immediate neighbourhood of a shot; we have no apparatus for doing that, and it has never been done.

13776. *Q.* Had you no such knowledge that he had not watered? *A.* No.
13777. *Q.* Do you know that, although he got your letter he admitted that he did not bother to have the places watered? *A.* Yes, I know that.
13778. *Q.* Will you admit that Mr. Rogers did nothing to carry out Rule 12? *A.* I do not know that he fired shots in a dry and dusty place.
13779. *Q.* Do you not know that shots were being fired in the 4th Left? *A.* Do you mean in the working faces?
13780. *Q.* Yes. Are they not dry and dusty? *A.* I do not know that they can be called so.
13781. *Q.* Do they not possess dusty conditions that are dry and dangerous? *A.* I saw dust there after the explosion.

Witness—A. A. Atkinson, 5 February, 1903.

13782. *Q.* Can you mention anything which you did to see that this urgent request which you made was ever attended to? *A.* Nothing beyond what I have described.
13783. *Q.* And you have the admission of the Manager that he never watered at all? *A.* Yes.
13784. *Q.* Will you not admit that that was negligent? *A.* If he fired a shot in a dry and dusty place, it was.
13785. *Q.* If ever he fired a shot at all? *A.* Not unless it was in a dry and dusty place.
13786. *Q.* I am taking the working places on the 4th Left. If a shot were fired in them, and the place was not watered, will you not admit that there was negligence? *A.* If the place was dry and dusty.
13787. *Q.* Do you not know that the majority of these places were dangerous—that they were in a dusty condition? *A.* I do not know.
13788. *Q.* Have you any reason to suggest that they were not? *A.* I do not know that they were or were not.
13789. *Q.* Did you not hear Mr. Rogers admit at the inquest that he did not know what the result of the analysis of the Mount Kembla coal-dust had been? *A.* I believe he said so. It was not an analysis, but the result of an experiment to show the explosibility of the dust.
13790. *Q.* Was that not negligence on the part of the Manager of the mine not to know the result of the experiments relating to the coal-dust? *A.* Yes, I think it was.
13791. *Q.* And in your opinion now, had the Kembla Mine been watered as you directed in your letter might the disaster have been avoided, or is it probable that it would? *A.* No, I do not think it would.
13792. *Q.* Did not coal-dust play a large part in propagating that disaster? *A.* Yes, I think it did.
13793. *Q.* If the 4th Left travelling road and the haulage roads had been well watered, would not the explosion have been confined practically to the No. 1 main level? *A.* I think it would have had a tendency to have had that effect.
13794. *Q.* It is a fact then that, had part of the mine been watered the extent of the disaster, in your opinion, would have been considerably reduced? *A.* If it had been watered for a sufficient length, I think it would.
13795. *Q.* Then will you not admit that it was negligence causing death, on the part of the management, not to sufficiently water that mine for a sufficient length? *A.* I do not think it could be so described.
13796. *Q.* What would you call it—what name would you give it? *A.* Well, if the explosion had been anticipated it would have been negligence.
13797. *Q.* I am not anticipating an explosion; but I am anticipating common dangers that were known to be there. But, coming to a case of gas before the disaster—you had notice of Gallagher's burning? *A.* Yes.
13798. *Q.* You had notice in the evidence of Mr. Ronaldson before the Commission on the Coal Mines Bill, that Kembla was constantly giving off gas in all parts? *A.* A little gas.
13799. *Q.* You had the evidence of a previous Manager named Green, in the same report, that Kembla had given off gas? *A.* I do not remember having read his evidence.
13800. *Q.* Did you have any special inspections made to determine whether the Kembla Mine was giving off a dangerous quantity of gas. *A.* Statutory inspections, and the ordinary inspections, were made from time to time by the different Inspectors.
13801. *Q.* Did you ever have an inspection made with the hydrogen flame? *A.* I do not remember that I did.
13802. *Q.* Did you make an inspection with the hydrogen flame in any other colliery? *A.* I have done so.
13803. *Q.* Knowing that, with coal-dust, fire-damp to the extent of 1 per cent. is dangerous, and that the safety-lamp will not detect less than 2½ per cent., did not you consider it necessary to have an inspection made of Kembla with the hydrogen flame? *A.* The conditions you suggest are only likely to arise when a shot is fired.
13804. *Q.* Are not the whole of your conclusions relating to coal-dust only liable to arise when a shot is fired? *A.* Or from an explosion of fire-damp.
13805. With the knowledge which you had that one man had been burnt with gas, and that a Manager admitted that the colliery was giving off gas in all parts, did you not think it necessary to have an examination made with the hydrogen lamp? *A.* I had an examination made in a neighbouring colliery but was unable to find anything.
13806. *Q.* Which colliery? *A.* Keira.
13807. *Q.* How long before the disaster? *A.* I cannot remember now. I can find it from my notes.
13808. *Q.* How long? *A.* I cannot say.
13809. *Q.* You thought it necessary in the Illawarra district, south of Mount Pleasant, to make an examination with the hydrogen flame? *A.* I do not know that I thought it necessary; but, having the hydrogen lamp with me, I did it.
13810. *Q.* Did you have any notice? *A.* No.
13811. *Q.* You made an inspection of a colliery with the hydrogen flame in a case where you had no notice, but you made no inspection of a colliery in a case where you knew a man had been burnt? *A.* That is so.
13812. *Q.* Can you give me any reason? *A.* I inspected Kembla with the ordinary safety-lamp.
13813. *Q.* It is valueless for coal-dust?——[*Interrupted.*]
13814. *Mr. Barry.*] I object to the question.
13815. *Mr. Lysaght*] *Q.* Would not the inspection be valueless so far as an explosion from coal dust and fire-damp is concerned? *A.* No.
13816. *Q.* Would not the ordinary lamp fail to detect the small amount of gas which might cause an explosion in connection with coal dust? *A.* If a cloud of coal dust was raised, yes.
13817. *Q.* Do you know whether the District Inspector made an inspection with the hydrogen lamp? *A.* I supplied him with one.
13818. *Q.* Did you every inquire whether he made an inspection with the hydrogen flame? *A.* I do not think he did.
13819. *Q.* Do you know whether he made an inspection of Keira or Mount Pleasant with a hydrogen flame? *A.* I do not know whether he did or not.
13820. *Q.* Was Keira the only colliery on the South Coast that you examined with the hydrogen flame? *A.* I examined Bulli and some other places.
13821. *Q.* Did you examine Mount Pleasant? *A.* I cannot swear to it.
13822. *Q.* Is not this the fact—that you relied on the report of the deputies and the management of Mount Kembla, so far as the presence of gas is concerned? *A.* No, certainly not.
13823. *Q.* Do you know how often the Inspector tested for gas? *A.* On every inspection, I expect.

13824. *Q.* How often would that be? *A.* Six or eight times a year, probably. I do not know exactly.
13825. *Q.* He did not visit at regular periods? *A.* No.
13826. *Q.* He might not go for three months? *A.* He might not.
13827. *Q.* Do you know when it was he went before the disaster? *A.* Either the end of March or the beginning of April.
13828. *Q.* And on that occasion he was only a few hours inspecting? *A.* I do not know how many hours.
13829. *Q.* Was it not only a report of one day's inspection? *A.* No, two days. He was in the mine in July also.
13830. *Q.* Did you get a report? *A.* No.
13831. *Q.* It was an inspection? *A.* It was an inspection.
13832. *Q.* Do you always get a report? *A.* After the inspection is concluded.
13833. *His Honor.*] *Q* I think he was there a fortnight before the explosion? *A.* Yes.
13834. *Q.* And on the day of the explosion? *A.* Yes.
13835. *Mr. Lysaght.*] *Q.* Was he completing it? *A.* He was either completing it, or he would require another day.
13836. *Q.* Does his report show what part of the mine he visited? *A.* Yes.
13837. *Q.* Does it show that he visited the back heading and No. 4 Left? *A.* It does not specifically mention them.
13838. *Q.* Does he specifically mention other places? *A.* We can see when the report comes up.
13839. *Q.* Then I may take it as quite correct, that so far as the presence of gas is concerned, no inspection was made of the Mount Kembla Mine with the hydrogen lamp? *A.* Not so far as I know.
13840. *Q.* And a proportion of gas, which could not be discovered with the ordinary safety-lamp, would have been quite sufficient to have been responsible for this disaster, if it was assisted with a cloud of dust raised by a fall? *A.* Yes.
13841. *Q.* You do not suggest that there was any greater degree of fire-damp, as a factor to this explosion, than an amount under 2½ per cent.? *A.* There may or may not have been.
13842. *Q.* Do you think there was? *A.* I cannot tell. It would be quite impossible to tell.
13843. *Q.* Then we have this position—that, as far as the inspections were concerned, the danger to be met with by gas in a mine, and the danger of dust, were in the mine. The result was this disaster; and no inspection was ever made to guard against these dangers? *A.* Well, ——[*Interrupted*].
13844. *Q.* I mean that you made no inspection to guard against those dangers? *A.* No inspection was made to detect a percentage of gas, which might be an important element in a disaster, no doubt, with certain other conditions.
13845. *Q.* Do you not think that your District Inspector was failing in his duty in not examining the Kembla Mine with the hydrogen lamp which you supplied him with? *A.* There may be reasons which he could give, which were known to him, why he did not try with the hydrogen lamp.
13846. *Q.* Did you ever ask him? *A.* I do not remember whether I did so or not.
13847. *Q.* He has never told you any reasons? *A.* No, I do not think he has.
13848. *Q.* Will you not admit that it was his duty to examine with the hydrogen flame at Kembla before the disaster? *A.* Well, I do not remember whether he had any specific instructions to use the hydrogen lamp in every mine.
13849. *Q.* Will you not admit that, as an Inspector is responsible, to a certain extent, for the safety of a mine, it was his duty to have examined Kembla with the hydrogen lamp? *A.* I do not think it was.
13850. *Q.* Then you do not consider that it was your Inspector's duty, or your duty, to examine Kembla with the hydrogen flame? *A.* I do not think it was our duty.
13851. *Q.* You do not think you were called upon to do it in order to ensure the safety of the mine? *A.* No, I do not think so.
13852. *Q.* Then I take it that you do not consider that your duty calls on you to make an inspection for things which are admittedly dangerous? *A.* I think if we could have the conditions which you suggest, so that we could inspect under those conditions, it would be manifestly our duty to do so.
13853. *Q.* I do not follow you? *A.* You suggest a set of conditions not likely to arise when we have an opportunity of inspecting.
13854. *Q.* Do you say that it is not your duty, or the duty of your Inspector, to inspect for a thing that is known to be dangerous and liable to cause a disaster? *A.* I do not say that. I say that if you could produce the condition of things which you suggest, or we could anticipate them, and have a chance of inspecting under those conditions, then we would inspect at that time.
13855. *Q.* What are the conditions which you want to make it your duty to inspect? *A.* You suggested a set of conditions. A cloud of dust, a certain percentage of gas, and a naked light.
13856. *Q.* Are not those conditions likely to arise at any time in a mine? *A.* No.
13857. *Q.* Is there not always danger of there being a cloud of dust in a place which is not watered—is there not danger of there being less than 2½ per cent. of gas in a place known to give off gas in all parts. Then you have the dust on the roads—you have under 2½ per cent. of gas, and you have the naked light. Now, were not all three of these things in the Kembla Mine? *A.* We are not likely to have 2½ per cent. of gas on the main intake air road.
13858. *Q.* I did not say that you were? *A.* Those are the conditions you put to me.
13859. *Q.* Were not those conditions existent at Mount Kembla? *A.* No.
13860. *Q.* What portion of those conditions were not existent? *A.* The cloud of dust, and the 2½ per cent. of gas were not there.
13861. *Q.* Do you not know that you had had notice that gas was being given off in the mine? *A.* I have had notice seven years before that the mine had given off gas.
13862. *Q.* Had you any means of knowing, or any knowledge that gas was not being given off under 2½ per cent? *A.* I think it is likely that it might have been given off.
13863. *Q.* Was it not the duty of your Inspector to examine with a hydrogen flame? *A.* I cannot admit that.
13864. *Q.* Then you do not consider it part of your duty, or part of the District Inspector's duty, to examine a mine where there are dangerous conditions which might lead to disaster? *A.* I do not say that.

Witness—A. A. Atkinson, 5 February, 1903.

13865. *Q.* Will you admit this—that the failure to examine the faces that were not being worked was negligence in the management? [*No answer.*]
13866. *Q.* You heard the evidence of Morrison that the top heading in the 4th Left—that there were eight or ten bords there which had not been examined by him; are you aware that Special Rule 9 of the Kembla Colliery states that the deputy shall make a true report of, and enter and sign daily in a book the state of the mine roads, brattice, and the faces. Now, will you admit that it was negligence on the part of the management not to have those faces examined daily? [*No answer.*]
13867. *Mr. Barry.*] I think that Mr. Lysaght might ask whether it was the duty of some one to make this examination
13868. *His Honor.*] Mr. Lysaght means bad management of a mine.
13869. *Mr. Lysaght.*] Was that not bad management of a mine—you know Special Rule 9? *A.* There seems to be some doubt whether the word "faces" should not be read in conjunction with the words "working faces."
13870. *Q.* Will you tell me when that doubt was first raised or where it came from. Have you any doubt as to what that word means. As Chief Inspector, reading Rule 9, have you got any doubt as to what the word "faces" means? *A.* It means the face of the coal.
13871. *Q.* Irrespective of whether it is being worked or not. Will you not admit that there is just as great a danger latent in a face not being worked, as in a face being worked? *A.* Yes.
13872. *Q.* And is it not essential to have daily inspection? *A.* Do you mean whether working or not?
13873. *Q.* Yes? *A.* I think they should be inspected.
13874. *Q.* I asked you whether it was not just as essential to have the faces examined which were not being worked, as the faces which were being worked. And your answer is "Yes"? *A.* Yes.
13875. *Q.* Now, is not the fact of the 4th Left being left unexamined for weeks evidence of bad management? *A.* Yes, I think it was.
13876. *Q.* And is it not probable, in view of the fact that gas was discovered in those particular faces, that the presence of gas there helped to propagate the explosion? *A.* In my opinion it had that effect.
13877. *Q.* So that in your opinion some of the results of the explosion are traceable to the fact that gas was allowed to accumulate in the mine? [*No answer.*]
13878. *Mr. Robertson.*] There is no evidence that gas did accumulate in the mine.
13879. *Mr. Lysaght.*] *Q.* Where a big fall is expected over a large area what precautions should be taken to guard against possible danger from that fall? *A.* Do you mean if gas is anticipated?
13880. *Q.* I take it whether anticipated or not. The colliery was known to have given off gas—and I want to know when a large fall is anticipated, what precaution should be taken to guard against that fall? *A.* I do not see that you could go beyond removing the workmen from the vicinity of the fall.
13881. *Q.* Would you not have all the places watered in the vicinity of the fall? *A.* I have never known it to be done in such a case.
13882. *Q.* Would you not consider it advisable? *A.* If you were anticipating gas with a fall which might possibly raise a cloud of dust, I think that you should water the place, especially if you are using naked lights.
13883. *Mr. Robertson.*] You could not water the floor where the fall was going to take place.
13884. *Mr. Lysaght.*] *Q.* Have you any further answer? *A.* If you have any likelihood of fire-damp being forced out, and naked lights are in use, I think watering should be done in the vicinity.
13885. *Q.* Is there anything else you can suggest? *A.* I do not know there is anything else to be done.
13886. *Q.* Did you observe that in Kembla bords were driven 100 yards without any cut-throughs? *A.* Yes.
13887. *Q.* Did you take a measurement of the air in any of those bords? *A.* No.
13888. *Q.* Were men working in them? *A.* Yes.
13889. *Q.* Was the brattice in good order—did you go up to the face? *A.* Yes.
13890. *Q.* Was the brattice in good order? *A.* So far as I can remember.
13891. *Q.* Now, I suppose that you will say, so far as Kembla is concerned, that there is no necessity, as regards the safety of the roof, to drive bords 100 yards without cut-throughs. I mean that it is no necessary for the safety of the mine to have long drives? *A.* I do not say that it is absolutely necessary at Kembla. But you might increase the size of the pillars in other directions.
13892. *Q.* So no possible harm would be done by having cut-throughs every 30 yards. I am taking Kembla specifically—you know it is not a deep mine? *A.* It might be necessary to increase the size of the pillars in other directions if you did it.
13893. *Q.* In what other directions? *A.* By increasing the width of the pillar.
13894. *Q.* Would there be any harm in having cut-throughs every 30 yards? *A.* What do you mean by harm?
13895. *Q.* Harm in the Kembla Colliery? *A.* I do not know that there would be any harm in Kembla.
13896. *Mr. Robertson.*] *Q.* Is it not good mining practice to have pillars as large as possible? *A.* It is. With increase of depth you want large pillars.
13897. *Q.* As a general rule? *A.* As a general rule it is better to have large pillars.
13898. *Mr. Lysaght.*] *Q.* Now, at this top heading on the 4th Left have they got what you call the fag end of the intake air. I mean that bords are driven 100 yards, and supplied with air that had been to a number of men before it reached those bords? *A.* Yes.
13899. *Q.* These drives were also a considerable distance from the furnace? *A.* Yes.
13900. *Q.* And the return air had to travel a circuitous route to go to the furnace? *A.* It had to travel a considerable distance.
13901. *Q.* Had you any word that the men working in those bords were not getting their adequate supply of air? *A.* I had no reason to think that they were not.
13902. *Q.* Did you bother to take a record? *A.* I did not measure the air.
13903. *Q.* Did you measure it anywhere? Do you not know that the men complained of it being hot? *A.* I have heard it since. I had no complaint before.
13904. *Q.* You say that you had no knowledge, but that the men have complained since that the air was hot and bad, and I asked whether you took any record to see whether the air was good? *A.* The air was good, so far as I remember.
13905. *Q.* Did you take a record? *A.* No.

13906. *Q.* So that you cannot say? *A.* I can say. You do not require to measure the air to see whether it is good or not.
13907. *Q.* Can you tell me when you measured the air? *A.* I have not usually measured the air myself.
13908. *Q.* Where did you measure it? *A.* I did not measure it at all.
13909. *Q.* As far as any measurement is concerned you do not know? *A.* So far as any measurement by the anemometer is concerned I do not know.
13910. *Q.* You trusted to the feel of the air about your body? *A.* Yes.
13911. *Q.* You say that you do not make a practice to record the air yourself? *A.* Not usually, unless there is some complaint or something of that sort.
13912. *Q.* In the absence of complaint? *A.* No.
13913. *Q.* You often visit these collieries? *A.* Yes.
13914. *Q.* On whom do you rely for the measurement of the air? *A.* On the Inspector for the District. I may say that I sometimes measure it in conjunction with him when I am along with him.
13915. *Q.* You told us that a District Inspector might not go to a colliery for three months? Yes.
13916. *Q.* If you relied on him for your records of the air you might only have a record every three months? *A.* That is so.
13917. *Q.* And for the remainder of the time—the intervals between these records by your Inspector—neither you or he would know what air was passing through to the men? *A.* That would be so.
13918. *Q.* Do you not think, then, that your District Inspector should take records of the air more often than three months? *A.* No, I do not think it is necessary unless there is some complaint.
13919. *Q.* As Chief Inspector do you consider that you are carrying out your duty so far as seeing that the men get an adequate supply of ventilation, by only having a record every three months? *A.* Well, there is also a statutory duty on the part of the management to measure the air once a month.
13920. *Q.* Are they bound to furnish you with a copy of the measurement? *A.* No, not unless we visit the colliery.
13921. *Q.* There would be no difficulty in the District Inspector visiting the mine once a month? *A.* There would be a great difficulty.
13922. *Q.* A great difficulty by overwork? *A.* Yes.
13923. *Q.* Do you think that you want some additional Inspectors? *A.* I do not believe in carrying inspection too far, because there is a tendency to make Managers think that they may be relieved of part of their responsibility. They may think this if there were a too close attendance of Government officials.
13924. *Q.* Do you not think that a closer attendance of Government officials would tend to the more efficient management of a colliery? *A.* It would rather have the contrary effect.
13925. *Q.* Do you say that the Inspectors are not overworked and have plenty of time in which to perform their duty? *A.* I think so.
13926. *Q.* You say that the Inspectors have plenty of time in which to perform their duties, and that they are not overworked? *A.* Well, it depends to some extent on what you regard as their duty.
13927. *Q.* I am taking your view of the matter? *A.* I think they have sufficient time.
13928. *Q.* And, in your opinion, is the visit of the District Inspector every three months sufficient for the colliery? *A.* Under ordinary circumstances I think it is—unless there is something special requiring attention.
13929. *Q.* So that you practically entrust the management of a colliery, without any correction of the management, to the Manager? *A.* Yes, he is responsible for the conduct of the mine.
13930. *Q.* I suppose you admit that the brattice cloth, used in the Southern collieries, becomes perforated after about twelve months' wear? *A.* If in a dry place, it may last longer, but in a damp place it may become in that condition.
13931. *His Honor.*] *Q.* How long? *A.* Four months, but I think in a dry place it lasts longer.
13932. *Q.* What happens to it then; how does it become pervious to the air? *A.* The moist atmosphere tends to rot the substance of the cloth.
13933. *Q.* It goes into holes? *A.* In some cases.
13934. *Mr. Lysaght.*] It becomes like a sieve.
13935. *Mr. Bruce Smith.*] One man called it wire-netting.
13936. *Mr. Lysaght.*] *Q.* Is bratticing with cloth a sufficient means to adopt in these collieries, or should there be bratticing with boards? *A.* Well, of course, boards are better. There is not such a leakage. But if the air is conducted to the face by brattice, I think that should be sufficient.
13937. *Q.* Is there any difference in the expense? *A.* Boards would be more expensive.
13938. *Q.* Do you know of any boards being used in the district? *A.* No.
13939. *Q.* Do you know of any in New South Wales? *A.* Yes.
13940. *Mr. Robertson.*] *Q.* May I ask where? *A.* In the A.A. Company's Sea Pit they use boards.
13941. *Q.* Are they used generally throughout the mine? *A.* Of course, they have to have cloth at the ends of the boards.
13942. *His Honor.*] *Q.* Do they use bratticing as well as the boards? *A.* They require canvas doors.
13943. *Q.* What is it, ½-inch pine, or what? *A.* Just ordinary ½ inch boards.
13944. *Mr. Robertson.*] *Q.* Have there been any tests to prove whether boards are better than brattice? *A.* I do not know of any in the State, but it is generally admitted in the old country, where they are used, that with boards there is less leakage.
13945. *Q.* In a dry mine, would not the shrinkage render them in a day or two less efficient than brattice *A.* I think they are found to be efficient in dry mines where they are used.

(The Commission at 4 p.m. adjourned until 2·15 p.m. on the following Monday.)

MONDAY

MONDAY, 9 FEBRUARY, 1903, 2 *p.m.*

[*The Commission met at the Land Appeal Court, Darlinghurst.*]

Present:—

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq., Commissioner. | D. RITCHIE, Esq., Commissioner.

Mr. Bruce Smith, Barrister-at-Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf of the Crown.

Mr. A. A. Lysaght, Solicitor, appeared on behalf of—

(*a*) the representatives of deceased miners, wheelers, &c., (victims of the explosion);
(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.); and
(*c*) the Illawarra Colliery Employees' Association (the Southern Miners' Union).

Mr. G. J. Barry, Solicitor, appeared on behalf of the Mt. Kembla Coal and Oil Company (Proprietors of the Mt. Kembla Mine.)

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings.)

Mr. A. A. ATKINSON, previously sworn, was further examined as under:—

Cross-examination by Mr. Lysaght continued:—

13946. *Q.* You said that your theory did not assume an accumulation of gas in the goaf? Yes.
13947. *Q.* But that gas was a factor in the initiation of the disaster? *A.* That is so.
13948. *Q.* Where, in your opinion, did that gas come from? *A.* From the strata above the coal seam.
13949. *Q.* In what part of the mine? *A.* From the No. 4 Right.
13950. *Q.* The goaf? *A.* The goaf, up in the strata.
13951. *Q.* And when, in your opinion, did that gas come from those strata? *A.* By the fall which took place at the time of the explosion, prior to, and, partly, after, the explosion.
13952. *Q.* Have you any evidence at all that any fall took place immediately prior to the explosion? *A.* Well, we have evidence that the fall, which did take place, was not completed at the time of the explosion.
13953. *Q.* But have you any evidence that it had begun before the explosion? *A.* It might not have, supposing the —— [*Interrupted.*]
13954. *Mr. Bruce Smith.*] Which do you mean, Mr. Lysaght—the 2½ feet that had fallen?
13955. *Mr. Lysaght.*] That was the week before.
13956. *Q.* Have you any evidence that it had not begun? *A.* We have only evidence by the general results afforded by the explosion itself.
13957. *Q.* So that your conclusion, now, is based on an assumption which there is no evidence to support? *A.* That is not so. It is based upon all the evidences of force seen in the pit after the explosion.
13958. *Q.* But your conclusion, as to the gas which was an originating force in the disaster, is based on an assumption which there is no evidence to support? *A.* I do not agree with you there.
13959. *Mr. Bruce Smith.*] Does your Honor understand that there is any other class of assumption than an assumption which there is no evidence to support? That is what an assumption means.
13960. *His Honor.*] Not know. It is difficult to define an assumption. I think what is meant is a deduction from the evidence.
13961. *Mr. Lysaght.*] *Q.* Can you tell me, Mr. Atkinson, what evidence there is, from which you deduce that gas came from the waste at the time of the fall? *A.* Well, the indications point to the initiation of the explosion near to the 4th Left. I have already pointed out that, under normal conditions, the air on that road could not be expected to contain any inflammable gas, that being an intake airway; but the evidence is, so far as I have been able to make out, that the explosion was initiated there. It would require a certain percentage of fire-damp to initiate that explosion, together with coal-dust, and a naked light. Those are the grounds for my deduction, principally.
13962. *Q.* Then, were there not other places, much nearer to the 4th Left, known since to be giving off gas? *A.* Not that I am aware of.
13963. *Mr. Ritchie.*] *Q.* Perhaps Mr. Atkinson might explain what particular fall the gas came from? *A.* A fall at the goaf edge of the 4th Right pillars.
13964. *Q.* Is that the one which has been described as the 2½ feet fall? *A.* No; that took place a week before.
13965. *Q.* Is it the fall that took place on the day of the disaster that you are referring to? *A.* Quite so.
13966. *Mr. Robertson.*] *Q.* Would not the fall precede the gas? *A.* Yes.
13967. *Mr. Robertson.*] Then the fall could not drive it out.
13968. *Mr. Lysaght.*] That is just what I was going to ask.
13969. *Q.* Now, do you not see that the issue of the gas would be subsequent to the fall? *A.* Part of the roof would fall before the gas was liberated; but the roof would be falling above; and there would be gas accumulated in the strata, which would be forced out by the fall.
13970. *Q.* Would the 2½ feet fall, a week before the disaster, liberate any gas? *A.* It might, or might not.
13971. *Q.* Did you not tell me last Thursday, that, in your opinion, it had not? *A.* I said that I had not suggested that there was any accumulation of gas.
13972. *Q.* And did I not ask you whether gas would not probably result from the fall of the 2½ feet; and did not you say "No"? *A.* I do not remember what you said just now.
13973. *Mr. Lysaght.*] *Q.* On Thursday I put this question: "But, in view of the evidence that the first fall had taken place a week before the disaster, do not you think that the accumulation resulted from the first fall"? You said "No, I could not say that that is very probable." (*Vide* para. 13605.) Well now, do you say that it is very probable. I did not say it was very probable. I said it might (liberate some gas).

13974. *Q.* I ask you now, do you say that it is very probable that gas did result from the first fall? *A.* I say that a little gas, probably, might have been liberated by the first fall.
13975. *Q.* In your opinion, would that little quantity of gas remain in that 35-acre goaf? *A.* It would go into the highest parts, naturally.
13976. *Q.* Then, is it not probable that, if that goaf had been inspected every week, fire-damp would have been discovered in it?
13977. *Mr. Bruce Smith.*] Your Honor will see that that is a mere repetition, a useless repetition, of all the examination we had on Thursday. We are having now the very same questions that we had then. Three or four times, in reading over the evidence, I saw that same question asked.
13978. *His Honor.*] Practically this question was asked before, Mr. Lysaght.
13979. *Mr. Lysaght.*] But your Honor will see that he has now given a different answer, in effect, from what he gave before. The previous answer was that there was not likely to be an accumulation of gas in the goaf; now he says that a small quantity was given off by the first fall, and would remain in the highest parts of the goaf—that would be an accumulation. Therefore, I am now entitled to ask the question which I asked before, whether it is not probable that, if that goaf had been inspected every week, the fire-damp would have been discovered in it.
13980. *Q.* I think you said that it was probable the gas would remain there? *A.* I said it might.
13981. *Q.* You said it would go to the highest parts. Now I ask you, that being so, is it not probable that, if the waste had been inspected every week, fire-damp would have been discovered in it? *A.* Well, we must remember that the timbers were drawn out of that place; and that it might be neither practicable nor safe to go into the higher parts after the timber was drawn.
13982. *Q.* Assuming that you could get in a considerable distance over the 2½ feet fall, is it, then, probable that fire-damp would have been discovered there?
13983. *His Honor.*] That question answers itself; because, really, if somebody had gone in and looked for it, and if it had been there, probably it would have been found.
13984. *A.* Assuming you could get in, and assuming the fire-damp was there, you would have been able to discover it.
13985. *Mr. Lysaght.*] I am taking Mr. Atkinson's own "probability."
13986. *Witness.*] Well, I think you sometimes twist it a little bit, Mr. Lysaght, to suit your own purposes.
13987. *Mr. Lysaght.*] *Q.* Now, taking your assumption of the fall forcing out a certain quantity of gas, would not the gas be liberated subsequently to the fall? *A.* Do you refer to the little gas in the top part of the goaf, which has been referred to?
13988. *Q.* No; I am referring now to the gas which you say was an initiatory factor in the disaster? *A.* Well, of course, another portion of the roof would require to —— [*Interrupted.*]
13989. *Q.* Just take the first part of the question; you can put that in afterwards;—would not the fall of the roof be before the liberation of the gas? *A.* I cannot answer that with "yes" or "no." It requires some explanation. The roof would break at the top of the goaf, and above that there might be a pocket, or a certain quantity of gas, under pressure; but the roof again above that would fall, and would continue to fall for a long time. From the evidence of the fall at that goaf edge it was a long way up.
13990. *Q.* And did it appear to have been a series of small falls like that? *A.* No; I think it appeared to be a very large fall.
13991. *Q.* One very large fall, do you say? *A.* I cannot say whether it was one very large fall or not.
13992. *Q.* Was it, apparently, one very large fall or a series of small falls? *A.* I could not say that; it is quite impossible to say.
13993. *Q.* Now, is it not essential, for the maintenance of your theory, that it should have been one large fall? *A.* No; I do not think it is.
13994. *Q.* Do not you see that, if there were a series of small falls, there would probably not be sufficient to force out any quantity of gas? *A.* I do not think that is a correct assumption at all.
13995. *Q.* Then, do you think that any small fall in that goaf would have forced out any accumulation of gas? *A.* "Any small fall," that is so indefinite that one cannot give an answer to it.
13996. *Q.* What is indefinite? *A.* Well "any small fall." If one piece of stone fell, I do not think it would have that effect.
13997. *Q.* You have been speaking yourself of "small falls," and I have adopted your own words? *A.* Well, I say that I do not know whether it was one large fall by itself or more; and it is impossible to say.
13998. *Mr. Ritchie.*] *Q.* Would it not want to be a large fall to drive it through those doors and on to the intake airway? *A.* I think it would.
13999. *His. Honor.*] When you speak of "large," it is as well for you to distinguish between large in area and large in thickness of roof. Of course, there is a radical difference between the two? *A.* Well, I think that the area which was open, so far as we have it in evidence, was 2 chains square, and the evidence at the face of the fall, seeing it after the explosion, went to show that the fall went up a long way above the seam.
14000. *Mr. Robertson.*] *Q.* Do you think it would require the whole area of the fall to drive the gas right across the return airway, to destroy those doors, and to drive the gas on to the main intake? *A.* Well, I think it would require the greater part of that area, certainly.
14001. *Mr. Lysaght.*] *Q.* Well, now, if that is your opinion, what becomes of your suggestion that there may have been a series of small falls constantly liberating gas, if you now say it would require a big fall to do what you suggest? *A.* Well, of course, I was not there to see it.
14002. *Q.* Is that your answer? *A.* Well, I should like to have read over to me what I have previously said, to see if you have put it correctly. You give such long questions that it is impossible to remember — [*Interrupted*].
14003. *Mr. Bruce Smith.*] Your Honor sees that Mr. Lysaght says, "As you have said so-and-so." Well, it is fair that he should read that "So-and-so."
14004. *His Honor.*] I do not think it is material at all what Mr. Atkinson has said previously. What the Commission wants to hear is what he thinks, after he has heard the evidence, and after he has had time for reflection.
14005. *Mr. Bruce Smith.*] I think your Honor will rule that, if Mr. Lysaght endeavors to face Mr. Atkinson with what he said before, he ought to read it, and not to paraphrase it himself.
14006. *Mr. Lysaght.*] *Q.* I think you remember what you said three minutes ago? *A.* Yes.

14007. *Q.* It was not last Thursday? *A.* No.
14008. *Q.* Do not you remember what you said a few minutes ago—that a series of small falls would be likely to liberate the gas? *A.* I think my evidence might be read.

By his Honor's directions, Mr. Garlick then read from the shorthand notes the following portion of Mr. Atkinson's evidence :—

"*Q.* Now, taking your assumption of the fall forcing out a certain quantity of gas, would not the gas be liberated subsequently to the fall? *A.* Do you refer to the little gas in the top part of the goaf, which has been referred to?

"*Q.* No, I am referring, now, to the gas which you say was an initiatory factor in the disaster? *A.* Well, of course, another portion of the roof would require to —— [*Interrupted.*]

"*Q.* Just take the first part of the question—you can put that in afterwards. Would not the fall of the roof be before the liberation of the gas? *A.* I cannot answer that with 'Yes' or 'No.' It requires some explanation. The roof would break at the top of the goaf; and above that there might be a pocket, or a certain quantity of gas, under pressure; but the roof again above that would fall, and would continue to fall for a long time. From the evidence of the fall at that goaf edge, it was a long way up.

"*Q.* And did it appear to have been a series of small falls like that? *A.* No; I think it appeared to be a very large fall.

"*Q.* One very large fall, do you say? *A.* I cannot say whether it was one very large fall or not.

"*Q.* Was it, apparently, one very large fall, or a series of small falls? *A.* I could not say that. It is quite impossible to say."

14009. *Mr. Bruce Smith.*] You see he did not say it was a series of small falls.
14010. *Mr. Lysaght.*] *Q.* When you said that it might continue to fall, did you mean a series of small falls? *A.* Well, I do not see that you could call it a series of small falls when it was really a continuation of what I have already said would probably be a large fall.
14011. *Q.* Then this is clear, that you told Mr. Robertson that you thought it was a large fall that forced out the gas? *A.* Yes.
14012. *Q.* Now, I ask you, as the continuing of the roof to fall—these continuing falls—would be after your large fall, where was the gas to be that the large fall had to force out? *A.* I do not understand you.
14013. *Q.* Where was the gas that the large fall had to force out, when your continuing falls would be after the large fall? *A.* Well, we know that it is very common for large falls to force out quantities of air, and sometimes to break down stoppings and doors—one has heard of that; and I am only suggesting something similar.
14014. *Q.* Now, you suggested that the gas came out of that goaf, and was forced out by the large fall? *A.* Quite so.
14015. *Q.* Now then, I say, do you now say that, inasmuch as it is clear that the gas coming from these continuing falls would be after the large fall —— [*Interrupted*]? *A.* A continuing fall is all one fall, after all. It is all part of the same.
14016. *Q.* Do you mean to tell me that the gas that initiated the explosion came from the continuing fall after the big fall? *A.* Well, I mean to say that, in my opinion, I think that the gas was forced out by that fall.
14017. *Q.* Now, I want to know, do you still mean that the gas was forced out by the big fall?
14018. *Mr. Bruce Smith.*] He does not separate them: he said so just now: He said it was continuous.
14019. *Q. Mr. Lysaght.*] *Q.* Let us clearly understand it. Do you separate the big fall from the continuing fall? *A.* No, I do not.
14020. *Q.* Then, do you say that the continuing fall afforded gas for the explosion? *A.* Yes, part of the one big fall.
14021. *Q.* And you say that the continuing fall afforded gas that operated in the first ignition? *A.* That is my opinion.
14022. *Q.* But when did that goaf cease falling? *A.* Some time after the explosion, evidently.
14023. *Q.* What do you mean by "some time after"? What is "some time"?—is it days, hours, or weeks, or what? *A.* Oh, probably within an hour.
14024. *Mr. Robertson.*] What was your question?
14025. *Mr. Lysaght.*] I asked him when did he think those falls continued—for how long after the big fall. He says for probably an hour.
14026. *Witness.*] I said that it would probably cease within an hour.
14027. *Mr. Lysaght.*] *Q.* Now, when you went to look at that goaf, how much of it had fallen? *A.* How do you mean? Do you mean how much of the two chains square?
14028. *Q.* No, how much in height? *A.* Oh, you could not get up to the top.
14029. *Q.* But, was the passage in the 4th Right blocked up by the fall at the goaf edge—absolutely blocked up—or could you see over it? *A.* Oh, you could get on to the edge of the stones.
14030. *Q.* So that what would be known, in general mining practice, as "a partial fall" only had taken place after the disaster? I mean, looking at it after the disaster, there had only been a partial fall.
14031. *His Honor*] Do you mean by that, Mr. Lysaght, that the cavity was not quite closed up?
14032. *Mr. Lysaght.*] Quite so; there was still a cavity for more to fall.
14033. *Witness.*] That is always the case.
14034. *Mr. Robertson.*] *Q.* Is not that always the case, no matter how big the fall is? *A.* Yes.
14035. *Q.* There is always a cavity at the edge? *A.* Yes.
14036. *Mr. Lysaght.*] *Q.* And, that being so, would not the strata there be probably giving off fire-damp when you tested for it? *A.* Oh, if there was any fire-damp, it would be right up in the highest parts, where we could not get to it; it would be quite impossible to get to it.
14037. *Q.* Now, have you any evidence at all that, before the big fall, there was any gas accumulated in that 35-acre waste? *Q.* No, I have not heard of any.
14038. *Q.* And now, what evidence have you that, after the explosion of the gas given off or liberated by the big fall, and subsequently by the continuing falls, there was any gas there? *A.* By careful examination I was not able to find that gas afterwards.
14039. *Q.* Perhaps you have misunderstood the question: what evidence have you that, except the gas given off by the big fall, and the continuing fall thereafter, there was any gas there to be forced out?

14040. *Mr. Barry.*] Your Honor, is there any evidence that gas was given off by the fall? Is it not only a theory?
14041. *Mr. Lysaght.*] The whole thing is a theory. I propose to show that there is nothing to —— [*Interrupted*].
14042. *Mr. Bruce Smith.*] Will Mr. Garlick please read that question for me?
14043. (Mr. Garlick then read Mr. Lysaght's question, as follows:—"What evidence have you that, except the gas given off by the big fall, and the continuing fall thereafter, there was any gas there to be forced out?")
14044. *Mr. Bruce Smith.*] Does your Honor understand that question?
14045. *Witness.*] I do not understand it. I will tell you that, after carefully inspecting, after the explosion, I was not able to find gas.
14046. *Mr. Lysaght.*] *Q.* Your theory is that the big fall forced out gas; and I have already pointed out to you that the gas must be there to be forced out. Where was that gas? *A.* It was in the strata.
14047. *Q.* That would be liberated subsequently to the fall? *A.* You say so: I do not.
14048. *Q.* What do you say? *A.* The whole thing comes together—the gas and the fall. I do not see how you can separate them in the way you desire me to.
14049. *Q.* Then the gas, that you say was a factor in originating the disaster, was liberated by the fall, and forced out by the big fall? *A.* Yes.
14050. *Q.* Would it not be just as probable that the first fall, a week before, would have liberated gas and forced it out? *A.* Well, I think I have already said that there might be a little gas liberated.
14051. *Q.* But would not it be just as probable? *A.* No, because on that occasion only 2 feet or 2½ feet of the roof had fallen.
14052. *Q.* How much had fallen at this big fall? *A.* You could not tell; you could not see up.
14053. *Mr. Bruce Smith.*] *Q.* You might give us an idea? *A.* Well, it might be 30, or 40, or 50 feet.
14054. *Mr. Lysaght.*] *Q.* And it might be only 4 or 5 feet? *A.* Oh, it would be more than that.
14055. *Mr. Ritchie.*] *Q.* If the gas was liberated by the big fall you speak of, would not that big fall close the opening to the 4th Right entirely? *A.* You mean, would it get down to the roadway?
14056. *Q.* The evidence goes to show that a fall of 2½ feet took place first in the 4th Right? *A.* In the pillars?
14057. *Q.* Yes? *A.* Yes.
14058. *Q.* Well, if the big fall took place subsequently to that fall, would it not fill up the 4th Right altogether? *A.* Yes; but the gas would get out.
14059. *Q.* Do you seriously think that the gas that was liberated by the fall would get out? *A.* Certainly I do.
14060. *His Honor.*] *Q.* Would not that be rather the gradual liberation of gas—the oozing of gas—than what you say took place; that is, the forcible expulsion of the gas coming from the 4th Right, as if it were from the barrel of a gun? *A.* I do not suggest anything like that.
14061. *Mr. Ritchie.*] *Q.* The doors were blown away? *A.* It was a flimsy canvas door, not even a wooden door; it would not require very great force to do that. Falls frequently take place sufficient to blow down 9-inch brick stoppings, and sufficient, sometimes, to blow men off their feet, and to throw dust about. We have many instances of that sort of thing.
14062. *His Honor.*] *Q.* But that is when a fairly large area of roof falls almost in one piece, is it not, driving the air from under it? *A.* Yes; generally speaking, it would require a pretty large area.
14062½. *Q.* Not rippling down, as it were, but coming down with a rush? *A.* Yes.
14063. *Mr. Robertson.*] *Q.* Do you see that, before the blast reached the doors, it would have an outlet by the return airways, which branch in both directions? *A.* Yes.
14064. *Q.* So, I take it, there must have been very considerable force to drive out those doors, seeing that it had that relief before reaching the doors? *A.* Yes; although not, perhaps, such as His Honor put it, like a blast from the barrel of a gun.
14065. *Q.* Well, that is only metaphorically speaking? *A.* Yes; I understand that allusion.
14066. *His Honor.*] *Q.* It is not that the explosion was like that of a gun; but, still, the gas must have been very suddenly forced to blow down the doors in its way? *A.* Yes.
14067. *Mr. Ritchie.*] Do I understand you to mean that the gas which would be liberated by the large fall would come out simultaneously with the air which was under the fall? *A.* Yes.
14068. *Q.* Is that quite consistent with what you experience in practice? *A.* I think it is.
14069. *Q.* Is it not rather the practice for the gas liberated by the fall to ooze out gradually, afterwards, if it can get out? *A.* Well, if it was a very, very gradual fall: but, if it was a sudden fall, and a very large fall, as I have suggested, I think it could be forced out with some force.
14070. *Q.* Then, if the fall came away over a vast area together, and closed up the opening to the 4th Right, how was the gas from the latter part of that fall to get out at all? *A.* It would not close up to prevent gas getting out.
14071. *Q.* Was it not closed up completely when you saw it? *A.* No.
14072. *Q.* How far was it from closed, then? *A.* Well, you could crawl up the stones at the edge of the fall, and get some feet above the level of the top of the seam? *A.* Yes.
14073. *Q.* Do not you think that, after the fall had taken place, the gas which would be liberated by its falling would go on top, instead of coming down to the bottom to be forced out? *A.* Well, I think it has been forced out.
14074. *Q.* Do not you think that would be a probability; that the gas from the breaking up of the strata would ascend, and would not, as a matter of fact, feel the effects of the expulsion at all, caused by the fall? Do not you think that there would be a tendency to draw back, to draw the gas upwards, by the creation of a vacuum, through the fall taking place: do not you think that would be a kind of exhaust, drawing it upwards? *A.* Well, with the roof falling above that gas, it would force the gas out.
14075. *Q.* Well, I take it, that, after the big fall you speak of, there must have been another fall? *A.* I do not separate them; I cannot separate them. I think it is impossible. I think the large fall that took place forced that out.
14076. *Q.* You tell us that you could get up several feet above the fall, when you saw it after the disaster? *A.* Yes.
14077. *Q.* Now, did you see anything to indicate that there had been two large falls after the 2½ feet fall? *A.* I do not think I have suggested two large falls.

14078. *Q.* I am asking you now, did you see anything to indicate that there had been two large falls? *A.* I could not say, really; it is impossible to say.
14079. *Q.* Now, supposing that the big fall you speak of did liberate gas, and that it did ascend, would it not require some other very considerable fall to force that out, assuming that it did ascend? *A.* Assuming that it did ascend, it would require some more falls to force it out.
14080. *Q.* Do not you think it is reasonable to think that it would ascend, the specific gravity of gas being very low; do not you think it is very likely to ascend, and fill up the vacancy caused by the fall, rather than to be forced out by the fall? *A.* It would, naturally, if the fall was not sufficiently great to force it out.

AFTERNOON.

(On resuming, Mr. W. R. Pratt attended to take Shorthand Notes of the Evidence and Proceedings).

Mr. A. A. ATKINSON, previously sworn, was further examined as under:—

14081. *Q.* There would be a vacuum? *A.* I do not suggest it.
14082. *His Honor.*] *Q.* I take it that the first thing would be that the force would tend to create a vacuum; assuming the absence of surrounding gas and air, it would be an absolute vacuum—if such a thing could be. The tendeney would he for all the gases to be drawn into the space that had been exhausted. Down at the bottom of the fall, as it came down, the air would be compressed; and that compression would have the effect of driving the air from under it. That would be the shooting out of the air. The only line along which the force could escape would be the 4th Right. If the gas were liberated in that upper part, which begins by being a vacuum, where is the tendency for that gas to come out with the air in any large quantity? *A.* The tendency without any fall, and without any other cause, and under natural conditions, would be for the gas to rise; but if the roof fell and continued to fall, I think the gas would be forced out.
14083. *Mr. Robertson.*] *Q.* The sequence of events, as you put it, was that there was a fall, then that the gas was liberated, then another fall, and that forced the gas out. But the first fall would block up the entrance or the outlet to some extent, and would not this prevent the gas escaping? *A.* It would not block it up sufficiently to prevent the gas being forced through.
14084. *Q.* Would it not block the outlet to such an extent as to prevent the gas being forced out with any great violence? *A.* I do not think that it would.
14085. *Q.* I understand you to say that there was a fall, that gas was liberated, and that then there was another fall? *A.* It was all continuous really; I do not suggest that there was any interval between the falls.
14086. *Q.* I confess that I cannot see how the gas, if as you suggest it was in the strata, could have been forced out with any great violence. Of course, I can see that the fall would not block up the entrance sufficiently to bottle up the gas, but it would block it up sufficiently to prevent any violent force coming out, sufficient to blow down doors? *A.* These doors were only canvas doors.
14087. *Q.* But, still, the return airway was intervening? *A.* Yes.
14088. *Mr. Bruce Smith.*] There is, say, a 2½ feet fall, and a space is left; there is a further fall which allows the gas to escape; and then there is another fall, or series of falls; but there must be a space left, or there could not be further falls. I went up there and saw the space; and Morrison was above me.
14089. *Mr. Ritchie.*] I think you must be wrong about that place. We are taking the 4th Right.
14090. *Mr. Bruce Smith.*] I am only talking about the principle.
14091. *Mr. Ritchie.*] What takes place in one fall has nothing whatever to do with what takes place in another.
14092. *Mr. Robertson.*] I was there a few days afterwards; and I could only just wriggle my way in.
14093. *Mr. Ritchie.*] *Q.* You have heard the first fall described as a light one, being, probably, about 2½ feet; you have described your fall as being a large one;—and certainly the seam would be thicker than 2½ feet, probably 4 feet? *A.* I cannot tell.
14094. *Q.* What would you regard as the thickness of the seam in what you call a heavy fall? *A.* I cannot say. The fall may have gone up 30 or 40 feet; the whole thing is continuous; I do not see how you can separate it into a number of falls. It is all one fall.
14095. *Q.* You said that you could get on top of it yourself;—it could not have gone up 30 or 40 feet? *A.* I could not get on top of it.
14096. *Mr. Robertson.*] *Q.* You were along the edge? *A.* Yes.
14097. *Q.* Would it be 3 feet thick at the entrance? *A.* I do not know how you can differentiate the thing. If the first fall was 2½ feet, when it fell afterwards it may have gone up 30 or 40 feet.
14098. *Q.* You say that there must have been a first fall and a series of falls afterwards? *A.* I cannot separate it.
14099. *Mr. Ritchie.*] *Q.* Would it fall in an hour? *A.* Mr. Lysaght asked me a question and desired me to say how long after the explosion was it probable that the fall would cease. He wished to know whether it was days or weeks, and I suggested it would probably cease within an hour.
14100. *Q.* Would it not take an exceedingly heavy fall to create the force which the evidence has disclosed—to dislocate doors—and not a continual dribble for an hour;—would it not require some great force taking place at once? *A.* Yes.
14101. *Q.* You say that you think the fall lasted about an hour? *A.* I do not think it is fair to put it down as lasting an hour. Mr. Lysaght put it to me—how long after the explosion did I think it was before the fall ceased. He wished me to express an opinion and said, was it within an hour, and having said that, I mean that it may have been very much within an hour.
14102. *Q.* We may take it that it is your opinion that the first heavy fall would liberate a lot of the gas which you spoke of;—the gas is then sent out by some subsequent fall, or by that continuous fall? *A.* It is all part of one continuous fall.
14103. *Q.* Then you say that there was one continuous fall, and that would give force enough to send out the gas which was liberated? *A.* I think so.
14104. *Q.* Have you ever seen anything of that kind before? *A.* I have seen falls liberate large quantities of gas, I cannot say that I have seen falls knock down brick stoppings, but I have read of it; I have also read of its knocking men down.
14105. *Mr. Lysaght.*] *Q.* Were not the stones on the edge of the goaf quite clean, showing that they had come down after the explosion? *Q.* Well, I have sufficiently explained that before.

14106. *Q.* If the stones which fell on the edge of the goaf were quite clean, does it not indicate that there had not been a very big fall before the explosion? *A.* I do not think it does.
14107. *Q.* Would it show that there could not have been a fall of 30 feet before the explosion? *A.* Well, it shows that the fall did not cease until after the explosion.
14108. *Q.* That is the fall of stone which you could see at a height of 6 feet above the edge of the goaf;—were not all these clean stones which you saw? *A.* They were clean stones as far as we could get up.
14109. *Q.* At the edge of the goaf? *A.* Yes.
14110. *Q.* So that the fall which liberated the gas could not have been 30 feet high? *A.* I cannot say that.
14111. *Q.* Is it not clear that the fall which liberated the gas could not have been 30 feet high? *A.* Well, it was all one continuous fall.
14112. *Q.* It could not be 30 feet high? *A.* I say it was all part of one fall.
14113. *Q.* Where you say the clean stone was only 6 feet from the floor, the gas must have been forced out before that 6 feet of stone fell? *A.* I do not know that I said anything about 6 feet of stone.
14114. *Q.* I ask you could you see the stone? *A.* You could see a few feet above the top of the seam.
14115. *Q.* The seam was 6 feet 6 inches I think? *A.* I should say it was 5 feet or 6 feet.
14116. *Q.* A few feet above that you could see clean stone? *A.* Yes.
14117. *Q.* For how high, 8 feet? *A.* For 8 or 9 feet.
14118. *Q.* You saw clean stone 9 feet from the floor—did not that indicate that these stones had come down after the explosion? *A.* It indicates that the fall did not finish until after the explosion.
14119. *Q.* It indicates that these stones fell after the explosion? *A.* Yes.
14120. *Q.* Therefore, the fall of stone which forced out the gas was not more than about 8 feet? *A.* I do not think that that is a correct deduction; because if you go further up you might find a fall of stone which came from a greater distance.
14121. *Mr. Robertson.*] *Q.* These stones ran down a slope? *A.* They usually do come down in that way.
14122. *Q.* They form a slope? *A.* Yes.
14123. *Q.* To discover a few feet of stone on the outside would be no criterion as to the appearance of the stone a few feet in the fall;—the stones on the outside might slide down from the top? *A.* I think we could see a foot or two in and they were clean.
14124. *Q.* The fall naturally ascended to an apex; and these stones might have tumbled down the slope from the top? *A.* Yes.
14125. *Q.* You might find clean stones on the outside of the slope which were not of the same character, or the same stratum as those inside the fall a foot or two? *A.* Well, of course, the stones might have fallen from a higher point.
14126. *Q.* That is what I mean—they might have fallen from a higher point? *A.* Yes.
14127. *Mr. Ritchie.*] *Q.* Regarding those large stones which you saw on the edge of the goaf—did they appear to have come from a higher point? *A.* No, I cannot say that they did. They seemed to have come down pretty straight to the edge of the goaf.
14128. *Q.* Your opinion is, that these stones, which you saw were not stones which had come down from a higher point? *A.* I could not say that.
14129. *Mr Lysaght.*] *Q.* It is clear that these big stones which were clean fell after the explosion? *A.* Yes, that is the deduction.
14130. *Mr. Robertson.*] *Q.* Would it make any difference if these stones were in a dead end. Would it make any difference to the deposit of dust if these stones were in a *cul de sac*? *A.* The evidence is that in a *cul de sac* you get the greatest deposit of coal-dust.
14131. *Q.* There might be a cushion of air that could not be reached by the force? *A.* We have it on record that the most coal-dust is usually found in these blind ends.
14132. *Q.* There might be a cushion of air there, would not that tend to protect these stones? *A.* No, it is contrary to all my experience.
14133. *His Honor.*] *Q.* How far up in the natural stone from the top of the seam do you expect to find gas? Would the gas be mostly in the first few feet and then less and less as you go up, or would it be otherwise? *A.* That is rather a difficult question to answer. I should say that as gas generally comes from the seam itself it is probable that it would be found nearer to the seam.
14134. *Mr. Robertson.*] *Q.* Have you any knowledge of gas being found in the stratum overlying the coal? *A.* Do you refer to any particular district.
14135. *Q.* Take Kembla? *A.* I have not heard of it at Kembla, but I have heard of it often enough at other places.
14136. *Q.* Anywhere in the Colony? *A* Do you mean above the seam.
14137. *Q.* Yes. *A.* Of course it is occasionally liberated by falls.
14138. *Q.* Is it gas which is naturally in the stratum, or does it find its way there by the sagging of the roof? *A.* I think it is naturally contained in the strata. In some shale reefs it most certainly is.
14139. *Q.* Have you heard a report that such a thing has been found in any of the southern collieries? *A.* I do not remember any report in regard to any southern colliery.
14140. *Q.* Is it not a fact that the roof above all the southern collieries is hard sandstone? *A.* It is blue shale, grey metal, and sandstone.
14141. *Mr. Lysaght.*] *Q.* That is not a cover that, in your opinion, would contain inflammable gas? *A.* I beg your pardon.
14142. *Q.* You say that the southern strata above the seam does not contain inflammable gas? *A.* I told Mr. Robertson that so far as I know I had not heard of any liberation of gas from these strata.
14143. *Q.* Do you know, in the southern district, of any strata which has gas in it? *A.* I think it is quite possible.
14144. *Q.* Have you any evidence to base that assurance on? *A.* I cannot say that I have.
14145. *Q.* You have made the statement here that the strata in Kembla probably had gas in them? *A.* I have known of these strata being bituminous, but not in the south.
14146. *Q.* That is what I want to bring out. You have absolutely no evidence that the strata above coal in Kembla contained any gas? *A.* No, there has no case come before me.
14147. *Q.* You cannot support the statement that the southern district strata, above the coal, contain gas by quoting any instance on record? *A.* No, I do not think I can.

14148. *Mr. Bruce Smith*.] *Q.* There is no instance in the southern district? *A.* I am speaking of the southern district.
14149. *Mr. Lysaght.*] *Q.* Speaking specifically of Kembla—although you have no evidence that the Kembla strata, above the coal, contained any gas—although you can give no instance of the strata in the south coal district containing any gas—is not your theory this—that this disaster depended on the strata containing gas? *A.* Yes.
14150. *Q.* Now, will you show the Commission any justification which you have for assuming that the strata above the coal at Kembla contained inflammable gas? *A.* I have read of cases. In one case which I can point to particularly, gas had not been seen in the district for some years, but it was liberated from the roof of a mine and I think it burned two boys. That was on a main intake airway.
14151. *Q.* Where? *A.* It is recorded in the Imperial Inspectors' Report.
14152. *Q.* That is something that happened in another part of the world? *A.* Quite so.
14153. *Q.* Do you tell the Commission seriously, because in some report about a colliery in another part of the world, there is a case where a stratum was known to give off inflammable gas—and because of this you say that gas would be given off by the stratum above the coal in Kembla? *A.* I am only dealing with the results of this explosion.
14154. *Q.* I want to keep the case down to that of inflammable gas above the coal at Kembla. Show me anything that you have that will warrant you in assuming that there is gas in the strata there? *A.* I have already told you that I have no evidence of it.
14155. Do you not admit that your assumption that the gas in this disaster came from the stratum—which you say you never knew to contain gas—is much weaker than the assumption that it came from the coal? *A.* The matter requires to be considered in accordance with all the results of the explosion.
14156. *Q.* Was not the evidence to the effect that gas had been given off at the top heading, which had not been inspected, in accordance with the results of the explosion? *A.* The evidence is that I found some gas after the explosion; and the evidence is that some force went down the back heading, which blew out two stoppings and which forced a door, near to the 5th Right, towards the 5th Right.
14157. *Q.* If you have had no evidence of the strata above the coal containing inflammable gas, but have had evidence in abundance that the seam of coal was constantly giving off gas, is it not fairer to assume that the explosion originated from gas given off by the coal, than from gas given off by the strata? *A.* We must look to the results of the explosion, to see where the explosion originated, and in my opinion it did not originate at a point where you say the gas was given off.
14158. *Q.* Now, I have a positive statement from you, that your opinion now is that the back heading, near Morris' place, was not the original seat of the disaster? *A.* I have already stated that.
14159. *Q.* You propounded that theory at Wollongong, but now you absolutely abandon it? *A.* Yes.
14160. *Mr. Bruce Smith.*] He was in doubt then; but now he is positive of one thing.
14161. *Mr. Lysaght.*] *Q.* Do you abandon that theory? *A.* Yes.
14162. *Q.* Do you remember telling me at Wollongong, that any further inspection which you might make would throw no further light on the position? *A.* Yes, I said so.
14163. *Q.* Will you tell me what additional facts you have got that made you abandon the theory that the disaster originated near Morris' place? *A.* The plan which has been prepared by the officers of the Mines Department contains evidence which, to my mind, is irresistible.
14164. *Q.* Did you not know that evidence before? *A.* No.
14165. *Q.* Did you not see a plan with evidences of force marked on it? *A.* This plan was then being made.
14166. *Q.* But you had your own notes? *A.* I had my own notes.
14167. *Q.* Then this plan was made from this evidence? *A.* The officers visited the mine and prepared the plan themselves.
14168. *Q.* Is that plan prepared from their own observations? *A.* Yes.
14169. *Q.* Then it is their evidence which we are taking, and not yours—their evidence of force? *A.* I do not know what you mean by their evidence of force.
14170. *Q.* I mean, was the plan prepared from their own observations? *A.* The plan has been prepared from the results of their observations, and I have been able to see the plan.
14171. *Mr. Bruce Smith.*] *Q.* And they measured the distances? *A.* Yes.
14172. *Q.* Had they not your notes to guide them? *A.* No; they took their own notes in the pit.
14173. *Q.* Then this plan, which you now say has altered your opinion, could have been prepared by any two mining surveyors? *A.* I dare say it could.
14174. *Q.* Some mining surveyors might have shown evidences of force in one place and some in another? *A.* Not if they did it accurately.
14175. *Q.* Then it would depend on the accuracy of the man? *A.* And on the honesty of the man.
14176. *Q.* Was anyone present to point out things to the men who prepared the plan? *A.* Some of the people from the colliery would be there.
14177. *Q.* Do you not think that certain evidences of force might have been pointed out, and if the plan was not checked certain other evidences might have escaped their notice ——?
14178. *Mr. Bruce Smith.*] Would it not be better to test the witnesses who prepared the plan on the matter?
14179. *His Honor.*] I do not think it is of any use cross-examining Mr. Atkinson on this matter.
14180. *Mr. Lysaght.*] *Q.* The plan shows the position of bodies which had been buried for weeks;—how were these men to put on the plan the position of bodies unless someone told them? *A.* They are put on the plan as the reported position.
14181. *Q.* Reported to whom? *A.* They will be able to explain that.
14182. *Mr. Ritchie.*] *Q.* Does this plan show all the evidences of force which you noted? *A.* Yes, and a great many more.
14183. *Q.* Does it contain the whole of it? *A.* I could not say whether the plan contains all of it. It contains the material portion, and, I should think, a great deal more information besides.
14184. *Mr. Robertson.*] *Q.* Since your visit, have you got any further information as to the direction of forces? *A.* I cannot say that I have.
14185. *Q.* Did you get any information from the colliery officials relative to the mine when you visited the mine with Mr. Smith? *A.* There may have been one or two things, but I do not think there was anything material.

14186. *Mr. Robertson.*] When I visited the mine with the Commission I got a great deal more information than I got formerly.
14187. *Mr. Lysaght.*] *Q.* You take that plan as your final guide, in justifying your conclusion, and that plan contains the evidences of force—all the evidences of force—which you yourself noticed? *A.* I do not know whether it does.
14188. *Q.* It may? *A.* It may.
14189. *Q.* And it also contains a lot of evidences of force which you did not notice? *A.* Well, it makes the thing clearer.
14190. *Q.* It shows a lot of additional evidence? *A.* It contains further evidence.
14191. *Q.* Further evidence of force which you did not notice? *A.* Yes.
14192. *Mr Ritchie.*] *Q.* Have you got the plans here? [*No answer.*]
14193. *Mr. Bruce Smith.*] They will be produced by the witnesses.
14194. *Mr. Ritchie.*] It might have been well to have them put in, so that Mr. Atkinson could have given evidence upon them. Why not call the witnesses, and have them put in formally?
14195. *Mr. Bruce Smith.*] I do not know whether I shall call these witnesses before the Managers have given their evidence.
14196. *His Honor.*] These witnesses are valuable in connection with Mr. Atkinson's evidence, because his evidence depends upon the assumption that the plans are accurate.
14197. *Mr. Bruce Smith.*] What Mr. Atkinson contended was, that there were two points which he thought might be treated as the source of the trouble; but, when he saw the plans, the matter was brought before him so that he could realise it much more fully; and that decided him which of the two theories was the right one.
14198. *Mr. Ritchie.*] Mr. Atkinson is continually speaking of plans, but they are not yet in evidence.
14199. *Mr. Bruce Smith.*] If I brought these plans into Court now, I would give a tremendous handle to the witnesses called on behalf of the mine. I do not propose to produce the plans at the present time—until after the whole of the witnesses on behalf of the mine have given their evidence. I will produce the plans then.
14200. *Mr. Ritchie.*] That will entail the necessity of Mr. Atkinson going into the box and explaining them.
14201. *Mr. Bruce Smith.*] Mr. Atkinson has reserved to himself the right of giving any evidence he may desire in reply to the Managers. I then propose to produce these plans. We have formulated a theory. One theory was given at the Inquest; and we now come here and say that, as the result of having the whole of the evidences of force noted and prepared on a plan, Mr. Atkinson can attribute the disaster to one cause. It is a fair thing, therefore, to let the Managers come in and say what their theory is. I I understand they propound a theory altogether different from that of Mr. Atkinson. When they have propounded their theory, I will give them mine, and allow them to see the plan.
14202. *His Honor.*] It seems to me to be only a fair thing that this plan, spoken of by Mr. Atkinson, should be before the Managers. They ought to be able to see upon what grounds, and upon what foundation, Mr. Atkinson has based his theory.
14203. *Mr. Bruce Smith.*] The assumption seems to be that there is a natural obligation upon Mr. Atkinson to explain the cause of the disaster; but he simply comes here as an expert witness to say "I think so and so." It is the Managers who have to explain the disaster.
14204. *His Honor.*] The Commissioners simply look upon it that Mr. Atkinson comes here for the benefit of the public, and in the interests of truth to give his opinion based upon all the facts which he is cognisant of. Amongst other things, this plan is spoken of as being part of the groundwork of his opinion, and his evidence is hardly complete unless we have it proved that that is a correct plan.
14205. *Mr. Bruce Smith.*] Surely, if anybody comes into the box to give evidence, he will be able to give the data from which he had drawn his conclusions. I would point out that Mr. Atkinson is no different from any other visitor to the mine. I asked all the witnesses here, "Did you take a single note of anything which you saw on paper," but they all said that they trusted to memory.
14206. *His Honor.*] I will give you one case in point. Suppose this were a question, amongst other things, of the altitude of a place, and suppose in taking the altitude the witness uses an aneroid, surely it would be fair to ask that that aneroid should be produced, to see whether it was correct or not.
14207. *Mr. Bruce Smith.*] My contention is that Mr. Atkinson has undertaken to come forward and give his explanation of this explosion, but I do not want him to be magnified into the position of the person who is responsible for it. It is, after all, a matter of conjecture. He says, "This is my opinion, for what it is worth." Let the Managers now come forward and give their explanation of the occurrence.
14208. *Mr. Barry.*] I do not think the Managers have anything to do with it.
14209. *Mr. Bruce Smith.*] It is for the management then to say what their theory is as regards the disaster.
14210. *Mr. Robertson.*] I do not think that that is so. Mr. Atkinson comes here as a public officer, and as much in the interests of the Kembla Company as of anyone else. If he has any information which is likely to be of any advantage to the Company, it is right that he should produce it.
14211. *Mr. Bruce Smith.*] I do not mean that he should not produce it, but I do not want the Managers to come here and criticise Mr. Atkinson's plans before giving their own evidence in regard to the matter.
14212. *Mr. Robertson.*] I do not see why the Managers should not have the advantage of Mr. Atkinson's plans.
14213. *His Honor.*] I agree with Mr. Robertson, and Mr. Ritchie takes the same view.
14214. *Mr. Ritchie.*] I think that we ought to have had the plans put in before Mr. Atkinson came here at all. You seem to think that Mr. Atkinson is a purely voluntary witness. He has a big responsibility upon him, and he comes here to defend himself as well as the Managers.
14215. *Mr. Bruce Smith.*] There is no defending himself about it, in my opinion. It is simply this—the Commission has to inquire into the disaster, and to decide where the blame lies. Mr. Atkinson comes here to express his opinion.
14216. *Mr. Ritchie.*] As one having a great responsibility resting on him.
14217. *Mr. Bruce Smith.*] I say it is for him to come here and say that he has done his duty, but it is not for him to embark on an elaborate disquisition of the whole thing. He has merely to show that his Department has done its duty. If he explains what he has done himself, and what his Inspectors have done, up to the present, that is all that he is bound to do.

14218. *Mr. Ritchie.*] You cannot prevent our asking him for more information.
14219. *Mr. Bruce Smith.*] I say that, so far, Mr. Atkinson has taken a great deal of trouble in the matter, and has spent many weeks in obtaining facts, and doing work which he was not bound to do at all.
14220. *Mr. Robertson.*] We quite acknowledge that.
14221. *His Honor.*] Therefore we think that Mr. Atkinson may wish to put himself in a right position, and may feel disposed to produce this map, which is the foundation, to a certain extent, of the opinions which he has formed; he may feel disposed to have it verified, and open to the inspection of everybody.
14222. *Mr. Bruce Smith.*] If the management, through their witnesses, is going to give evidence, it should do it without seeing Mr. Atkinson's plan. After the witnesses have given their evidence, I do not wish to prevent them from seeing the plan. I should ask, however, that any plans should remain in the possession of the Commission, and that they should not be in the hands of the witnesses before they give evidence. I want them to give what I call their positive evidence, irrespective of Mr. Atkinson's plan. I do not mind their having an opportunity of seeing the plans afterwards.
14223. *Mr. Robertson.*] What is the difference between the production of any plan or plans and the evidence which Mr. Atkinson has given here to-day?
14224. *Mr. Bruce Smith.*] There is a great deal of difference between the two things.
14225. *Mr Robertson.*] Mr. Atkinson's evidence has been of great value to me, although I have seen the mine myself. Mr. Atkinson has investigated this matter more than anyone else, and therefore, his evidence is of great importance ——
14226. *Mr. Bruce Smith.*] And now let the persons on the other side give their evidence irrespective of Mr. Atkinson's data.
14227. *Mr. Barry.*] I object to the term "sides"—there are no sides in this matter.
14228. *Mr Bruce Smith.*] Well, you are one side and I am on the other. What I say is, that I think the witnesses called on behalf of the management ought to give their evidence without seeing that plan. Let them give their evidence irrespective of other peoples' data.
14229. *His Honor.*] Is there any dispute as to where certain bodies were found in the mine?
14230. *Mr. Bruce Smith.*] The position of the bodies is of no importance, because I do not think there is any difference of opinion as to where they were found. But the position of the skips, the heaps of coal, the doors, the wire, and the canvas is a matter of importance.
14231. *Mr. Ritchie.*] Is there not evidence of that already?
14232. *Mr. Bruce Smith.*] I do not think that three people have made comprehensive notes of these things.
14233. *Mr. Robertson.*] Then why should they not have the advantage of Mr. Atkinson's notes?
14234. *His Honor.*] Why should they be asked to give evidence in the dark to mislead themselves and the Commission by making false assumptions. I have no doubt Mr. Barry, for instance, would be only too glad to see any plan with a general assumption that it is correct.
14235. *Mr. Bruce Smith.*] Does your Honor think that these witnesses will come here to give evidence in the dark? Has not each one had ample time to visit the mine, and is it not a fact that they will all come here having taken sufficient evidence to make deductions for themselves.
14236. *His Honor.*] Mr. Atkinson found himself in the dark; and now he has had light thrown on a certain matter.
14237. *Mr. Barry.*] His officers put him right.
14238. *Mr. Bruce Smith.*] I will put the plans in evidence at once, but I would ask you to allow the witnesses for the management to give their evidence in their own way, and on their own data, with the right of seeing the plans afterwards. In the meantime the plans to remain the property of the Court.
14239. *His Honor.*] We think that the plans should be put in, and it will be for the Commission to exercise its discretion as to who should be allowed to see them. We shall not allow the plans to become public in any way, but we shall use our discretion with regard to allowing them to be inspected here or anywhere else. One plan is now, in fact, part of Mr. Atkinson's evidence. We shall expect to have these plans produced before the Commission to-morrow morning.
14240. *Mr. Bruce Smith.*] Very well, your Honor.

[The Commission, at 4·10 p.m., adjourned until 10 o'clock the following day.]

TUESDAY, 10 *FEBRUARY*, 1903.

[*The Commission met at the Land Appeal Court, Darlinghurst.*]

Present:—

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq., Commissioner. | D. RITCHIE, Esq., Commissioner.

Mr. Bruce Smith, Barrister-at-Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf of the Crown.

Mr. A. A. Lysaght, Solicitor, appeared on behalf of—

(*a*) the representatives of deceased miners, wheelers, &c., (victims of the explosion);
(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.); and
(*c*) the Illawarra Colliery Employees' Association (the Southern Miners' Union).

Mr. G. J. Barry, Solicitor, appeared on behalf of the Mount Kembla Coal and Oil Company (Proprietors of Mount Kembla Mine).

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings.)

Mr. A. A. ATKINSON, previously sworn, was further examined as under:—

14241. *Mr. Bruce Smith.*] These are the plans which the Commission wished to have. There are three of them.
14242. (Three plans were handed to the Commissioners, and inspected by them.)
14243. *His Honor.*] Mr. Atkinson, will you kindly come round and explain the sequence of these.
14244. (Mr. Atkinson then went on the Bench and explained the plans to the Commissioners.)
14245. *His Honor.*] *Q.* This plan and the other two sections? *A.* Cover the same ground.
14246. *Mr. Robertson.*] *Q.* On the same scale? *A.* A different scale.
14247. *His Honor.*] These plans can be considered to be provisionally in evidence; and also that plan which has never actually been put in, the compilation plan. (The plan referred to here is one prepared by Mr. Atkinson, and handed to the Commission, on which there are noted the main intake and return airways of the mine, the working places of all the men in the mine on the day of the disaster, and the positions in which the bodies of the men who perished in the disaster were found.)
14248. *Q.* Did you compile this plan yourself, Mr. Atkinson? *A.* No. It was done under instructions. It is really a copy of this one, information for which I supplied myself. [*Referring to a plan which he held in his hand.*]
14249. *Mr. Bruce Smith.*] I am afraid there is a difficulty about that. I do not think it is all sworn to.
14250. *His Honor.*] *Q.* That is a copy? *A.* Yes.
14251. *Q.* A copy made by a draftsman? *A.* Yes.
14252. *Q.* And you compiled that yourself? *A.* Together with a draftsman, from information received from different people and officials, as to the positions. It was not all sworn evidence.
14253. *Q.* It was not sworn evidence? *A.* No.
14254. *Mr Bruce Smith.*] And it cannot be sworn, your Honor.
14255. *His Honor.*] Is there any dispute as to its correctness?
14256. *Mr. Bruce Smith.*] As long as it is taken with that infirmity, Mr. Atkinson will have no objection to putting it in.
14257. *His Honor.*] We will take it provisionally.
14258. *Mr. Bruce Smith.*] It can never be other than provisional. I think the officials who prepared that got some of the information from the witnesses at the Inquest after the Inquest, something additional; so, I mean to say, it could never be an exhibit, except in that sense; but if the Court likes to take it with that infirmity, knowing that it is done with the best intentions in order to get at the truth as to the positions of the bodies and other things, it may be useful.
14259. *His Honor.*] The plan might be inspected by Mr. Lysaght and by Mr. Barry—I will not say by you, Mr. Bruce Smith, because you have put it in as something correct—I assume you take it as correct?
14260. *Mr. Bruce Smith.*] I do not wish to put it in; but, if the Commission like to have it, I do not see any objection.
14261. *His Honor.*] If it is admitted on all hands, by all persons interested, that it is practically correct, then we might take it as correct.
14262. *Mr. Bruce Smith.*] Yes. I mention the infirmity to the Court now. If the Court like to take it, knowing that, Mr. Atkinson will be glad to have it in.
14263. *His Honor.*] So far as Mr. Atkinson himself is concerned, a good deal of it is of his own knowledge.
14264. *Mr. Bruce Smith.*] Your Honor will understand that at the Inquest a witness would go into the box and would say, "Well, I do not understand a map at all"; and yet he would fix the position of a body. After he came out of the box; the officials would take him, and would school him, so to speak, on that plan, and get him to point out the position of that body on the plan. Well, that was not evidence at all. It was after the witness left the box; so that it would be after he had left the influence of the Court.
14265. *Mr. Robertson.*] I take it that the position of nine-tenths of the bodies is of very little importance to us. It is only the positions of a certain number of the bodies that are important.
14266. *His Honor.*] But the physical facts are important.
14267. *Mr Robertson.*] Yes; but I take it that Mr. Atkinson can swear to the position of the important bodies.
14268. *Mr. Bruce Smith.*] No, because Mr. Atkinson did not see the positions of some of them. They are nearly all marked in there on the information received from these officials.
14269. *Mr. Robertson.*] I certainly did not know the bodies myself; but I would have no hesitation in identifying them from information which I have received since. 14270.

14270. *His Honor.*] *Q.* Can you distinguish the information, as to the positions of the bodies, which appears on that plan, and which was given at the Inquest, from what was not actually given at the Inquest, but was procured from the witnesses afterwards;—are you able to distinguish the facts? *A.* Yes, I think so, Your Honor; and, so far as the positions of the bodies are concerned, there may be some little differences, but no material differences, between this plan and the plans which the witnesses marked at the Inquest.
14271. *Q.* You say there really are no substantial differences? *A.* I think not.
14272. *Q.* You were present during the Inquest—the whole time? *A.* Yes, I was.
14273. *Mr. Bruce Smith.*] But I do not think he was present when these things were being put upon the plan.
14274. *Witness.*] No, I was not present when they were put on the plan.
14275. *Mr. Bruce Smith.*] I want to see that Mr. Atkinson does not give greater weight to it than it is entitled to.
14276. *His Honor.*] *Q.* Are there any facts, except the positions of the bodies, that are, in that sense, uncertain in relation to the evidence that was given at the inquest; or are the other facts—the positions of stones, and wires, and trucks, and other things, as they appear on the plan—within your own knowledge, or within the knowledge of witnesses who gave evidence?
14277. *Mr. Bruce Smith.*] Which is Your Honor speaking of—which plan?
14278. *His Honor.*] The compiled plan [*meaning the plan which was afterwards marked Exhibit No.* 29].
14279. *A.* Most of the evidences of force shown on this plan were put on with my own knowledge. There may be some which are on here, and which were not given in evidence.
14280. *Q.* But are all that are there, on that plan which you have in your hands, consistent with your own knowledge and observation of what appeared on the ground after the explosion, and before any work was done in removing them? *A.* Well, some few may have been put on from information received, as well.
14281. *Q.* As to the position of that wire, which is a very important thing, is that within your own knowledge or not? *A.* Well, I have nothing indicating anything on this plan with reference to that wire.
14282. *Q.* What do you say as to the skips;—do they appear on that plan? *A.* No, Your Honor.
14283. *Q.* Then, that plan shows, principally, bodies? *A.* And stoppings—doors.
14284. *Q.* Well, as to those, what can you say of your own knowledge? *A.* I think they are all put on with my own knowledge, those stoppings and doors.
14285. *Mr. Ritchie.*] *Q.* Are there any material matters mentioned or noted on these sectional plans—[*referring to those which were afterwards put in and marked Exhibits Nos.* 25, 27, *and* 28]—of which you have no personal knowledge? *A.* Oh, yes, there are several things which the surveyors had more time to detail and put on, as they were there four or five days.
14286. *His Honor.*] *Q.* Did the surveyors go into the mine themselves? *A.* Yes, Your Honor.
14287. *Q.* And did they take their own observation of these facts, which they put down—physical facts? *A.* Yes, they did.
14288. *Mr. Bruce Smith.*] Those sections were prepared, almost altogether from the personal observation of those two surveyors who went in, and remained there five days.
14289. *His Honor.*] *Q.* I suppose it comes to this, Mr. Atkinson, practically, that, as to the position of all physical appearances, except bodies, those surveyors went by their own observation? *A.* Yes.
14290. *Q.* And as to bodies, of course, they had to take history for that, because the bodies were removed before they went? *A.* Yes.
14291. And as to the history of those bodies which appear on the sectional plans [*Exhibits* 26, 27, *and* 28], is that or is that not, practically, contained in the evidence given at the Inquest? *A.* I do not understand when Your Honor mentions the sectional plan.
14292. *Q.* The sectional plan [*Exhibit* 26] shows bodies? *A.* The one made by the surveyor.
14293. *Q.* Those three that were produced to-day for the first time [*Exhibits* 26, 27, *and* 28]; those show the position of some bodies? *A.* Yes.
14294. *Q.* And those positions of bodies could not have been known to the surveyors, except by the narration of somebody else? *A.* That is so.
14295. Well, was that narration, so far as you know, the narration at the Inquest, or a narration made to them afterwards? *A.* To them, when they were in the mine, Your Honor.
14295½. *Mr. Robertson.*] It must have been before the Inquest.
14296. *Q.* Were not they beginning this plan before the Inquest? *A.* They were busy with it.
14297. *Q.* And I take it they would have all their information prepared? *A.* Before the Inquest. I do not remember. You could get that from the officers themselves.
14298. *Mr. Bruce Smith.*] I will call them next.
14299. *Mr. Ritchie.*] *Q.* When you are using those plans, you might distinguish, or make clear, those things of which you have a personal knowledge from those things of which you have not a personal knowledge? *A.* You are referring to those plans?
14300. *Q.* Those sectional plans which you produced this morning? *A.* If I might make a suggestion to the Commission, I think that direction might be given to the surveyors.
14301. *Q.* But, in addition to what they know, I would like to know what you know about these evidences of force on those plans?
14302. *Mr Bruce Smith.*] He has given three days' evidence at the Inquest. He has never mentioned the positions of things, except exceptional ones, before the evidence given at this Commission.
14303. *Mr. Ritchie.*] It would not take a great deal of time to put clearly before the Commission what matters there are of which he has a personal knowledge.
14304. *Mr. Bruce Smith.*] Would it not be better, if any particular object became important, for him then to be asked, "Did you see this yourself?"
14305. *Mr. Ritchie.*] That would amount to the same thing.
14306. *Mr. Bruce Smith.*] Yes; but it would involve less loss of time.
14307. *Mr. Ritchie.*] Yes.
14308. *Mr. Bruce Smith.*] I mean, if anything becomes, or seems to you to be, of importance, Mr. Atkinson can at any time—he will be under oath—say, from the table, "That is from my own knowledge," or "That is not from my own knowledge."
14309. *His Honor.*] I understand Mr. Atkinson to say that, so far as his personal observation went, these plans are correct; there is nothing contradicting his personal knowledge. 14310.

14310. *Mr. Bruce Smith.*] I will go further, and say that he has no reason to doubt that they are correct.
14311. *Mr. Ritchie.*] Although there is something additional there.
14312. *Mr. Bruce Smith.*] Although he may have got information in the mine, still he has no reason to doubt the correctness of the information.
14313. *Witness.*] No; I have no reason to doubt the information.
14314 *His Honor.*] Well, then, subject to correction, and subject to the calling of these witnesses—the compiling surveyors—these plans might as well go in [*Exhibits Nos.* 26, 27, and 28]. Of course, evidently that plan [*Exhibit* 29] must go in, subject to correction. That, which is a copy of the one which Mr. Atkinson had in his hand just now, seems a little more questionable.
14315. *Q.* There is no doubt as to this being a correct copy of the one you have in your hand—you have compared it with yours? *A.* Yes.
14316. *Q.* And you prepared yours by taking one of the original plans of the mine, which was admittedly correct? *A.* Yes.
14317. *Mr. Bruce Smith.*] *Q.* Who made that copy [*Exhibit* 29]? *A.* Mr. Martin, the draftsman in the office. Mr. Martin made this one [*indicating his own plan, which he held in his hand*].
14318. *Mr. Ritchie.*] The lithograph map was shown at the inquest as being a true copy of the plan of the mine.
14319. *Mr. Bruce Smith.*] His Honor is asking about a lithograph upon which the positions of all the men are marked. There is no question about the lithograph being copied from the plan supplied by the mine itself; but His Honor is asking now about a lithograph upon which the positions of the men are marked, which was originally made by Mr. Martin.
14320. *Mr. Ritchie.*] *Q.* The position of the bodies, as marked on that lithograph, were noted there on the strength of the evidence given at the inquest? *A.* Only partly so.
14321. *Q.* And also from information supplied by the officials in the mine? *A.* Yes.
14322. *His Honor.*] It is admitted, and must be taken, that at that time nobody had any object in misrepresenting the position of any particular body or any particular thing. The information was given to the best of the knowledge of everyone who attended, and, practically, it is the best information.
14323. *Mr. Bruce Smith.*] I do not think it would be practicable to get any better; and Mr. Atkinson says he has no reason to doubt the accuracy of the whole of it.
14324. *His Honor.*] And I think the Commission might think there is no doubt of it, practically. I think it might go in, subject to any correction, of course, as presumably correct.
14325. *Mr. Bruce Smith.*] It can go in for what it is worth.
14326. *His Honor.*] Just so.
14327. *Mr. Bruce Smith.*] I will give you an instance of the difficulty. In the case of Dungey's body there were only two witnesses who spoke as to the relative positions of the body and the head. One—Morrison, I think—swore that, as far as he could remember, the head was outbye the body; and Frost junior swore that the head was inbye the body. Well, they are the only two witnesses who spoke as to the relative positions of those two objects.
14328. *His Honor.*] And so, in this sectional plan, I notice that the head is left out.
14329. *Mr. Bruce Smith.*] And the arm too.
14330. *Witness.*] The arm was taken by a position which was marked on a stone.
14331. *His Honor.*] I suppose there was no question about the arm, or that there was more certainty about its position.
14332. *Mr. Bruce Smith.*] *Q.* Was there any conflicting evidence given with regard to the position of the arm and the body? *A.* I think that there was conflicting evidence with regard to that as well as the head; I am not sure.
14333. But instances of that kind are very few. I think there are only two or three.
14334. *His Honor.*] And they are not very material, because it is not possible to say whether the man would be blown off his head or the head blown off the man.
14335. *Mr. Bruce Smith.*] No; and I should think that the head would come off the body by striking against something, not by being blown off.
14336. *His Honor.*] So I think we may take it that these plans are, provisionally, in now for what they are worth.
14337. *Witness.*] Might I ask whether there is any desire on the part of the Commission to have any reduction of the plans. Perhaps you could think of it before the surveyors come.
14338. *His Honor.*] By and bye. We will have to have this large sectional plan reduced, and the other will have to be reduced, too, finally, for the purpose of printing; but it will not do to go into that at once, because the plan would have to be away for about a week. We will go on now with Mr. Atkinson's cross-examination.
14339. [A map showing the results of the explosion in part of No. 1 main level rope road, Mount Kembla Mine, was put in and marked *Exhibit No.* 26.]
14340. [Two sections, showing the results of the explosion in part of No. 1 main level rope road, Mount Kembla Mine, were put in and marked *Exhibits Nos.* 27 *and* 28.]
14341. [A lithograph plan of the Mount-Kembla Mine, on which the positions of the working places and the positions of the men who perished in the disaster are shown, was put in and marked *Exhibit No.* 29.

Cross-examination by Mr. Lysaght:—

14342. *Q.* Which is the plan that you are using to base your theory on? *A.* Well, the plan that I referred to yesterday is here.
14342½. *Q.* Do not you see that that is not an answer to my question?
14343. *His Honor.*] It is hardly fair to say "Which plan are you using to base your theory upon?" but you might ask, "Which plan did you use, which plan did you look at, before you concluded that your theory was the correct one, or before you formed that theory?"
14344. *Mr. Lysaght.*] I understand, your Honor, that some of these sectional plans are merely a duplication of the one big plan.
14345. *His Honor.*] Mr. Atkinson says, you remember, that he had a certain idea, and then afterwards he got all these facts crystalized clearly before his mind, so that he could look at them and study them more carefully.

14346. *Mr. Lysaght.*] That is the plan I want.
14347. *His Honor.*] And then he came to another conclusion—he did not come to a different conclusion; but he modified his first conclusion.
14348. *Mr. Bruce Smith.*] In this respect: I understood Mr. Atkinson to say, originally, that he was in doubt between two points; and now he says he thinks the evidence preponderates in favour of one; but there is nothing "absolutely certain" about any one of them—it is mere expert opinion.
14349. *Mr. Lysaght.*] *Q.* But I suppose you say that you have no doubt now that the theory of the back heading having been the original seat of the disaster was erroneous? *A.* No; but my opinion has been strengthened that the 4th Right was the source by investigating this plan.
14350. *Q.* And that opinion is without any doubt in your mind? *A.* Well, there always are doubts.
14351. *His Honor.*] Mr. Atkinson does not say that, Mr. Lysaght. Mr. Atkinson must be taken to say—he must say—that there is no absolute certainty about anything of this kind. There never can be.
14352. *Witness.*] I just give it as my opinion for what it is worth.
14353. *Mr. Lysaght.*] *Q.* The plan where all these things were condensed for you, and which you looked at, and on which you finally fixed on this conclusion—which is that plan? *A.* This plan here [*indicating Exhibit No.* 26].
14354. *Q.* This is what I want to ask you: What new matter did those sectional plans [*Exhibits Nos.* 26, 27, *and* 28] show you that confirmed you in this theory? *A.* Oh, there are several things which are shown more plainly when you get them on to a plan and are able to look at it.
14355. *Q.* I ask you what new matter? *A.* Well, there is one piece of evidence particularly with reference to the telephone wire.
14356. *Q.* What was that? *A.* And another piece with reference to a telephone wire in a tub near to the 4th Left; and generally the appearance, as indicated on the plan, of some of the tubs and some of the coal—those are the principal things, I think.
14357. *Q.* But in what way did the new matter concerning the telephone wire support this theory? *A.* It indicated to me that the force had gone inbye.
14358. *Q.* Anything else? *A.* Not in answer to that question.
14359. *Q.* No more new matter, then, as far as either of the telephones wires were concerned? *A.* No; it indicated a force inbye.
14360. *Q.* What other new matter did that plan show you? *A.* I think I have indicated the principal things.
14361. *Q.* The two telephone wires? *A.* And the general position of the tubs and coal.
14362. *Q.* Now, did you not give evidence about those telephone wires at the inquest? *Q.* Yes; I said that, if I remember rightly, I thought the wire had been detached from inbye, but that I could not swear to it, or something to that effect.
14363. *Q.* And what additional fact have you had, then, about that telephone wire since the inquest? *A.* Well, the plan has elucidated the matter, and made it clear to me that the wire has been detached at the outbye end, and that there has been a force inbye in connection with that wire.
14364. *Q.* Could not you see that from your own observation in the mine? *A.* Well, I did not see it. It was in the neighbourhood of a horse, which was in a pretty high state at the time, and we did not dwell too long on it, whilst these surveyors occupied some days in unravelling the evidences.
14365. *Q.* Well, is there anything else besides that? *A.* Well, those are the principal things.
14366. *Q.* And that information is supplied to you by surveyors putting it on a plan? *A.* Yes.
14367. *Q.* Did you go to verify it? *A.* No, I did not.
14368. *Q.* Do not you see that it would be a very simple matter for a telephone wire to be broken in eight or ten different places after the disaster? *A.* No; I think it is highly improbable. It is very improbable, I think.
14369. *Q.* Well, perhaps you can tell me this: What was the volume of air passing up the No. 1 main level on the day of the disaster? *A.* I cannot tell you that.
14370. *Q.* Have not you seen the record of it? *A.* I am not aware that the air was taken on the day of the disaster.
14371. *Q.* Can you give me an estimate of what you would expect would be passing up the No. 1 main level immediately prior to the disaster? *A.* Well, I do not see how I possibly could give an estimate. I think it is impossible for me to give an estimate.
14372. *His Honor.*] What you want to get is the rate of travelling of the air.
14373. *Mr. Lysaght.*] *Q.* Twenty thousand cubic feet, or whatever it might be, per minute, travelling up there—roughly the amount of air that was diverted into the No. 1 main (Right) section? *A.* I cannot remember the quantities in all the splits.
14374. [Mr. Lysaght asked for the ventilation books of the mine, which were put in as exhibits at the inquest, and were ordered by the Commission, when at Wollongong, to be produced as exhibits before the Commission. These had not yet been produced; but Mr. Barry said he would telegraph for them at once.]
14375. *His Honor.*] What you really want to understand is the approximate rate of travelling of the air. It does not matter about the number of cubic feet.
14376. *Mr. Lysaght.*] Yes; and about the volume, too; because, if there was a very heavy volume travelling up, there would need to be a large amount of gas coming out of the waste to make it an inflammable atmosphere.
14377. *His Honor.*] If you give the section of the engine plane, and if you then get the rate of travelling of the air, it might give what you want.
14378. *Mr. Lysaght.*] *Q.* Cannot you give me an estimate? *A.* I cannot. I would not like to say.
14379. *Mr. Robertson.*] I suppose there were probably 30,000 cubic feet.
14380. *Mr. Lysaght.*] That is what I thought myself.
14381. *Witness.*] I could not say. It is probably less than that.
14382. *Mr. Lysaght.*] *Q.* Now, can you say, as a fair estimate, 20,000 cubic feet per minute? Was it not an important matter for you to know about how much air was passing up that intake; do not you regard that as an important matter?
14383. *Mr. Bruce Smith.*] Now, do not let us have it said afterwards that Mr. Atkinson has sworn that there was 20,000 cubic feet of air. My friend is asking Mr. Atkinson to acquiesce in an assumption; and we do not want him afterwards to say that Mr. Atkinson absolutely swore it.

14384. [*Answer to Mr. Lysaght's question.*] I know that the quantity of air which was circulating, according to the ventilation book, was in accordance with General Rule 1: more than the minimum quantity was supplied; but I do not remember, for the moment, the quantities which were going in each split.
14385. *Q.* Do not you consider it is an important matter for you to have known, as near as you could, the amount of air travelling up that No. 1 main level on the day of the disaster? *A.* I do not see how I could have known it.
14386. *Q.* Could not you have taken the ventilation book for the previous record, and seen what the split was on that occasion? *A.* Yes; that is what I would like to do now.
14387. *Q.* But do not you think it was somewhat material to have done it before now? *A.* No; I do not think that it was.
14388. *Q.* Now, if we take the assumption that there would be about 20,000 cubic feet of gas—with the number of men working in that district, there could not very well be less, could there? *A.* Yes.
14389. *Q.* Taking the number of men, boys, and horses in that split, what would be the minimum required to go up the No. 1 main level? *A.* 9,000 or 10,000 cubic feet would supply the quantity required.
14390. *Q.* That would be the minimum required?
14391. *Mr. Bruce Smith.*] *Q.* Do you mean for the men engaged in the mine at that time? *A.* On that particular split.
14392. *Mr. Lysaght.*] *Q.* And it is a fair assumption that there would be a margin of, I suppose, 3,000 or 4,000 cubic feet? *A.* Yes.
14393. *Q.* So that the volume passing could safely be put at not less than about 15,000 cubic feet per minute? *A.* I think so.
14394. *Q.* Now, is it not a fact that a considerable quantity of fire-damp would have to come from the waste to form an explosive atmosphere, when that intake air was there to sweep it away and dilute it? *A.* I do not exactly understand your question.
14395. *Q.* That 15,000 cubic feet passing would dilute a large percentage of fire-damp, would it not? *A.* Would dilute? Well, I might say that 150 cubic feet of gas would afford sufficient, under certain conditions, with that volume, to make it dangerous, if there were also a cloud of dust, as has been suggested.
14396. *Mr. Robertson.*] *Q.* But is not there a time-factor as well in the question?
14397. *Mr. Lysaght.*] Now, for the present, leave out any consideration of any coal-dust; and take it that there were only fire-damp and air, what would be the volume of fire-damp required to be explosive, meeting that air?
14398. *Mr. Bruce Smith.*] Do you mean without coal-dust?
14399. *Mr. Lysaght.*] Yes; I am leaving out coal-dust altogether at present, for a reason you will see.
14400. *Mr. Bruce Smith.*] That is assuming there was no coal-dust?
14401. *Mr. Lysaght.*] Yes. *A.* Oh, well, about 750 cubic feet.
14402. *Q.* Now, does your theory depend on the gas being brought to an inflammable point by meeting the intake air? *A.* I think it was associated with coal-dust.
14403. *Q.* I am leaving coal-dust out of it altogether for the present;—do you mean that the gas, when brought to its inflammable point, was brought to it by meeting that air? *A.* I do not see how you could possibly leave out the coal-dust.
14404. *Mr. Bruce Smith.*] Now Your Honor sees the difficulty. First of all, Mr. Atkinson was asked to assume a condition of things in which there was no coal-dust. Then Mr. Lysaght goes on to say "Did it do so-and-so?" He mixes up a hypothetical case with a supposed actual case; and it will lead, I am afraid, to a lot of complications.
14405. *Mr. Lysaght.*] What I mean is this: up to the time that the gas met the air ——
14406. *Mr. Bruce Smith.*] The time that it did meet. You see you are on a hypothetical case that Mr. Atkinson says never took place.
14407. *His Honor.*] What is the question?
14408. *Mr. Lysaght.*] At what particular spot does Mr. Atkinson think that the mixture of gas and air became inflammable.
14409. *His Honor.*] I do not see how he can possibly answer that. What Mr. Atkinson suggests is the blowing out of a mixture, which he cannot, by any possibility, define the proportions of—the blowing out with force of a mixture of gas and air into the column of very slowly moving air coming up the engine level.
14410. *Mr. Bruce Smith.*] But does Your Honor appreciate my objection to the form? Mr. Lysaght begins with a hypothesis, but does not continue the hypothesis in each question. He drops the hypothetical form, and speaks in an actual form; and Mr. Atkinson may be assuming all through the answers that he is still on the hypothetical form—that coal-dust is not in question—but he will be answering questions in an actual form that should be put with a hypothetical preface. My own experience of examining witnesses over twenty years is this: that, if one begins a series of hypothetical questions, one's hypothesis must be put to every question—"If so-and-so would so-and-so," not "Did so-and-so."
14411. *His Honor.*] Mr. Lysaght, you were, to a certain extent, passing from the hypothetical to the actual. Mr. Atkinson has said all along, "I do assume as a fact that there was coal-dust from the first." You say, "Put the coal-dust out of the question," and "Do not you see what would happen?" You should say, "Do not you see what would happen, then, if so-and-so were so-and-so?" You do not put it that way; but you ask Mr. Atkinson what probably happened, Mr. Atkinson still believing in the coal-dust.
14412. *Mr. Lysaght.*] I can put it shortly, Your Honor.
14413. *Q.* Now, considering the coal-dust as a factor, your theory assumes a cloud of dust being raised in No. 1 main level and travelling road? *A.* Well, I do not know that I have referred to the travelling road; I said the No. 1 main level.
14414. *Q.* The theory assumes a cloud of dust raised by the rush of air and fire-damp in No. 1 main level? *A.* Yes.
14415. *Q.* Can I take it that it assumes that cloud of dust from the 4th Right up to the 4th Left, all the way? *A.* Yes, I think so.

14416. *Q.* And that would be a cloud of dust produced either from the roadway or from blown-out dust stoppings? *A.* I do not think that the stoppings would contribute, because they were blown towards the travelling road.
14417. *Q.* Well, then, it would be a cloud of dust produced from the roadway, and sides, and roof of the No. 1 main level? *A.* Yes, I think so.
14418. *Q.* Then was it not negligence in the management not to sufficiently water that No. 1 main level?
14419. *Mr. Barry.*] I object to that question. That is a question that this Court will not, I presume, allow Mr. Atkinson to determine. That is a question for the Court—an inference to be drawn from the facts that are put before them.
14420. *His Honor.*] Mr. Atkinson has already answered that, practically, several times.
14421. *Mr. Bruce Smith.*] Yes, Your Honor; but Mr. Atkinson has, very properly, complained to me, although he did not complain to the Court, that he comes into the Court here to assist the Commission, as an expert, to find whether or not there was negligence in certain directions; and he says that, instead of being treated as an expert assisting the Court, he is really asked to assume the functions of a jury, and to say whether there is negligence or not. How can Mr. Atkinson say whether it was negligence or not? He may not know the meaning, in law, of negligence. Negligence has formed the subject of special judgments by Courts. Yet Mr. Atkinson is asked to find upon the issue which the Commission are going to concern themselves with by-and-bye, when they have heard the whole of the evidence. I can understand Mr. Atkinson being asked what he thinks, and what he saw, and what he believes, but not his being asked to make deductions as to whether he thinks the management was negligent in omitting something or doing something. I can quite imagine his being asked whether, if he had been the Manager, he would have thought it a discreet thing to do; I should not object to his being asked that. But he is being asked the bald question, "In your opinion, was this negligence, or gross negligence?" I submit that it has nothing to do with the expert witness' evidence.
14422. *Mr. Lysaght.*] The question was put on the basis of getting an expert opinion upon a condition in the colliery, respecting which I asked him, was it not, first of all, practically a dangerous condition, and, therefore, was it not negligence not to have it removed.
14423. *His Honor.*] You have exactly given yourself away by the expression you have used, yourself, just now—"and, therefore." That is a question which the Court has to decide. It is not for Mr. Atkinson to say whether it is negligence or not; it is for him to say, if you like, what he, as an expert, would feel would be the best plan to adopt under the conditions which existed before the explosion took place; but he, rightly, objects to be asked to draw a conclusion of negligence, which is one of the principal questions for this tribunal to settle. I do not think it is a proper way to put the question; and it would not have been allowed, probably, in any Court trying a matter of this kind; it would not have been permitted to put to an expert this continual question as to whether something was negligent, or whether it was not. Whether it was good management to water, or not, is another question; and that I suggested to you before, was the proper way to put it—"Supposing you had been managing the mine, would you, or would you not, under the circumstances which you saw then existing, before the explosion, have watered in certain places?" But all these questions have been put so often that it seems to me that this is a repetition of what has gone before, two sittings ago.
14424. *Mr. Lysaght.*] *Q.* If your theory depends on the coal-dust carrying to the 4th Left, where you think it met the naked light, would you not, if you had been Manager, have had the No. 1 main level thoroughly watered? *A.* In the light of what has happened I certainly would do so in future.
14425. *Q.* Is it probable that, had the No. 1 main level been thoroughly watered, the disaster would never have occurred? *A.* That depends to some extent upon the quantity of gas which has been given off, and which is impossible to determine.
14426. *His Honor.*] It is quite clear that it is impossible, in the nature of things, to answer that question.
14427. *Mr. Lysaght.*] Yes.
14428. *Q.* But, in the absence of the coal-dust, you do not think that this explosion would have occurred? *A.* Well, in the absence of the coal-dust it would have required a much larger quantity of fire-damp to have been ignited by a naked light.
14429. *Q.* Now, you do know that the danger arising from the quantity of dust that was on the No. 1 main level was well-known to all mining people? *A.* Well, I think there is some variety of opinion, even now, as to that.
14430. *Q.* What I do not quite understand, Mr. Atkinson, is your answer that you consider it bad management not to water now, but you would not consider it bad management not to have watered the main level before the disaster;—because I put it to you that all the knowledge of the dangers of coal-dust was well-known before the disaster? [*Witness did not answer.*]
14431. *Q.* You follow that? You have already said the disaster afforded no new information regarding the danger of coal-dust; and that the English explosions had afforded plenty of cases. Now, I do not understand why it would be bad management not to water now, and yet it would not be bad management not to have watered the main level before the disaster.
14432. *Mr. Bruce Smith.*] I do not think Mr. Atkinson used the words "bad management."
14433. *Mr Lysaght.*] *Q.* I am asking you now? *A.* But I think you suggest that I said it before.
14434. *Q.* I think on Thursday you said that;—but I ask you now, would it not be bad management not to water the No. 1 main level?
14435. *Mr. Bruce Smith.*] I object to that. It is only putting it in another way.
14436. *Mr. Lysaght.*] I am using His Honor's expression.
14437. *His Honor.*] No. I suggested that you should ask how he would have managed himself.
14438. *Mr. Lysaght.*] Well, I will put it that way.
14439. *Q.* Since the disaster, would you, as Manager, water the No. 1 main level? *A.* Yes.
14440. *Q.* Before the disaster, would you, as Manager, have watered the No. 1 main level? *A.* I could not say, really, what I would have done. I do not wish to pose as anything more than any ordinary human being, and, therefore, it is impossible for me to say what I would have done under the circumstances.
14441. *Q.* With all your knowledge of the dangers of the coal-dust that was there ——[*Interrupted.*]
14442. *Mr. Barry.*] There is no evidence that coal-dust was there. "Assuming that coal-dust was there"—put in that form I do not object to it.

14443. *Mr. Lysaght.*] *Q.* Well, assuming that coal-dust was there, and with your knowledge of its dangers, do you mean to say that you would not have watered, as Manager? *A.* Well, I would probably have thought it necessary to have particular regard to the initiating causes of explosions, and to take precautions to prevent their starting; and that would be, in the case of shot-firing, if there were dry and dusty places, to water them; if I had had a knowledge of the possibility of a small explosion of fire-damp initiating an explosion, I would have thought it necessary, in good management, to use safety-lamps as a precaution against that contingency.

14444. *Q.* And, if you thought there was a probability of a small fire-damp explosion, would not you also have considered it necessary to water the main No. 1 level? *A.* No; I think the more important precaution is to adopt the use of safety-lamps, and thereby avert the possibility of the small gas explosion.

14445. *Q.* Then, may I take it that, with the knowledge of the conditions at Mount Kembla before the disaster, in your opinion, there was no necessity to water the No. 1 main level? *A.* I do not think I have said so.

14446. *Q.* Well then, I ask you that now;—with your knowledge before the disaster of the conditions of Kembla Mine, in your opinion, was it unnecessary to water the No. 1 main level? *A.* Well, so long as the legal obligations were carried out, and precautions adopted to prevent the possibility of an explosion by shot or by fire-damp, I do not know that I would have watered it. As I have said before, I cannot tell.

14447. *Mr. Robertson.*] *Q.* In the wildest flights of your imagination, could you have anticipated an explosion occurring in the way this is suggested to have occurred? *A.* No, I could not, having regard to the large area of pillars that had been taken out previously.

14448. *Q.* Assuming that the theory is correct, of it having occurred by a fall driving out gas and air from the 4th Right, which was ignited by a naked light in the main haulage road, is it not absolutely unique in mining disasters? *A.* I have not been able to get a parallel case, certainly.

14449. *Mr. Lysaght.*] *Q.* But, Mr. Atkinson, the dangers of the coal-dust would not be unique? *A.* Coal-dust is only dangerous under certain specified conditions.

14450. *Q.* I know that? *A.* It is perfectly harmless, except under certain conditions.

14451. *Q.* Now, leave out the legal obligation altogether, because I am speaking to you now as if you had been Manager, do you say, in your opinion, knowing the conditions of Kembla, it was not necessary to water the main level before the disaster?

14452. *Mr. Barry.*] I object to that question. I assume, for the purposes of this inquiry, that so long as the legal obligations cast upon the Kembla Mine were carried out, they were not bound, except morally, which, I submit, has nothing to do with this Court. He is asked this question—If the legal obligations were carried out, would he not be disposed to do more? Of course, if it is looked at from the humanitarian point of view, it might be different; but I submit that has nothing to do with this inquiry.

14453. *His Honor.*] Legal obligations are certainly a very strong factor in determining a question of negligence; but they are not absolutely the determining factor, even in civil actions. Perhaps you remember the case of an accident to a train in which that question was considered by the Courts in England, and decided against your contention. That was a case in which it was held that it was quite right for a Jury, on the question of negligence, to consider the fact that the Company had not adopted the communication system, even although, under the circumstances, the Company was not bound, in law, to adopt the system, and, at the same time, it had been made compulsory, by law, under other conditions of running, to adopt it. What the Court said there was this: "It is known that the inter-communication system is a great safeguard; this Company knew it; this Company might have adopted it; under other circumstances this Company would have been compelled by law to adopt it; this Company did not choose to adopt it, because it was not compelled by law to adopt it; if it had been adopted, probably the accident would not have happened; I leave it for the Jury to say whether, and how far, the non-adoption of the precaution affects their minds in relation to the question of negligence." There is no doubt that your contention is wrong.

14454. *Mr. Bruce Smith.*] The same thing has occurred in the case of the emission of sparks from an engine; where there was a statutory requirement as to what should be used, they used it; and the distinction was between, practically, common-law negligence and statutory negligence.

14455. *Mr Barry.*] That is the point I take here.

14456. *His Honor.*] There is no doubt, Mr. Barry, that you can very well contend that, so long as the management complies with the law, that is a very strong argument in favour of the theory that the management is not guilty of negligence; but still you cannot contend from that position as a conclusive one. It is *prima facie* evidence, and, as such, it has a great deal of weight; but it is not conclusive; and, therefore, Mr. Lysaght may ask the Commission, both as a matter of law and as a matter of common-sense, to consider whether the Company should not have gone beyond its legal obligation in certain respects.

14457. *Mr. Bruce Smith.*] I was not joining Mr. Barry in his objection, because I thought the Commission really went outside statutory blameability.

14458. *His Honor.*] Of course it does. It goes to common-sense; statutes do not always come up to common-sense.

14459. *Mr. Barry.*] I had in view that case in England; but that was where a well-established practice had not been carried out by this Company; but there is no such question here, for the practice of watering mines is entirely apart from what is imposed upon them by law, either common law or statute law.

14460. *His Honor.*] The only question is whether the Commission ought to exclude the evidence on the ground of that legal non-compulsion to adopt the plan which, Mr. Lysaght suggests, ought to have been adopted; and what I have to hold, as a matter of law, as well as of common-sense, is that the Commission cannot exclude the evidence on that ground.

14461 *Mr. Bruce Smith.*] I think there is a very complete answer to that contention, in this respect, that the Commission is asked, not only to find out who is to blame, but to make suggestions for the future management of mines; and, therefore, it goes beyond the breaches of existing law, in order to ascertain what further provisions of law are required in future; and, therefore, if this inquiry were to stop at the breaches of the present law, it would not reveal what provisions are required for the future.

14462. *Mr. Lysaght.*] *Q.* Knowing the conditions of the Kembla Mine before the disaster, would you not, as Manager, have watered the No. 1 main level? *A.* I cannot say whether I would or not.

14463. *Q.* Were there not, before the disaster, conditions of dust in the main level, which, any day, might lead to disaster?
14464. *Mr. Barry.*] Before that question can be asked, we ought to have the conditions, or to know if he knew the conditions, that were there. Mr. Lysaght's question assumes that certain conditions are there, which may be dangerous, without any evidence of it. I think it is a fair question to ask "What were the conditions; what do you know of the conditions?" "The conditions were so-and-so." "Then, assuming they were as you state, would it not be dangerous to allow them to remain without being watered?"
14465. *His Honor.*] The question is perfectly permissible.
14466. *Mr. Bruce Smith.*] Mr. Garlick might read the question again, please.
14467. Mr. Garlick then read the question as follows:—"*Q.* Were there not, before the disaster, conditions of dust in the main level, which, any day, might lead to disaster?"
14468. *Mr. Barry.*] Mr. Atkinson has given evidence that he had not been in the mine for a considerable time.
14469. *His Honor.*] That is another question. It does assume a little more than Mr. Atkinson's knowledge probably was, but still we cannot tell as to that until he answers the question.
14470. *Mr. Lysaght.*] *Q.* What do you say, Mr. Atkinson, to that question? *A.* Well, I might say that I had not been in that part of the mine for nine months before the disaster; and I think that the conditions likely to lead to disaster, which would be either a shot fired, or a small explosion of fire-damp, or fire-damp mixed with coal-dust and air, were not likely to exist on that part of the road.
14471. *Q.* Do not you know that the Manager has admitted that he never had the vicinity of a shot watered?
14472. *Mr. Barry.*] That is a repetition of the same question that has been asked.
14473. *Mr. Lysaght.*] I am testing the answer, now.
14474. *His Honor.*] That has nothing to do with the question you have just asked, because there was no shot-firing in that part of the mine at all, in the main No. 1 level.
14475. *Mr. Lysaght.*] *Q.* The shot would not be required to be fired in the main engine road? *A.* Not usually.
14476. *Q.* I mean that it would not be necessary for the shot to be fired in the main engine road to be a source of danger in the main level? *A.* If proper precautions were not taken when a shot was fired in the neighbourhood of dust, there would be a certain danger.
14477. *Q.* Exactly; in any working place, if a shot were fired, and no proper precautions taken to water the dust, then that would be a source of danger to the No. 1 main level? *A.* In a dry and dusty place?
14478. *Mr. Lysaght.*] Exactly.
14479. *His Honor.*] I might point out, Mr. Lysaght, that what we are on now is the suggestion of the possibility of a fall producing the effect which Mr. Atkinson believes was produced by a fall; and the result, in relation to that, of not having kept down the dust which the blast of that fall was supposed to have raised. Now, this has got nothing to do with the shot-firing at all. You see it is confusing matters to go off into shots.
14480. *Mr. Lysaght.*] But Mr. Atkinson's answer led me away on that matter; he introduced it.
14481. *Mr Bruce Smith.*] Only because he said there was a rule which required them to water dry and dusty places.
14482. *Mr. Lysaght.*] *Q.* Now, getting to that fall in the goaf raising the cloud of dust, I will ask you, finally, would you not, before the disaster, as a Manager, have watered that No. 1 main level? *A.* In view of the possibility of a fall?
14483. *Q.* There was that possibility there? *A.* Well, I say, is that to be attached to your question, "In view of the possibility of a fall?"
14484. *Q.* I will attach it, as well as any other danger that might be there. The fall was anticipated; and I may attach that as well as any other source of danger that might be there. Would you, as Manager, have watered the No. 1 main level?
14485. *Mr. Bruce Smith.*] Do you mean with the knowledge he has?
14486. *Mr. Lysaght.*] Yes.
14487. *A.* I can only say, as I said before, that I cannot say whether I would or not.
14488. *Q.* Do you remember telling me, at para. 13702 of the evidence, "The additional knowledge conveyed by the explosion alters the case"; and, at para. 13707, "The effect of the explosion has brought the matter so keenly before everyone in the mining community, and before everyone associated with mining"; and you gave that as the reason why it was not negligence before the disaster, where it would be negligence after the disaster?
14489. *Mr. Bruce Smith.*] But, what is the question?
14490. *Mr. Lysaght.*] *Q.* Do you remember that? *A.* I remember the references, which you are reading.
14491. *Q.* But you have answered me that, where it would be negligence after the disaster, it would not be negligence before the disaster not to have watered, because the disaster had brought the dangers keenly before all mining people; and the disaster had altered the case? *A.* Yes; I think I remember that.
14492. *Q.* Now, that is a fair summary of the reasons you say might have actuated you, or even the management, as far as you could judge? *A.* Yes, I think so.
14493. *Q.* Well then, you have already told me that the dangers of coal-dust were pointed out in the ordinary mining text-books? *A.* Yes, I think we have had that before.
14494. *Q.* And it is also a fact that, as far back as 1889, the dangers of coal-dust were thoroughly gone into and published in this work by Abel? *A.* Well, they were gone into to a certain extent.
14495. *Q.* By Abel; and the result of his investigations was published? *A.* Yes.
14496. *Q.* The dangers of coal-dust were also emphasised in your own annual reports before the disaster? *A.* Yes.
14497. *Q.* And, do you remember reading this passage in the report of the Bulli Colliery accident, made by the Bulli Colliery Explosion Commission, at page 16:

> 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 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-dived coal-dust with gas, intensifies the effect which would otherwise follow

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

Do you remember reading that passage? *A.* Yes, I think I have read that.
14498. *Q.* Do you know that that was published as far back as 1887? *A.* Yes, I think that is the year.
14499. *Q.* Now, in view of that information, and the conclusions drawn by a Commission concerning an explosion in the same district, and in the same seam, do you say that it was not keenly enough before all mining people before?
14500. *Mr. Barry.*] *Q.* What was keenly before them, the report?
14501. *Mr. Lysaght.*] The dangers of coal-dust.
14502. *Mr. Bruce Smith.*] Your Honor sees this, that, after reading that paragraph, Mr. Lysaght asks the witness: "Will you now say that this question of the danger of coal-dust was not keenly enough before all the mining community"? Well, that is for the Commission to say.
14503. *His Honor.*] All that Mr. Lysaght can ask of Mr. Atkinson is the state of literature on the subject; and that is hardly a question there is any doubt on.
14504. *Mr. Lysaght.*] But, Your Honor will pardon me, that is a reason that Mr. Atkinson gives that he would not water the mine. He says "The effect of the explosion has brought the matter so keenly before everyone in the mining community, and before everyone associated with mining"; and that is in answer to my question—"Why should it be negligence not to water now, and not negligence not to water before the disaster?" That is the reason he gives. Then I am showing that it was keenly before the mining public by the report in 1887 of the Bulli explosion, and that it was emphasised; and therefore I am putting it to Mr. Atkinson—is not his reason an absolutely unsound one?
14505. *Mr. Bruce Smith.*] Surely that is a matter of comment, Your Honor.
14506. *Mr. Lysaght.*] *Q.* Well then, do you want to give any other reason besides what you have given, that the matter was not keenly before mining people, and that the explosion alters the case? *A.* Well, I might say that, if it had been thought of very keenly by the mining community, the Legislature would probably have dealt with it in their 1896 Act in a different way.
14507. *Q.* Is that the only answer? *A.* It is the only one that strikes me at the moment.
14508. *Mr. Bruce Smith.*] *Q.* You mean the 1896 Act brought no reform as the result of that report?
14509. *Mr. Lysaght.*] It did.
14510. *Mr. Bruce Smith.*] But not in the direction that you are suggesting now.
14511. *Mr. Lysaght.*] But in some points.
14512. *Mr. Bruce Smith.*] Yes, in other directions.
14513. *Mr. Lysaght.*] *Q.* Do you know that the Bulli Commission also found—"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"? *A.* Yes, I have read that passage.
14514. *Q.* And have you read also that, "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"? *A.* Yes, I have read that too.
14515. *Mr. Bruce Smith.*] They are more sure than the Chamberlain Commission.
14516. *Mr. Lysaght.*] *Q.* And do you know that one of the recommendations of the Bulli Commission was—"Where dust exists in quantity and under conditions favourable for ignition, it should be periodically and efficiently damped by water"? *A.* Yes; I have read that too.
14517. *Q.* Well now, I want to know, as you knew that Kembla was not being periodically and sufficiently damped by water, and as you knew there were no appliances at Kembla to water the sides or roof at all, why did not you not make some suggestion to avoid the danger that might be there?
14518. *Mr. Bruce Smith.*] Do not answer that. Now, Your Honor sees the objection to that question. If Mr. Atkinson gave an answer to that question, he would appear, from the evidence, to be admitting that he did know all those things, of which my friend says "as you knew." I object to it. I do not mind Mr. Lysaght saying "Assuming you knew, then why?" but not "As you knew," because the simplest answer to that would practically admit, on the evidence as it would be ultimately printed, that he did know it.
14519. *His Honor.*] It comes of making a question too comprehensive, Mr. Lysaght. I have called your attention to that before.
14520. *Mr. Bruce Smith.*] I know it is done with the idea of condensing; but my friend puts two, and sometimes three, questions in one.
14521. *Mr. Lysaght.*] I will put it seriatim.
14522. *Q.* Did you know there were no appliances at Kembla to water the sides or roof? *A.* Yes.
14523. *Q.* Did you know that the only watering that was done there was with a tub with one hole in the bottom of it? *A.* Well, I know that the only watering that was done was on the floor; I do not know whether there was one hole or more.
14524. *Q.* And did not you also know that the appliance for watering the floor was inadequate? *A.* Well I cannot tell whether I knew that or not.
14525. *Q.* But you have told me since, you know, that it was inadequate? *A.* Yes.
14526. *Q.* You cannot say whether you did know it was inadequate?
14527. *Mr. Bruce Smith.*] That was only revealed by the Inquest.
14528. *Mr. Lysaght.*] *Q.* You cannot say now whether you know it was inadequate?
14529. *Mr. Bruce Smith.*] For floor purposes.
14530. *Mr. Lysaght.*] *Q.* You cannot say now whether you knew at that time that it was inadequate to water the floor? *A.* I could not say whether I knew it or not.
14531. *Q.* Did you ever inquire? *A.* I do not remember about that. I knew that there were some water-tubs in the pit, which let the water out at the bottom; but I am not aware that I saw them at work; and therefore I could not judge as to whether the water was adequately spread over the road. 14532.

Witness—A. A. Atkinson, 10 February, 1903.

14532. *Q.* Now, with the exception of your letter to the Manager, three or four months before the disaster, what did you ever do to see that the dangers from coal-dust were obviated in Kembla? *A.* I am not aware that I did anything.
14533. *Q.* Did you send sprays? *A.* I did not send sprays to Kembla; but I sent them to several collieries, and asked them to use them.
14534. *Mr. Lysaght.*] Then, although you had this report of the explosion at Bulli, caused, in a great measure, by dust, and although the dangers were pointed out there, you admit you did nothing for fourteen years to obviate the dangers of dust at Kembla? *A.* No, I do not admit anything of the sort.
14535. *Mr. Bruce Smith.*] He has only been here six years.
14536. *Mr. Lysaght.*] *Q.* Then you did nothing for six years? *A.* I was not here even six years.
14537. *Q.* How long were you here, before you sent that letter, three months before the disaster: how long have you been Chief Inspector? *A.* Five years last September.
14538. (In compliance with a request by Mr. Bruce Smith, Mr. Garlick read Mr. Lysaght's question, as under) :—"Then, although you had this report of the explosion at Bulli, caused, in a great measure, by dust, and although the dangers were pointed out there, you admit you did nothing for fourteen years to obviate the dangers of dust at Kembla"?
14539. *Mr. Lysaght.*] Make it five years.
14540. *Mr. Barry.*] I object to that question—the dangers of dust. We do not admit yet there were any dangers of dust there. "If there were any dangers there, did you do anything to obviate the dangers of dust?"—that is the way it should be put.
14541. *Mr. Bruce Smith.*] I object to it in another way. There is an assumption here that Mr. Atkinson, who has got the general supervision of about 150 coal mines —— [*Interrupted.*]
14542. *Witness.*] About 100.
14543. *Mr. Bruce Smith.*] There is an assumption here that he was to do something. I think there was an assumption that it is a part of the duty, not merely of the Inspector, but of the Chief Inspector in New South Wales, to practically manage these mines. He cannot do that. Your Honor sees the form of that question. If that were to go forth, it would seem like an admission by Mr. Atkinson that it was his duty to do something in a particular mine to obviate a possible explosion. It is not his duty to do anything. It is merely his duty to see that the Manager does what the law imposes upon him; and Mr. Atkinson has already said that he cannot say there was any breach of the existing law; and he has already pointed out, in the previous part of his evidence, that some of the things Mr. Lysaght has suggested were quite outside his power to compel the management to do: and I do submit that a high official like Mr. Atkinson should not have put to him a question which, whatever answer he gives, would make it appear that he admits that it was his duty to do something. It is not his duty to do it at all.
14544. *His Honor.*] It is quite open to Mr. Atkinson to repudiate that duty. It is quite open to him to explain away the presumed or suggested duty; but, at the same time, there is nothing to prevent the question being put in that form; although it might be contended that too much is being suggested as incumbent upon Mr. Atkinson. At the same time it is clearly incumbent upon him, if he does know that something is going wrong in a mine, whether it is a matter which he has power to set right or not, to try his best to stop it. If something very obviously dangerous were being done, for instance, if a mine were being lit by gasoline, which was handled about by all the miners, in a general, promiscuous, manner, Mr. Atkinson would certainly consider himself bound to say something, I presume.
14545. *Mr. Bruce Smith.*] Your Honor will understand that I am not at all attempting to minimise the responsibilities of the Chief Inspector. All I say is that a question is being put to him in such a form that, whichever way he answers it, he will seem to admit that there was a duty upon him to do something, as distinguished from seeing that other people did it. Mr. Atkinson is here as a scientist, in order to express his opinion on certain questions. I think, if Mr. Atkinson knows now, from Your Honor, that he is at liberty, himself, to take exception to the form of the question, he is quite capable.
14546. *His Honor.*] How is the Court to assume that Mr. Lysaght is not now intending to suggest that one of the authorities to blame might be the Department of Mines? Mr. Lysaght has a perfect right to raise that question on the issues: he might even go so far as to say "I have no fault to find with the management; but I have fault to find with the Department." If he suggests that to the Commission, they cannot stop the suggestion.
14547. *Mr. Bruce Smith.*] No, but Mr. Lysaght suggests to Mr. Atkinson "You did nothing," not "You did nothing that you had power to do." I would not mind that at all; because Mr. Atkinson has a very easy answer. Mr. Atkinson explained three or four days ago that he had the right to require the management to water dry and dusty places before they fire shots; "but," he said, "there my power ended." But, if Mr. Lysaght has permission to put this question, he should be required to put it in this way—"But you did nothing that you had power to do?" or "You empowered nothing that you had power to empower, for preventing it?"
14548. *His Honor.*] That is on the same principle that I alluded to before. I do not think that this Court is limited to the question whether Mr. Atkinson was acting strictly within his legal powers or not; and I do not think the Department could justify its action by saying that it complied entirely with the law if, say, for the sake of argument, the Department had merely permitted some, not illegal, but obviously dangerous, practice. It could not shelter itself then any more than the management could—nobody could shelter himself—under that suggestion. The management could not and the Department could not. If some new practice were adopted—I have suggested, for instance, the use of gasoline in a haphazard or happy-go-lucky way—oh, well, of course, the Department would try to put its foot down on that, and properly so, and would be bound to do so.
14549. *Mr. Barry.*] My reason for objecting to that was to protect the interests of the Kemhla Colliery. I object to this question put by Mr. Lysaght, "To obviate the dangers of coal-dust in Mount Kembla Coal-mine." I submit that is not a fair way to put the question, or to have it on the depositions. I do not wish to abbreviate or cut down the responsibilities of the management; but it is assuming that there were dangers in that coal-mine. So far as Mr. Atkinson's duties are concerned, of course, that is a matter that Mr. Bruce Smith may take up: but I submit that, before the Chief Inspector can be asked whether he took steps to prevent the dangers, we have the right to ask, and the Court has a right to have, some evidence that the dangers were there.
14550. *His Honor.*] As far as that is concerned, Mr. Atkinson's own evidence assumes that coal-dust was a factor in producing this very explosion, rightly or wrongly; and, rightly or wrongly, it is assumed

that

that that factor ought to have been contemplated beforehand. Now, Mr. Lysaght says that is the very point he is arguing. The suggestion is that it ought to have been contemplated before. It is a question for the Commission whether it ought to have, or ought not to have, been contemplated before, and provided against. The Commission cannot shut out evidence that that is so.

14551. *Mr. Barry.*] I do not desire to shut it out, if it is put in a different way.

14552. *Mr. Bruce Smith.*] The Commission will not look to the Chief Inspector to interfere with the management of an industry beyond the point at which the Legislature has said that it is his duty to do it, and beyond the point at which he has power to do it; because, if Mr. Atkinson were to take up a sort of paternal position with regard to all these mines, and to say, "I have only the power to do so-and-so; but I require you to do so-and-so in addition to that which is required by the Act and Regulations," and to interfere in many other ways beyond the limits which have been laid down by the Legislature, the very first people to turn round would be the Mine Managers; and they would say, "Are you going to manage the mines, or are we going to manage them? You are there with certain very limited powers."

14553. *His Honor.*] I think the Commission have already decided that point. It is a very strong argument in favour of the theory that the Department has done its duty, that the Department has enforced everything which the law enables it to enforce; but that does not necessarily include the whole moral duty of the Department to the community; and if invention, for instance, goes suddenly a long way ahead of legislation, there is clearly a duty thrown on the Department, holding the position which it does of overlooking the proper management of mines, to guard against the dangerous application of new inventions which have not yet been dealt with by any legislation. There are many instances of that.

14554. *Mr. Bruce Smith.*] I quite admit it; but your Honor must not lose sight of this fact, that this report is fourteen years ago, that the Legislature has dealt with the whole of the mine management only six years ago, and that the regulation —— [*Interrupted.*]

14555. *His Honor.*] After all—I do not wish to interrupt you—but all these are questions of degree. They are not questions of principle. On principle we cannot stop Mr. Lysaght. Even if we did disagree with him—I will not say that we do—we could not stop him if he makes suggestions, even though those suggestions may be apparently unfounded.

14556. At Mr. Bruce Smith's request, Mr. Garlick again read the question, as follows:—"Then, although you had this report of the explosion at Bulli, caused, in a great measure, by dust, and although the dangers were pointed out there, you admit you did nothing for five years to obviate the dangers of dust at Kembla?"

14557. *A.* Well, I called the attention of the Manager to observe General Rule 8, in regard to the use of safety-lamps, and also General Rule 12, in regard to the blasting. I was not aware myself of any report of gas having been made in the mine since my arrival; and I think that the explosion which has occurred, in my opinion, in the way indicated, could not reasonably have been anticipated.

14558. *Mr. Lysaght.*] *Q.* Do you remember stating at the inquest, p. 60, "The proof of the explosion is the best evidence as to whether such conditions were dangerous, once an explosion was started"? *A.* Yes.

14559. *Q.* And the "such conditions" referred to were that there was a sufficient quantity of coal-dust in the 4th Right to have carried it some considerable distance?

14560. *Mr. Bruce Smith.*] Do not answer that for a moment till I see whether the two things are connected.

14561. *Mr. Lysaght.*] It goes on this way: "I think that the 4th Left rope road was about as dusty a piece of road as I saw; and, once the explosion was initiated, there was, I think, sufficient dust to carry the explosion along for a considerable distance; I think that the proof of the explosion is the best evidence as to whether such conditions were dangerous, once an explosion was started; I think that the explosion has been carried on by coal-dust after it was initiated."

14562. *Mr. Bruce Smith.*] "Once an explosion was started."

14563. *Mr. Lysaght.*] Yes, of course.

14564 *Q.* Now, then, it being clear that the dangerous conditions were there, I ask again, with the exception of your two letters to the Manager, did you do anything to obviate those dangerous conditions? *A.* I did nothing beyond that, and calling his attention to the danger of the dust.

14565. *Q.* That is in the letters? *A.* Yes.

14566. *Q.* Now, I am going to take you to these two letters, to show what you really did do. In your letter of the 13th of May, 1898, you say:—

> Referring to my visit to the Mount Kembla Colliery on the 11th instant, and our conversation on several matters, amongst which were—
>
> 1. Old Davy lamps now used by deputies, being considered as out of date and illegal under General Rule 9, should be replaced by another type of safety-lamp.

Do you know whether those old Davy lamps were replaced? *A.* Well, I know that I wrote to the Inspector, calling his attention to it, and asking him to let me know if it was not done; and, getting no reply in the affirmative, I presumed that the matter had been attended to.

14567. *Q.* Do not you know that Mr. Rogers admitted that certain lamps were sent down by Dr. Robertson, and had never been used? *A.* I think I heard that.

14568. *Q.* Were not those the lamps sent down to replace the old Davys'? *A.* I do not know that.

14569. *Mr. Bruce Smith.*] Now Your Honor sees how my friend goes from what took place at the inquest, or, rather, from what Mr. Atkinson had done prior to the explosion, to what Mr. Rogers, the Manager, admitted at the inquest. What connection is there?

14569½. *Mr. Lysaght.*] One moment.

14570. *Q.* Did you ascertain whether the old Davy lamps, which you said were illegal, had been replaced—yes or no? *A.* I cannot answer it "yes" or "no." I wrote to the District Inspector after the visit, pointing out to him what I had suggested, and asking him if he would let me know; and, therefore, I presumed that it had been attended to.

14571. *Q.* And you never bothered to make any further inquiry from him? *A.* No, I do not think I did.

14572. *Mr. Bruce Smith.*] Now Your Honor sees—"you never bothered"—that is not fair.

14573. *Mr. Ritchie.*] *Q.* Who was the Inspector then? *A.* Mr. Rowan.

14574. *Mr. Bruce Smith.*] Do not you see how unfair it is—"you never bothered"; and then the witness gives an answer, and it looks as if it were too much trouble.

14575. *His Honor.*] The question and answer go down separately, Mr. Bruce Smith.
14576. *Mr. Bruce Smith.*] They do here, but not in the Press.
14577. *His Honor.*] It is impossible to say what will go into the Press.
14578. *Mr. Robertson.*] I do not see that it helps the matter to put the question offensively.
14579. *Mr. Lysaght.*] It was not my intention to put the question offensively.
14580. *His Honor.*] Mr. Lysaght, we must try, on this inquiry at any rate, to eliminate all police court practice.
14581. *Mr. Bruce Smith.*] It is a scientific inquiry, and it should be a scientific atmosphere; and it stirs up my *nisi prius* mood when I hear questions like this.
14582. *Mr. Barry.*] I have read this; Mr. Lysaght has not put the whole of the evidence or answer to the Coroner's question as to those safety-lamps by Mr. Rogers.
14583. *Mr. Lysaght.*] What page is this?
14584. *Mr. Barry.*] Page 41 (*Inquest*) (*reading*): "I suppose, if safety-lamps were used, the expense would fall on the Company. The Company supplied the dozen or eighteen safety-lamps which we had before the disaster; they had not been used; they were sent up by Dr. Robertson, and I was surprised to see them, because we did not require them." He asks Mr. Atkinson, "Did you not hear Mr. Rogers say that the lamps were sent there, but were never used?"
14585. *Mr. Robertson.*] The question is, were they supposed to be identical with the lamps to replace the Davy lamps. I think, as far as I can see, these were lamps sent up for another purpose altogether.
14586. *Mr. Barry.*] That is so.
14587. *Mr. Bruce Smith.*] And it must not be forgotten that Mr. Atkinson had no power to order them to use a safety-lamp at all.
14588. *Mr. Lysaght.*] Except a proper safety-lamp for examining for gas.
14589. *Mr. Bruce Smith.*] Only then, if gas had been found within twelve months before.
14590. *Mr. Robertson.*] He has no power to order safety-lamps.
14591. *Mr. Lysaght.*] *Q.* If you had no power to order safety-lamps, what did you mean by saying that the old Davy lamps were out of date and illegal;—in what respect were they illegal? *A.* Well, I might say that the Royal Commission on Accidents in Mines, which published its final report in 1886, spoke with reference to the old Davy, Clanny, and Stevenson, lamps, and recommended that they should not be used in currents of high velocity and inflammable, unless protected by a shield.
14592. *Mr. Robertson.*] *Q.* Is it not provided for by General Rule 9? *A.* Yes.
14593. *Q.* "They shall be so constructed that they may be safely carried against the air current ordinarily prevailing in that part of the mine"? *A.* Yes; that is the rule which refers to this.
14594. *Q.* And those safety-lamps, I take it, did not comply with this provision? *A.* I think that was understood.
14595. *Mr. Bruce Smith.*] *Q.* That is, supposing that they are under an obligation to use a safety-lamp at all. But they were not in this mine, because gas had not been found for twelve months before.
14596. *Mr. Robertson.*] But, if they use safety-lamps at all ——
14597. *Mr. Bruce Smith.*] They were not required to use them by law.
14598. *Mr. Robertson.*] The law says, "Wherever safety-lamps are used"; so evidently the deputies were using safety-lamps which were not in accordance with Rule 9.
14599. *Mr. Bruce Smith.*] Then I quite see why he said "illegal."
14600. *Mr. Lysaght.*] *Q.* If a mine is using safety-lamps, is it not clear that they have got to use approved safety-lamps? *A.* Yes.
14601. *Q.* And, that being so, I want to know whether you ascertained whether they were using legal safety-lamps? *A.* Well, I cannot add anything to what I have already said in regard to that.
14602. *Q.* Now, General Rule 4 is as to reports being made at the station, and before each shift commences, whether day or night;—do you know whether that rule was carried out? *A.* Yes; the reports were made, and, so far as I was able to ascertain, were made in accordance with the law.
14603. *Q.* Then you put at the bottom of your letter, "I shall be pleased to hear from you on these matters." Did you hear from the management on those matters? *A.* Only indirectly.
14604. *Q.* You did not get any letter? *A.* No.
14605. *Q.* And I do not think you got any answer from Mr. Rogers to that letter of the 30th April, 1902? *A.* No; I do not think there was.
14606. *Q.* You did not ask for any reply? *A.* No; I did not ask for any reply.
14607. *Q.* Now, you heard Mr. Rogers say, and the officials admit, that the examination of the waste had only been made once a month for some years.
14608. *Mr. Bruce Smith.*] Did they say so?
14609. *Mr. Barry.*] No; they did not say that.
14610. *Mr. Lysaght.*] *Q.* Do you remember how long the examination of the waste—for what period of time the examination of the waste—had only been made every month? *A.* I do not remember what the evidence said.
14611. *Mr. Robertson.*] *Q.* Can you say how long the special rules were in force requiring that to be done? *A.* Since about the beginning of 1897, I should think.
14612. *Q.* Was the same rule in force at other collieries? *A.* At some other collieries, yes.
14613. *Q.* I take it that the examination of a waste weekly or monthly would date from the special rule being enforced? *A.* Yes; I take it so.
14614. *Mr. Lysaght.*] *Q.* But you do know this: that Mr. Rogers stated, "If I had thought there was any occasion for it, it would have been practicable to have the waste workings inspected once a week, and I was aware of Rule 10 in the Special Rules."
14615. *Mr. Bruce Smith.*] In the rules, the word "practicable" occurs as to the examination, not as to the frequency.
14615½. *Mr. Lysaght.*] I know that.
14616. *Q.* And then he says that it was only made once a month, and that it had been going on for some time. Now, I want to know, inasmuch as there was there a direct breach of rules, how is it that you, or your Inspector, did not discover it?
14617. *Mr. Bruce Smith.*] He will answer for himself, but not for his Inspector.

14618. *Mr. Lysaght.*] *Q.* Perhaps you will answer for yourself first? *A.* Well, the Inspector's reports, from time to time, pointed out that the Act was being complied with, and I was, therefore, unable, from that, to assume that the waste workings were not being inspected as required by the rule.
14619. *Q.* About how often did you, yourself, go to Kembla Colliery? *A.* I think I was there once in each year before the accident.
14620. *Q.* Did you, on any of those occasions, look at the report book to see when these things were being examined? *A.* Well, I generally looked at the report book under General Rule 4; but I may have omitted to look at the waste workings report book.
14621. *Q.* Was it not equally important to look at the waste workings report book as at the other report book? *A.* No, I do not think so: but I was assured that the reports were kept in accordance with the rules.
14622. *Q.* You know now that the assurance was altogether wrong, do you not? *A.* Yes, I do.
14623. *Q.* And do I understand that you never looked at the waste report book? *A.* I do not remember having done so.
14624. *Q.* Now, had you looked at the waste report book, it would have shown, on the face of it, that the examination was only being made once a month, would it not?
14625. *Mr. Bruce Smith.*] How does he know that?
14626. *Mr. Lysaght.*] He saw it in Court here.
14627. *A.* I suppose it would.
14628. *Q.* Then is it not clear that if your sub-inspector had looked at the waste report book any time he would have seen that it was only being made once a month? *A.* Yes.
14629. *Q.* In your opinion, was not your Inspector to blame for not looking at that waste report book? *Q.* Yes, I think he was.
14630. *Mr. Robertson.*] *Q.* He might have looked at it, or you might have looked at it, and not have noticed that the examination was made monthly, instead of weekly? *A.* I might have done so.
14631. *Mr. Lysaght.*] I think, Mr. Robertson, the words (of the report) are "The monthly examination."
11632. *Mr. Robertson*] Quite so; but I say he may have looked at it, but not have observed that the examination was being made monthly.
14633. *Mr. Lysaght.*] I think the book itself said "The monthly examination was this day made." ——
14634. *Mr. Robertson.*] But are you quite sure? That would be rather an unusual way to put it.
14635. *Mr. Lysaght.*] *Q.* Now I take it that that is clear, that for part of the time Mr. Rowan was Inspector, and part of the time Mr. Bates was Inspector when the examination of the waste was made only monthly? *A.* Yes.
14636. *Q.* But both of those Inspectors failed to report what was a violation of the rule? *A.* Yes.
14637. *Q.* Do you then say that both those Inspectors, in your opinion, were to blame for not discovering and reporting that violation? *A.* Yes.
14638. *Q.* But you consider that you were not to blame because you had their general assurance that the rules were being carried out? *A.* That is so.
14639. *Q.* And you did not verify that assurance yourself, so far as the waste report was concerned? *A.* I did not.
14640. *Mr Bruce Smith.*] He did not verify the Inspector's report of his duties by doing the Inspector's work himself.
14641. *Mr. Lysaght.*] That is a question to be considered hereafter, as to whether it was not part of his duties to inspect the books when he went to the Colliery.
14642. *Q.* You might tell me, Mr. Atkinson, throughout the conduct of your office, have you considered yourself absolutely bound not to make suggestions beyond what the law empowers you to enforce? *A.* Well, it is a question covering such a very wide range that it is impossible to answer it "yes" or "no." If Mr. Lysaght could bring it within narrower limits, and specify any particular thing, perhaps I should be better able to answer it.
14643. *Q.* At this moment, do you consider yourself bound not to make suggestions, unless you can enforce those suggestions by law? *A.* Suggestions in regard to safety?
14644. *Q.* Suggestions in regard to anything?
14645. *Mr. Bruce Smith.*] In the management of mines, you mean.
14646. *Mr. Lysaght.*] *Q.* Anything. In regard to the duties of your office and the scope of those duties? *A.* I think I might make suggestions, so long as they are within reasonable limits.
14647. *Q.* Whether there was a power, in you, to enforce them by law, or not? *A.* Yes.
14648. *Q.* And, as a matter of fact, you have frequently made such suggestions, although you could not enforce them by law? *A.* Yes.
14649. *Q.* So that there is nothing in this suggestion of Mr. Bruce Smith's that you could not make suggestions, or would not make suggestions, because you could not enforce them by law?
14650. *Mr. Bruce Smith.*] I never made any such suggestion. I said that, if he were constantly interfering with the management of the mines, beyond the point to which he is empowered by law, the management of the mines would be the first to turn round, and refuse to permit such interference.
14651. *Mr. Ritchie.*] But should that influence him?
14652. *Mr. Bruce Smith.*] No; and it has not, within reasonable limits.
14653. *Mr. Lysaght.*] *Q.* Was it not reasonable for you to suggest something in regard to watering? *A.* I did suggest something in regard to watering in Kembla.
14654. *Q.* But, beyond what you did suggest, only in 1202, was it not reasonable for you to suggest something else in regard to watering in Kembla? *A.* Well, if I had anticipated any serious accident, I think, certainly, it was.
14655. *Q.* But without anticipating any serious accident? *A.* Well, that matter of coal-dust is specially dealt with in the General Rules; and I do not see that it was my duty to go beyond the —— [*Interrupted*].
14656. *Q.* I do not say that. But you have just told me yourself that you did not feel yourself confined within those duties, and you would make suggestions outside them; and I ask you, on that, why you did not make some suggestions regarding the watering of Kembla Mine? *A.* Well, I felt that I had done all that it was my duty to do in the matter.
14657. *Q.* But, now, is it not a fact that you did think it was your duty to send sprays to some mines? *A.* Well, I do not know that it was my duty; but I did it.

14658. *Mr. Bruce Smith*.] It is not his duty to spend State money to send down machinery.
14659. *Mr. Lysaght*.] *Q.* Did you send sprays? *A.* To some collieries, yes.
14660. *Q.* Sprays purchased by the State? *A.* Yes.
14661. *Q.* Did you send any to the South Coast district? *A.* Yes.
14662. *Q.* To all the collieries? *A.* To the Metropolitan and Bulli, I think. We have it on the papers.
14663. *Q.* Only those two? *A.* I am not very sure. We could ascertain from the papers.
14664. *Q.* Did not you send some to Mount Pleasant? *A.* I do not remember.
14665. *Mr. Robertson.*] *Q.* May I ask whether the object of sending those sprays was to test their efficiency? *A.* Yes, that was one of the objects, certainly.
14666. *Mr. Lysaght.*] *Q.* But what was the main object: was it not to have the place watered? *A.* To bring the matter before the Colliery Managers' attention; to bring these sprays before the notice of the Colliery Managers.
14667. *Q.* I understand the spray was sent down for the watering of the mine?
14668. *Mr. Bruce Smith.*] How ridiculous—one spray to water 25 miles.
14669. *Mr. Lysaght.*] *Q.* To indicate how a mine could be watered with sprays—is not that why it was sent down? *A.* It was sent in order that they might be tested; and in order that they might be brought before the attention of the Managers.
14670. *Q.* Now, when was that? *A.* Two or three years ago, I think.
14671. *Q.* So that, at that time, you recognised the necessity of the use of sprays in the South Coast mines? *A.* I do not say that that follows from the fact that I sent the sprays for them to test.
14672. *Q.* Do you recognise that it would be an advisable precaution to take? *A.* Yes.
14673. *Q.* And, although you recognised that, from two to three years ago, you never bothered to suggest—I beg pardon: you never did suggest—to the Kembla management that any part of their mine wanted spraying? *A.* I do not remember having done so.
14674. *Mr. Bruce Smith.*] *Q.* Did not you send one to Mr. Rogers? *A.* No, I do not think so.
14675. *Mr. Bruce Smith.*] I thought Mr. Rogers admitted that he had had one.
14676. *Mr Barry.*] He never saw it.
14677. *Mr. Lysaght.*] *Q.* Now, in your letter to Mr. Rogers of the 30th April, you say this: "Having regard, therefore, to the fact that large colliery explosions are sometimes produced by blasting, and propagated by means of coal-dust alone, it is necessary, in the event of blasting taking place in your colliery in dry and dusty places, that the requirements of General Rule 12, section 47, Coal Mines Regulation Act, should be strictly complied with, and the vicinity of the shot thoroughly watered, as required by that Rule." You see those words "propagated by means of coal-dust alone"? *A.* Yes.
14678. *Q.* That was a notice to the Manager at Kembla of the dangers of coal-dust explosions, three months before the disaster, "propagated by coal-dust alone"—you see that, do you not? *A.* Yes.
14679. *Q.* There was a direct notice from you to the Manager of Kembla of the dangers of an explosion being propagated through coal-dust alone?
14680. *Mr. Bruce Smith.*] *Q.* That was a circular that went to all the collieries? *A.* Yes.
14681. *Mr. Lysaght.*] *Q.* But it goes to Kembla. I am binding it down to Kembla at present: so that the excuse that the disaster altered the case, and that it was not keenly before the public before the disaster, does not apply to the Manager of Kembla?
14682. *Mr. Bruce Smith.*] I object to that. That goes to Recommendation No. 20, which the Commission have cut out.
14683. *Mr. Lysaght.*] *Q.* Coming to these inspections being confined to places that were working—Morrison's admission that places not being worked were not inspected by him—would an inspection of the report book by the Inspector have discovered that these places were not being inspected?
14684. *Mr. Bruce Smith.*] I object to the form of that question. Ask whether the book would have revealed it.
14685. *Mr. Lysaght.*] Would an inspection of the book by the Inspector have revealed —— [*Interrupted.*]
14686. *Mr. Bruce Smith.*] That depends on the Inspector. He may be blind. Ask whether the book would reveal it.
14687. *Mr. Lysaght.*] *Q.* Would the book reveal it? *A.* No.
14688. *Q.* The book, on the face of it, I think, would seem to show that every face was being inspected? *A.* Let me understand which book you refer to.
14689. *Q.* The Daily Report Book, by the deputy? *A.* That is, the inspection before commencing work.
14690. *Q.* The inspection before commencing work. I think that shows "We examined the working places"? *A.* I do not know the words.
14691. *Q.* I will have to leave that until we get the book? *A.* But, if the words are in accordance with General Rule 4, it will say "The places that are working, or that the workmen will pass."
14692. *Q.* It is clear that those places, although places that were not being worked, being places that would be passed by the workmen, Special Rule 9 required them to be examined? *A.* Do you refer to General Rule 4, or to the Special Rule?
14693. *Q.* The Special Rule 9—"He shall also make a true report of, and enter and sign daily, in a book kept at the appointed office for the purpose, the state of the mine roads, doors, stoppings, brattice, faces, and ventilating appliances." I mean it is clear that the Special Rule 9 required those places to be examined.
14694. *Mr. Bruce Smith.*] I object to the question.
14695. *Mr. Lysaght.*] *Q.* Was there any means by which your Inspector could have ascertained that that rule was not being carried out?
14696. *Mr. Bruce Smith.*] Do you mean from the report?
14697. *Mr. Lysaght.*] From any source that was available to him.
14698. *Q.* Were there any means? *A.* By inquiries as to whether the places were inspected, I think he might have ascertained.
14699. *Q.* And, apart from a verbal inquiry like that, could he have ascertained it from any report books or any other books? *A.* I do not think so.
14700. *Q.* You do not think he could? *A.* No.
14701. *Q.* Do you know whether any such inquiry was ever made? *A.* I cannot tell.
14702. *Mr. Bruce Smith.*] You are assuming that they would have told the same thing, voluntarily, that they told when under examination on oath; because, it was not until Morrison was under oath that he admitted that he had not examined those places.

14703. *Mr. Lysaght.*] Yes. I am presuming that he would have said, "We do not examine places that are not being worked."
14704. *Q.* However, as far as you know, no such inquiry was ever made? *A.* As far as I know.
14705. *Q.* You described one of the doors in the 4th Right as being "a flimsy canvas door" yesterday: do you remember that?
14706. *Mr. Bruce Smith.*] Would you mind locating that?
14707. *Mr. Lysaght.*] *Q.* When Mr. Robertson was asking you some questions, you remember stating that it was a flimsy canvas door? *A.* Yes.
14708. *Q.* That was a door near the No. 1 travelling road, I think? *A.* Yes.
14709. *Q.* Now, the other canvas doors, throughout the mine, were of similar material? *A.* I think so.
14710. *Q.* Would you describe the other canvas doors as "flimsy canvas doors"? *A.* Well, I might explain that the term "flimsy" was only intended to convey to the Commission that such a door did not require very much force to remove it.
14711. *Mr. Bruce Smith.*] By explosion?
14712. *Witness.*] I did not desire to show that canvas doors were of no value.
14713. *Mr. Lysaght.*] *Q.* What would apply to an explosion would apply to anything else. The canvas doors were, in fact, rightly described as "flimsy"? *A.* They were made of the ordinary canvas which was in use at all of the mines.
14714. *Mr. Bruce Smith.*] *Q.* They were no more flimsy than those in use in other mines? *A.* No more flimsy than those in other mines.
14715. *Mr. Lysaght.*] *Q.* Now, I want to know when it was that double doors were insisted on? *A.* Some time since the Kembla explosion.
14716. *Q.* Was it in consequence of the Kembla explosion? *A.* Well, after the Kembla explosion I suggested that we should insert a special rule to that effect.
14717. *Q.* And has that special rule been inserted for all collieries? *A.* All the collieries on the South Coast?
14718. *Q.* Yes. *A.* With slight modifications. They are not altogether the same.
14719. *Q.* But the use of double doors is being insisted on, in effect? *A.* Yes.
14720. *Q.* Have you power under the law to insist upon double doors? *A.* Well, I had the power to suggest a special rule to that effect.
14721. *Q.* And would not that be as good as any other power, if you suggested the special rule, and the special rule was approved, would not that be the effect of the Act? *A.* Yes; provided it was not objected to by the colliery people.
14722. *Mr. Bruce Smith.*] They could go to arbitration.
14723. *Mr. Lysaght.*] *Q.* They did not go to arbitration, did they: as far as you know, no objection was made by the colliery people to do that? *A.* There were some slight objections, but it has not been necessary to go to arbitration.
14724. *Q.* Now, will you tell me what it was, resulting from the Kembla disaster, that made you insist on these double doors? *A.* Well, I cannot say that it was "resulting from the Kembla disaster."
14725. *Q.* Did the idea of ordering double doors occur to you before the Kembla disaster? *A* Well, the matter had never come before my notice to make suggestions to that effect as regards the southern collieries before.
14726. *Q.* Well, I ask you did the idea occur to you as regards the southern collieries to order double doors, before the disaster? *A.* No.
14727. *Mr. Robertson.*] *Q.* Double doors were in use in some southern collieries before? *A.* Yes.
14728. *Mr. Lysaght.*] *Q.* Double doors were not in use in Kembla, were they? *A.* In some cases.
14729. *Q.* And, in a number of other cases, they were not? *A.* No.
14730. *Q.* Now, it was the Kembla disaster that caused you to go in for this special rule regarding double doors? *A.* I cannot say that altogether.
14731. *Q.* Well, perhaps, you will tell me what else did it? *A.* Well, I cannot call to mind what else there was; but I know that I suggested it after the Kembla disaster.
14732. *Q.* Well, it is not more than about eight months since the disaster; and it is not more than about four months, or three months, since the rule was got through;—and you cannot tell me anything else but the Kembla disaster that suggested this to your mind? *A.* I do not remember just at the moment.
14733. *Q.* Then, may I not take it, that it was the Kembla disaster? *A.* No, I do not think you may. I do not think that is altogether a fair inference.
14734. *Q.* Although you cannot tell me anything else? *A.* I cannot remember just at the moment.
14735. *Q.* Now, tell me what it was, if anything, in the single doors that you saw objectionable? *A.* Well, the doors on the haulage road——[*Interrupted*].
14736. *Q.* Which one, the No. 1 haulage road? *A.* Wherever there are single doors on the haulage roads, I think they are better to be avoided in mines where gas is given off.
14737. *Q.* And was that the condition at Kembla;—were there single doors on haulage roads? *A.* There were at one or two places.
14738. *Q.* In the No. 1 main level? *A.* In the No. 1 main level; or rather——[*Interrupted*].
14739. *Mr. Robertson.*] *Q.* Adjoining the No. 1 main level? *A.* Adjoining the No. 1 main level.
14740. *Mr. Lysaght.*] *Q.* Could you indicate them, just indicating where the single doors were? *A.* The 5th Right rope road is one place.
14741. *Q.* Where else? *A.* I think that is the only place on the haulage road where there was a single door.
14742. *Q.* Before you leave that, you might tell me is that a canvas door or a wooden door? *A.* A wooden door.
14743. *Q.* Now, where else is there a single door in the No. 1 Right, not in a haulage road? *A.* Opposite to the 4th Left travelling road, between the No. 1 main level and the No. 1 travelling road.
14744. *Q.* What was that, canvas? *A.* A wooden door.
14745. *Q.* Anywhere else?
14746. *Mr. Robertson.*] *Q.* Mr. Atkinson, are you sure that the door on the 5th Right was a wooden door: was it not a canvas door with a wooden frame? *A.* As well as I remember, I would not swear to it, but I think it was a wooden door.
14747. *Mr. Robertson.*] Perhaps you are right.

14748. *Mr. Lysaght.*] *Q.* Where else was there a single door? *A.* Well, there were the single doors at the 4th Right.
14749. *Q.* I think that was a canvas door? *A.* Yes.
14750. *Mr. Robertson.*] *Q.* There were two there?
14751. *Mr. Lysaght.*] *Q.* One in the 4th Right, and one in the cut-through below that? *A.* Yes.
14752. *Q.* The disarrangement of any one of those single doors, that is, either the one at the 4th Right, or the one at the cut-through below the 4th Right, would have had the effect of turning the intake air straight into that return in the travelling road? *A.* Partially so.
14753. *Q.* And cutting off the supply of air for the whole of the men up No. 1 to the left? *A.* To some extent.

[At 1 p.m. the Commission adjourned till 2 p.m.]

AFTERNOON.

(On resuming at 2 p.m., Mr. W. R. Pratt attended to take shorthand notes of the evidence and proceedings).

MR. ALFRED ASHLEY ATKINSON,

Previously sworn, was further examined, as under:—

Cross-examined by Mr. Lysaght:—

14754. *Q.* You were speaking about single doors. If either of those doors at the 4th Left, or the 5th Right, should become deranged, the air would short circuit into the travelling road and not go to the men? *A.* Do you refer to the doors between No. 1 main level and the travelling road.
14755. *Q.* Yes? *A.* A portion of the air would go through.
14756. *Q.* So that with the two doors at the 4th Right, and the cut-through below the 4th Right, and the two doors, one on the 4th Left and one on the 5th Right, there were four single doors on which the ventilation of the whole of the place to the left of No. 1 main level, depended upon. That is the ventilation depended upon any one of those four doors? *A.* Well, I do not know that the doors on the 4th Left were single doors, but to the best of my knowledge the other two doors you referred to were single doors.
14757. *Mr. Bruce Smith.*] I asked that we should be supplied with a map from the mine showing the condition of the ventilation just before the explosion, but we have not got it yet.
14758. *His Honor.*] *Q.* Do the maps from the Mines Department show the ventilation? *A.* No.
14759. *Mr. Bruce Smith.*] I ask Your Honor to give direction that plans shall be supplied from the mine showing the method of ventilation immediately prior to the explosion. Here is an instance of the necessity for it. Mr. Atkinson is only able to speak from what he knows.
14760. *His Honor.*] I suppose the mine has a record of that information?
14761. *Mr. Barry.*] I have taken a note of it.
14762. *Mr. Robertson.*] It could be shown on one of the lithographed plans of the Department.
14763. *His Honor.*] It would be useful if a reliable plan could be procured, but at the same time it must be remembered that the information must be based on the recollection of somebody.
14764. *Mr. Bruce Smith.*] There is a surveyor at the mine whose business it is to survey and record on a map kept by the management all the changes that are made. They have the data there. They can show on one of these lithographed maps all the apparatus they have for ventilating the mine.
14765. *Mr. Robertson.*] The plan of the mine usually shows the development work but not the doors, but these could easily be put on because most of the officials know where the doors are, and how the ventilation is conducted.
14766. *Mr. Bruce Smith.*] I do not think it would take long for them to do it.
14767. *Mr. Robertson.*] It could be done in half a day.
14768. *Mr. Lysaght.*] *Q.* It is clear that the ventilation of the mine to the left of No. 1 main level depended on at least three doors. That would be one on the 4th Right and the one below it, and the one on the 5th Right? *A.* Yes, to a certain extent.
14769. *Q.* Well, if any one of those doors became deranged in view of the fact that the return airway was in the back heading, would not the greater proportion of air escape into the return airway? *A.* Well, a portion of would; I do not know whether it would be the greater portion.
14770. *Q.* Would not the greater drag be down that return airway instead of through the working places? *A.* The greater drag would be round the faces.
14771. *Q.* The drag would be round the faces, but the tendency to escape would be down the return airway, would it not? *A.* Between the point where the doors are fixed and the ventilating furnace, there does not appear to have been much difference in the distance the air would travel.
14772. *Q.* May we take it that half the air escaping would be a fair estimate? *A.* I think probably half, that is, if the door was open to its full extent.
14773. *Mr. Bruce Smith.*] *Q.* The door would require to be opened to its full extent? *A.* The door would require to be wide open.
14774. *Q.* And if it were only three-quarters open the volume of air would be reduced? *A.* Yes.
14775. *Q.* If the door were wide open the maximum amount of air which would escape would be half? *A.* Yes.
14776. *His Honor.*] *Q.* That is the door connecting the return with the intake airways? *A.* Yes.
14777. *Mr. Robertson.*] *Q.* That is a matter which could be easily ascertained. It would be easy to open the door and try the experiment? *A.* Yes.
14778. *Mr. Lysaght.*] *Q.* Was the failure to have double doors at the 5th Right evidence of bad management —— [*Interrupted*].
14779. *Mr. Bruce Smith.*] I thought that the Commission had barred the use of the term "bad management."
14780. *His Honor.*] The term "bad management" is not so objectionable as the term negligence; but perhaps it is going a little too far. Could not Mr. Lysaght ask the witness what he would do himself.
14781. *Mr. Lysaght.*] That does not carry the matter far enough.
14782. *His Honor.*] If you were to ask what the witness thought good management, that could hardly be objected to.
14783. *Mr. Lysaght.*] That would not establish what I want to establish.
14784. *Mr. Bruce Smith.*] "Bad management" is a very elastic phrase. 14785.

14785. *Mr. Lysaght.*] *Q.* Is it safe to trust a single door to guard against an escape of air in the main intake? *A.* Well, I think it would have been more prudent to have had double doors.
14786. *Q.* Do you say it is not safe to trust to single doors to prevent an escape of air from the main intake? *A.* No; it is better to have double doors.
14787. *Q.* On your inspection of the mine did you see that there were only single doors guarding that intake? *A.* I do not know whether I was through those places or not. I might have been.
14788. *Mr. Robertson.*] *Q.* Was this inspection prior to the accident? *A.* Yes; but I do not remember whether I saw those doors, but I might have seen them.
14789. *Mr. Lysaght.*] *Q.* Do you remember going up No. 1 main level before the disaster? *A.* Yes.
14790. *Q.* Did you look to see whether the doors between the back heading and the main level were single or double doors? *A.* I do not think I did.
14791. *Q.* Had you known they were single doors, would you have considered it essential to have ordered double doors? *A.* Yes, I think I would.
14792. *Q.* And, in your opinion, ought your inspectors, had they known them to be single doors, also to have recommended double doors? *A.* Yes; I think so.
14793. *Q.* Then will you say that the failure to provide double doors to guard the main intake, shows evidence of defective management ——
14794. *Mr. Bruce Smith.*] There it is again.
14795. *Mr. Lysaght.*] His Honor did not say the term could not be used.
14796. *His Honor.*] Mr. Atkinson said it would be better to have double doors; the Commission can draw its own conclusions.
14797. *Mr. Bruce Smith.*] Other witnesses may be asked the same question, and their ideas as to bad or defective management may be different. In a scientific inquiry we should employ exact scientific phrases.
14798. *His Honor.*] Surely it is sufficient that the witness says it would be a proper thing to provide double doors under the circumstances.
14799. *Mr. Lysaght.*] *Q.* In your opinion, were the inspectors negligent in not ascertaining —— [*Interrupted*].
14800. *His Honor.*] There is the old phrase again.
14801. *Mr. Lysaght.*] It is the inspectors this time.
14802. *His Honor.*] It is the same thing.
14803. *Mr. Lysaght.*] If your Honor thinks that I should not pursue this matter further I will not do so.
14804. *Q.* Have you got those reports of Mr. Bates which I asked for? *A.* They are here.
14805. *Q.* Have you read them since I asked the question? *A.* Yes, I have.
14806. *Q.* Is there any reference to the dusty conditions of Kembla in them? *A.* I do not think so.
14807. *Q.* Then your former answer was correct? *A.* Yes.
14808. *Mr. Barry.*] *Q.* May I ask whether the notes which were made by Mr. Bates at the time of the disaster were found? *A.* Mr. Bates has the notes.
14809. *His Honor.*] *Q.* Did he send in a report? *A.* He would have his notes in a pocket-book.
14810. *His Honor.*] *Q.* Probably they would be in existence? *A.* I think so.
14811. *Mr. Lysaght.*] *Q.* Mr. Bates is at present doing work as an inspector? *A.* He is not doing any underground work.
14812. *Q.* I said work as an inspector? *A.* He is doing work for the Department.
14813. *His Honor.*] *Q.* What is he doing? *A.* He is looking after the record tracings in connection with some of the collieries, and is doing a little clerical work.
14814. *Mr. Lysaght.*] *Q.* Did he not go to one of the collieries at Bellambi yesterday morning? *A.* He would probably go to the Colliery office.
14815. *Q.* If he is capable of doing work as an inspector, surely he can give evidence here? (No answer.)
14816. *Mr. Bruce Smith.*] Now, you are assuming that he is doing work as an inspector. He is not inspecting.
14817. *His Honor.*] Mr. Bates may not be, under the circumstances, fit to go underground, and possibly he may not be fit for some years, but he may be competent to speak as to facts that occurred.
14818. *Mr. Bruce Smith.*] I would ask Your Honor to see him yourself personally. I will be quite content with that.
14819. *His Honor.*] Coming into a Court like this, where there are only a few people, is not like going into a crowded Court.
14820. *Mr. Bruce Smith.*] Will Your Honor see him?
14821. *Mr. Lysaght.*] Might I suggest that he be formally subpœnaed.
14822. *His Honor.*] A subpœna would not be necessary, and, perhaps, it is as well that he should not be subpœnaed.
14823. *Mr. Lysaght.*] Might we have that book produced?
14824. *Mr. Bruce Smith.*] If you want it you can have it. It is the material on which his report will be based, and it might be of use to the Court.
14825. *Mr. Lysaght.*] *Q.* In your letter to Mr. Rogers of 13th May, 1898, you referred to a general conversation which you had with him. Do you remember whether on that occasion you told Mr. Rogers about the danger arising from coal-dust being allowed to accumulate? *A.* I cannot remember.
14826. *Q.* Can you remember any matter in your conversation that would have any bearing subsequently on the disaster? *A.* Well, I can only infer from the contents of the letter that probably those subjects formed part of the conversation.
14827. *Q.* That is the subject of the danger of coal-dust being allowed to accumulate? *A.* That is one of them—and shot-firing.
14828. *Q.* And also the necessity for watering? *A.* I do not remember to what extent that might have been mentioned at the time.
14829. *Q.* You have no notes of any of these conversations? *A.* I do not think I have.
14830. *Q.* You might tell me whether you have written any further letters to Mr. Rogers beyond those you produced at the inquest? *A.* I have written some other letters.
14831. *Q.* Do they bear on the watering question or on the dust question? *A.* No; I do not think they do.
14832. *Q.* Or upon any danger apparent in the Kembla Mine? *A.* Well, I forget the subject of all the letters.
14833. *Q.* You have copies? *A.* Yes.

14834. *Q.* Is there any objection to producing them? *A.* No.
14835. *Mr. Lysaght.*] Might I ask, your Honor, that all the letters sent by Mr. Atkinson to Mr. Rogers shall be produced.
14836. *Mr. Bruce Smith.*] If they bear on the condition of the mine, they might be produced.
14837. *His Honor.*] *Q.* They are business letters, I suppose—official communications? *A.* Yes.
14838. *Q.* And there could be no objection to their production? *A.* I see no objection as far as I know.
14839. *Mr. Lysaght.*] *Q.* Will you have the letter-book containing these letters produced? *A.* If I can get a communication sent to the office, you can have it to-morrow.
14840. *Mr. Bruce Smith.*] I beg to tender the reports of the District Inspector of the inspections of the Mount Kembla Colliery for the years 1901–2. (Reports put in, and marked "Exhibits No. 30 and 31.")
14841. *Mr. Ritchie.*] Is there only one report for 1902?
14842. *Mr. Bruce Smith.*] Yes.
14843. *Mr. Ritchie.*] *Q.* Can you understand the districts which are alluded to in this report? *A.* I think so.
14844. *Q.* He says, "The working places were in good condition and a plentiful supply of timber on the various flats. Daily reports are made on the state of the working places previous to the men commencing work, and also on the machinery, &c." How do you interpret that term "working places"? Do you think Mr. Bates means the men working there daily? *A.* I think the word "daily" would include those only actually working.
14845. *His Honor.*] *Q.* Can you gather from this report, the total amount of air going into any part of the mine? *A.* I think no.
14846. *Q.* The amount of air at that particular time? *A.* Yes, the amount of air at that particular time.
14847. *Mr. Lysaght.*] *Q.* Can you tell me from the last report the amount of ventilation going up No. 1 main level at that particular time? *A.* It is not very easy to distinguish from the report between the main tunnel and No. 1. Of course, I may mention that this is the first inspection of the Kembla Colliery made by Mr. Bates, and he may have got hold of some wrong terms in connection with the district.
14848. *Q.* Do I understand that you cannot tell us? *A.* I cannot from this report.
14849. *Q.* And apparently Mr. Bates, if he had the information, did not put it into this report? (No answer.)
14850. *Mr. Bruce Smith.*] How can the witness say?
14851. *Mr. Lysaght.*] *Q.* Where is this No. 6 Right that he mentions? *A.* I take it that it is No. 6 Right off the main tunnel.
14852. *Q.* Where is No. 5 Right mentioned—it is not apparently mentioned here at all? *A.* I think that might be No. 4 Right; I do not know.
14853. *Q.* Had No. 5 Right been broken off at all at that time—off No. 1 main tunnel? *A.* Yes.
14854. *Q.* With regard to No. 4 Right he says: "There are 45 men, 5 boys, and 5 horses—total, 55—and supplied with 10,080 cubic feet of air per minute, giving each an average of 183 cubic feet." That could not be the 5th Right? (No answer.)
14855. *His Honor.*] There are too many of them.
14856. *Mr. Lysaght.*] Much too many. I wonder what Mr. Bates means by No. 6 Right.
14857. *Mr. Robertson.*] That is off the main tunnel; but I think we had better wait until we get the ventilation report from the mine.
14858. *Mr. Lysaght.*] *Q.* Well, this is Mr. Bates' report. Considering you do not know to what parts of the mine it refers, and you cannot tell me from it the amount of air going up No. 1 main level—how did you know what sort of air the men were getting at Kembla? *A.* I know from that report that the men working there were getting more than the minimum quantity required by the Act. It is quite impossible for me to know the names and numbers of every district in every colliery in the State.
14859. *Q.* Is this the only report you got during 1902 from Mr. Bates? *A.* He would probably have made one on the day that he was inspecting the mine had he not been injured.
14860. *Q.* Is the other report for 1901? *A.* Yes.
14861. *Q.* Do you only get annual reports? *A.* No.
14862. *Mr. Ritchie.*] There are three reports here for 1901.
14863. *Q.* I want to ask you about the gas in that back heading. Do you know whether there was any brattice from the last cut-through up to the face? *A.* Yes, there was.
14864. *Q.* Did you see it? *A.* Yes.
14865. *Q.* Before the disaster there was brattice from the last cut-through right up to the face? *A.* They do not usually put it right up to the face. It was within a reasonable distance of the face.
14866. *Q.* I think you told us, when you examined the door on the 5th Right that it had been left open by some of the rescue party? *A.* Yes.
14867. *Q.* Who told you the rescue party left that door open? *A.* I could not say that. It was some of the party who were in the mine at the time.
14868. *Mr. Robertson.*] *Q.* Which door was that? *A.* A wooden door on the 5th Right.
14868½. I was the first man to go through that door, and I am in a position to contradict that.
14869. *Mr. Lysaght.*] *Q.* You hear that? *A.* The door was open, and I understood that it had been left open by rescue parties.
14870. *Mr. Robertson.*] *Q.* The door was open when I went there a couple of hours after the explosion? *A.* That is in accordance with what I say.
14871. *Mr. Lysaght.*] *Q.* In your evidence at the inquest you stated: "The door between the No. 1 main level and the back level, on the No. 5 Right rope road was open, and I understand had been left open by some of the rescue parties, in order to short circuit the air with a view to the more speedy recovery of some of the bodies." Do I understand that it was open when the first rescue party went in ——
14872. *Mr. Robertson.*] I was there two hours after the accident, and it was open then.
14873. *Witness.*] I think that the door was found open by the rescue parties and was left open by them, as Mr. Robertson found it.
14874. *Mr. Lysaght.*] *Q.* Do you assume that the door was blown open by the explosion? *A.* Probably.
14875. *Q.* It was not blown off its supports at all? *A.* No.
14876. *Q.* It opened in the usual way—that was towards the travelling road? *A.* Yes.
14877. *Mr. Robertson.*] *Q.* That is not the usual way—it opens the other way? *A.* Yes, I see it opens towards No. 1 level.

14878. *Mr. Lysaght.*] *Q.* Was the door open in the ordinary way that it opens? (No answer.)
14879. *Mr. Robertson.*] *Q.* The door is opened by the skips? *A.* Yes.
14880. *Q.* Therefore it opens towards No. 1? *A.* Yes.
14881. *Mr. Lysaght.*] *Q.* It appeared to be perfectly firm, and on its supports, and not in any way damaged? *A.* I could not say that. It was on its hinges. The building at the side of the door was disturbed.
14882. *Q.* The door itself was not moved out of its ordinary position? *A.* No, I do not think it was.
14883. *Q.* Then that door having been blown open in the ordinary way, did it not indicate that the force came from the travelling road, west? *A.* There was considerable force in other directions.
14884. *Q.* But I am taking this particular evidence of force? (No answer.)
14885. *His Honor.*] We should like to have it explained how that door was opened. Mr. Robertson found it open. I understand that it was a door which closed of its own accord.
14886. *Mr. Lysaght.*] *Q.* Was that a self-closing door? *A.* I think so.
14887. *Q.* What stopped it from closing? *A.* There would be a good deal of material blown about from the explosion, which came in the road of it and prevented it closing.
14888. *Q.* Material on the floor? *A.* Yes.
14889. *Mr. Bruce Smith.*] *Q.* Do you mean part of the building round the door? *A.* There may have been part of that as well.
14890. *His Honor.*] You mean from over the door; it would not blow in from the jambs of the door. It would be blown in from No. 1 level.
14891. *Q.* The door reaches to the roof? *A.* Yes.
14892. *Mr. Bruce Smith.*] *Q.* Is there anything shown on these sectional plans about this door? *A.* I do not think so.
14893. *Mr. Lysaght.*] *Q.* That door having been blown open, the matter which would keep it open would come from the left travelling road direction. It could not be kept open by stuff blown from the main level, because that would force it to again? (No answer.)
14894. *Mr. Robertson.*] *Q.* Is it not a fact that stuff from that door was blown towards the 5th Right? *A.* It was blown towards the east.
14895. *Q.* Is it not a fact that large quantities of dust, brattice cloth, and rubbish, were blown in an easterly direction? *A.* There was a large quantity of material blown in that direction.
14896. *Q.* Did you observe two skips going down towards No. 1 main level? *A.* On the 5th Right.
14897. *Q.* Yes. *A.* I cannot say I did.
14898. *Q.* On the first skip there was an accumulation of brattice cloth, dust, and other things? *A.* The skips may have been removed in order to allow of the bodies being taken away.
14899. *Mr. Lysaght.*] This is clear—that the door was blown open from the travelling road in a westerly direction? *A.* If my recollection serves me right, that is so.
14900. *Q.* Would not that indicate that the force came down from the back heading from the travelling road? *A.* I do not think so.
14901. *Mr. Robertson.*] *Q.* Is it certain that the door was blown in a westerly direction? *A.* So far as I remember, it was open in its ordinary way.
14902. *Mr. Robertson.*] I cannot recollect myself, although I was first to see it.
14903. *Mr. Ritchie.*] *Q.* Have you any notes about the condition of that door? *A.* I have no notes as to the way in which that door was open.
14904. *Mr. Robertson.*] *Q.* It is possible that the door, opening in the ordinary course to the west, might be blown by force to the east? *A.* That is possible, of course.
14905. *Q.* You remember the disturbance to the supports of the door;—the stones were blown a terrible distance to the east? *A.* I know the building stones of the door were blown to the east.
14906. *Q.* The same force might blow a door, ordinarily opening to the west, to the east? *A.* It might.
14907. *Mr. Bruce Smith.*] *Q.* If a door usually opened one way, and was blown the other, the derangement of the hinges would be such that it might stick? *A.* It might.
14908. *Q.* You are quite sure that the material about the door was blown to the east? *A.* Yes.
14909. *Mr. Lysaght.*] *Q.* What I want to establish is this—when that door became deranged, the men at the faces of all the working-places to the left of No. 1 were deprived of their air supply? *A.* Certainly so, after the explosion.
14910. *Q.* I mean from the fact of that door being deranged? *A.* Not altogether, without the explosion.
14911. *Q.* Do you not see that the cut-through opens on the return air-way? *A.* I see that.
14912. *Q.* The tendency would be for all the air to go down the return airway? *A.* Not all of it.
14913. *Q.* The greater portion of it? *A.* I do not think so.
14914. *Mr. Ritchie.*] *Q.* Are you sure about the door at the cut-through on the 5th Right being a wooden door, or was it a canvas door? *A.* It was a wooden door.
14915. *Q.* The one in the cut-through near the 5th Right rope road? *A.* Well, I am not quite sure about the material.
14916. *Mr. Lysaght.*] *Q.* The door was an indication of force;—it would be material to observe it carefully? *A.* Yes.
14917. *Q.* It would be material to know whether it was a canvas or a wooden door? *A.* Yes. So far as I remember, it was a wooden door.
14918. *Q.* Where skips pass through, there are canvas doors, are there not? *A.* It depends on the position. Many of them pass through wooden doors.
14918½. I do not know whether Mr. Robertson remembers whether this door was a canvas or a wooden one.
14919. *Mr. Robertson.*] I think it was a canvas door. The only man who could give us any evidence about that would be Morrison.
14920. *Mr. Lysayht.*] I think he said it was a wooden door.
14921. *His Honor.*] *Q.* Did the skips that came out of the 5th Right travel round by the 2nd Right rope road and the cross-cut heading? *A.* Yes, the empty skips went in at the 2nd Right.
14922. *Mr. Robertson.*] *Q.* They would be loaded by the time they came out? *A.* Yes.
14923. *Mr. Bruce Smith.*] How far back would you like copies of the letters written by Mr. Atkinson to Mr. Rogers?
14924. *Mr. Lysaght.*] There are not many.

14925. *Mr. Bruce Smith.*] *Q.* How many would there be in a year? *A.* Not many in a year.
14926. *His Honor.*] *Q.* Would there be half a dozen altogether? *A.* Perhaps there would be a dozen.
14927. *Mr. Bruce Smith.*] Oh, you had better have them all.
14928. *Mr. Lysaght.*] *Q.* Do you know whether there was any brattice in the bords not being worked to the left of No. 1? *A.* I do not remember.
14929. *Q.* In the absence of bratticing, and in view of the fact that there had been fire-damp in some of these bords —— [*Interrupted.*]
14930. *Mr. Barry.*] When?
14931. *Mr. Lysaght.*] After the explosion. In the absence of bratticing, these bords would most probably have contained a small accumulation of gas, before the disaster? *A.* That is possibly so.
14932. *Q.* It is not more than possible. Is it not probable? *A.* There may have been a small accumulation of gas there.
14933. *Q.* Do you say probably? *A.* You mean if there was no bratticing.
14934. *Q.* Yes? *A.* I could not say it was probable.
14935. *Mr. Robertson.*] *Q.* Is it probable there would be no bratticing? *A.* I think it would be probable that there was bratticing.
14936. *Mr. Lysaght.*] I understood that Morrison said that there was no bratticing past that cut-through, in the left section, near to where Morris was working.
14937. *Mr. Robertson.*] He misunderstood you.
14938. *Mr. Lysaght.*] I asked Mr. Atkinson if there was bratticing right up to the top of the cut-through in the heading—that is two cut-throughs above where Morris was working, and he said there was brattice there.
14939. *Mr. Robertson.*] There is no necessity for any brattice.
14940. *Mr. Lysaght.*] *Q.* Was there any brattice to take the air from Morris' place to the top of the cut-through? *A.* No.
14941. *Mr. Bruce Smith.*] I have looked up the evidence given by Morrison at the inquest in relation to that door. On page 18 he says:—"There is another door on the 5th Right; that door was intact, but the stoppings were driven in the same direction as the previous door I spoke of, that is to the right."
14942. *Mr. Robertson.*] *Q.* He does not say which way it was driven? *A.* No.
14943. *Mr. Ritchie.*] *Q.* Nor whether it was a wooden door or a canvas door? *A.* No.
14944. *Mr. Bruce Smith.*] He speaks afterwards of two canvas doors as if in distinction.
14945. *Mr. Lysaght.*] *Q.* Where did you get that 80,000 cubic feet of air from, as being supplied in the Kembla mine? *A.* The ventilation book at the colliery shows that it varies between 80,000 and 100,000 cubic feet.
14946. *Q.* Do you mean to say that there is a record in the ventilation book of 100,000 cubic feet of air, going into the Kembla mine? *A.* I will not swear to it. I have seen a record by the check-inspectors for 100,000 feet.
14947. *Q.* Where abouts in the check-inspector's report book—in Mr. Wynn's report book? *A.* I forget whose book it was.
14948. *Q.* Were not the figures supplied by the Manager in his return as between 60,000 and 70,000 as being the intake air? *A.* I do not remember just now.
14949. *Q.* Does not your own Inspector's report show what it was in April—the actual intake? *A.* I think we can get it by adding the figures together.
14950. *Q.* Would it take you long to add them together? *A.* No. I see the total is 57,880 cubic feet.
14951. *Q.* Now, can you show me those reports which mention 80,000 to 100,000 feet? *A.* If I had the reports here I could.
14952. *Q.* Is not the amount stated a fair average for it? *A.* It depends where the air was measured. A great deal more than that may have been going into the mine.
14953. *Mr. Robertson.*] *Q.* Mr. Bates does not appear to have given the total intake, or the total return? *A.* No.
14954. *Q.* Is it not usual to give the total? *A.* I think it is usual.
14955. *Q.* This is right enough to show whether the minimum quantity of air was supplied, but it is a matter of interest, and it is desirable, to have the total intake? *A.* Quite so.
14956. *Mr. Bruce Smith.*] *Q.* That shows a large surplus over the minimum? *A.* It averages from 183 cubic feet to 439 cubic feet per man.
14957. *Mr. Lysaght.*] *Q.* That is an average by taking the air at one split? *A.* It is not taken at the working places.
14958. *Q.* They take the number of men and the number of horses at the different splits, and also take air passing to supply them? *A.* Yes.
14959. *Q.* Is this a fact—looking at the plan of the 35-acre goaf—would not the pressure of the intake air on the cross-cut heading rope road, and along the 5th Right rope road, have the effect of circulating, more or less, a current of air through the goaf? *A.* I think there may to a small extent be a circulation of air round the edge of the goaf.
14960. *Q.* Would not the pressure of those two intakes have the effect of preventing any small accumulation of gas on the return airway in No. 1 travelling road? *A.* If gas had accumulated on the edge it would have that effect.
14961. *Mr. Robertson.*] *Q.* As a matter of fact it did not, because black-damp was found there? *A.* Yes.
14962. *Mr. Lysaght.*] *Q.* Was not the air circulating there? *A.* The air was not circulating through the goaf.
14963. *Mr. Ritchie.*] *Q.* It takes a good force of atmospheric air to remove black-damp on account of its specific gravity? *A.* Yes, if in large quantities.
14964. *Mr. Lysaght.*] *Q.* We may take it that that goaf was not at all ventilated? *A.* Certainly it was not.
14965. *Q.* Therefore, if any gas was given off in that goaf, either from the pillars or the strata, or any where else, it would remain there? *A.* It would rise to the highest parts.
14966. *Q.* And it would be there as a constant source of danger until there was a fall to force it out? *A.* Yes; if there was gas there it would be a source of danger.

14967. *Q.* I ask you now if you have any further authority for saying that gas exists in the sandstone strata? *A.* I have not. I know I have read it.
14968. *Q.* You know that that was sandstone strata? *A.* It was partly shale, partly grey metal, and partly sandstone.
14969. *Q.* It was not likely to contain gas? *A.* Sometimes it does.
14970. *Q.* Was the strata at Kembla such a strata as would be expected to contain gas? *A.* So far as I know, it has not given off gas previously.
14971. *Q.* Would it be such a strata as would be expected to contain gas? *A.* I know a strata of the same character that has occasionally contained gas. I cannot say that it is a strata that one would expect to contain gas.
14972. *His Honor.*] *Q.* You know that you may have shale or sandstane bands;—is it the sandy bands or the shale bands of material which actually give off gas? *A.* The gas is more frequently in the shale.
14973. *Q.* This sandstone—it is a sort of soft, impure sandstone, is it not? *A.* I do not remember what it was there, it varies in different parts.
14974. *Mr. Robertson.*] *Q.* Would you not describe it as a shaley sandstone? *A.* I think that would not be an inappropriate description of it.
14975. *His Honor.*] *Q.* It is very hard at first, but comes to pieces on exposure to the air, as if it is aluminous sandstone? *A.* That would be correct.
14976. *Mr. Lysaght.*] *Q.* That stratum would not contain gas? *A.* Sometimes it does.
14977. *Q.* Can you give any case in this Colony? *A.* The strata above a seam of coal in the Newcastle district gave off gas like this. There are shales and sandstone there as well as here.
14978. *Q.* You told us of the great danger arising from using blasting powder? *A.* Under certain conditions.
14979. *Q.* Did you make any suggestion to the management of Kembla that they should not use it? *A.* Only by means of the annual report of the Mines Department, where I called attention to the permitted explosives.
14980. *Mr. Bruce Smith.*] Did you not send out a circular? *A.* Yes; the conclusions of the Royal Commission on Coal-dust, and that had attached to it a list of permitted explosives.
14981. *Mr. Ritchie.*] *Q.* Has that been put in? *A.* Not the one mentioned by Mr. Bruce Smith.
14982. *Mr. Lysaght.*] *Q.* Did you point out to the management of Kembla the danger of using this blasting powder, and suggest the use of a safer explosive? *A.* I sent out in detail a circular containing the conclusions of the Royal Commission on Coal-dust, together with a list of the permitted explosives in England. In addition to that, I called attention to the question of explosives in the annual report of the Mines Department, but I did not send any other circular round to the collieries in reference to the matter.
14983. *Q.* You knew they were using this blasting powder at Kembla? *A.* I did.
14984. *Q.* Did you not consider it dangerous? *A.* Not if they observed the precautions published in General Rule 12.
14985. *Q.* You know that Mr. Rogers stated that he did not observe those precautions? *A.* I do not think so.
14986. *Q.* I understood that he did not water in the vicinity of a shot? *A.* He did not state that he did not water in a dry and dusty place.
14987. *Q.* He did state that he did not water in the vicinity of a shot? *A.* Yes.
14988. *Q.* Did you not consider, in view of the Dudley explosion, and the danger of coal-dust, that you should have stopped the use of this blasting powder? *A.* I could not do that.
14989. *Q.* Could you not make a suggestion that they should use another kind of powder or explosive? *A.* I think that the sending out of those circulars might be termed a suggestion.
14990. *Q.* Did you ever inquire whether any of those suggestions had been carried out? *A.* I knew that they were using the gunpowder.
14991. *Q.* You never at any time suggested any amendment in the Act to provide for the greater safety of coal-mines? *A.* Do you mean in the Coal Mines Act?
14992. *Q.* Yes? *A.* Yes, I have.
14993. *Q.* How long ago? *A.* I suggested an amendment to General Rule 8, as to the use of safety-lamps.
14994. *Q.* That is since the Kembla disaster? *Q.* No, it is not.
14995. *Q.* To whom did you make the suggestion? *A.* In the annual report of the Mines Department.
14996. *Q.* Do you refer to this passage? which begins:—

It is matter for regret that arrangements have not been completed at this colliery for the use of safety-lamps ——

A. I do not refer to that.
14997. *Q.* What report is it in? *A.* In the 1901 report, I think.
14998. *Q.* Is this the extract:—

General Rule 8, section 47, of the Coal Mines Regulation Act, is not satisfactory as regards the use of safety-lamps. The same applies to the rule in Great Britain, where the Inspectors have recommended the substitution of the following:—"No lamp or light other than a locked safety-lamp shall be used in any seam of a mine in which, after the date of this rule any ignition of inflammable gas occurs, or in which there is likely to be such a quantity of inflammable gas as to render the use of naked lights dangerous. All safety-lamps shall be cleaned, trimmed, examined, lighted, and locked in a proper lamp-room on the surface before being issued for use. All safety-lamps shall be provided with locks incapable of being surreptitiously opened without detection." If a rule of this character were adopted in place of General Rule 8 it would be more satisfactory, as the necessity for the adoption of safety-lamps is much more clearly defined therein.

Is that it? *A.* Yes.
14999. *Q.* Is that the only suggestion you have made since you have been Chief Inspector for the amendment of the Coal Mines Safety Act? *A.* Yes; I believe it is.
15000. *Mr. Bruce Smith.*] You did not read this portion of the suggestion:—"It is to be regretted that considerable opposition to the use of safety-lamps is still displayed by the owners, managers, and workmen in connection with collieries where small quantities of fire-damp are more or less regularly given off."
15001. *Mr. Lysaght.*] We have had all about that before.
15002. *Q.* Is there not a greater danger from coal-dust than from failure to use safety-lamps? *A.* Under certain conditions.
15003. *Q.* Why did you not make a recommendation as to an amendment of the law regarding the watering of mines? *A.* I do not know why I did not.

15004. *Q.* Why did you not make a suggestion as to the amendment of the law regarding the use of gunpowder? *Q.* I brought the matter before the mining community, and I consider that I did my duty. It is not within my power to amend the law.
15005. *Mr. Robertson.*] *Q.* I suppose these matters were brought under the notice of the Minister? *A.* These suggestions form part of the annual report.
15006. *Q.* And come before Parliament? *A.* Yes.
15007. *Mr. Bruce Smith.*] *Q.* The circulars which you issue come before the Minister before you issue them? *A.* Yes.
15008. *Mr. Lysaght.*] *Q.* Do you know anything about an explosion which occurred on the ship "Glaucus" about a couple of months before the disaster? *A.* I do not remember.
15009. *Q.* I now propose to take Mr. Atkinson through some of the recommendations which have been made. You know the first recommendation, which is, that "Managers, under-managers, deputies, and shot-firers should hold certificates of competency by examination." Do you consider it wise to allow persons who simply hold certificates of service to still continue to act as managers of collieries? *A.* Yes.
15010. *Q.* I think you said that many capable managers would be too old to qualify for certificates? *A.* Yes.
15011. *Mr. Bruce Smith.*] *Q.* He said that there was another method by which Managers who held certificates of service could be arraigned for any neglect of duty.
15012. *His Honor.* That is only the Manager who is actually at work.
15013. *Mr. Ritchie.*] And who has probably brought about some disaster.
15014. *Mr. Lysaght.*] *Q.* I take it that you have some persons in your mind whom you were thinking of as being too old to qualify when you made that statement with reference to their qualifications? *A.* No.
15015. *Q.* Can you tell me what Managers you know of who you regard as being too old to qualify for certificates? *A.* I do not see why I should go into the personal qualifications of the various Managers.
15016. *Q.* Might I ask you if you consider that Mr. Rogers is too old to qualify for a certificate?
15017. *Mr. Bruce Smith.*] Is this question allowable?
15018. *His Honor.*] No; I think it is going outside the scope of the inquiry.
15019. *Mr. Lysaght.*] *Q.* Do you know how certificates of service were obtained? *A.* Yes.
15020. *Q.* Do you know whether any evidence was given on oath that these persons had acted as Managers for a certain length of time? *A.* Yes.
15021. *Q.* Were you in the State at the time? *A.* Some certificates have been obtained since I came here, but others were issued before I came.
15022. *Q.* Do you know whether, before they are obtained, evidence is given on oath as to the length of service? *A.* So far as I remember, it is.
15023. *Q.* Is there any regulation bearing on that matter? *A.* Do you mean as to giving evidence on oath?
15024. *Q.* Does it not lie entirely in the hands of the Minister whether he chooses to issue certificates of service or not? *A.* There are certain qualifications which are necessary before a certificate is granted.
15025. *Mr Bruce Smith.*] Section 8, sub-section 6, provides for a statutory declaration.
15026. *His Honor.*] No doubt someone has to be satisfied.
15027. *Mr Ritchie.*] The question is, what proof is there that the applicants have complied with the provisions laid down in the statute.
15028. *Mr Lysaght.*] *Q.* Where is there anything which compels applicants to prove that they are entitled to obtain service certificates? *A.* I am not aware that there is anything.
15029. *Q.* That being so the Minister can issue certificates to any persons who apply, and who make a statement that the conditions have been fulfilled. [*No answer.*]
15030. *Mr. Bruce Smith.*] I see that it is for the Minister to be satisfied.
15031. *Mr. Lysaght.*] *Q.* Then the Minister can issue a certificate on the mere statement of a man that he has been a mining manager for five years within twelve months of the passing of the Act? *A.* Yes; so long as the person supplies a statutory declaration as to the number of men employed in the mine.
15032. *Q.* Do you know that in this case certificates were issued to the Manager of one colliery, which he said he had managed, and that another Manager applied in respect of services for the same colliery? *A.* I am not aware of such a case.
15033. *Q.* Did you ever hear of a certain length of time for service being set up by a Manager who got his certificate, and of another Manager coming in and setting up the same time as entitling him to get a certificate? *A.* No; I did not.
15034. *Mr. Bruce Smith.*] I think that if there are any cases of the kind that Mr. Lysaght should name them, and let the papers come here.
15035. *His Honor.*] It is hardly worth while going into particular cases.
15036. *Mr. Bruce Smith.*] If the Court thinks that a system has been abused it might make suggestions to remedy that system for the future.
15037. *His Honor.*] The system provided under the Act is rather a loose one, it certainly seems a happy-go-lucky provision.
15038. *Mr. Bruce Smith.*] I understand it is a copy of the English provision.
15039. *Mr. Lysaght.*] *Q.* You know that a man can get a certificate now for services rendered, although he may not have been a Manager since 1896? *A.* Yes.
15040. *Q.* In your opinion should that provision be abolished? [*No answer.*]
15041. *His Honor.*] It is hardly worth while pursuing this matter further.
15042. *Mr. Lysaght.*] *Q.* Regarding this oral examination which you suggest for deputies—you would also include shot-firers? *A.* Yes.
15043. *Q.* Why do you propose an oral examination and not an examination in writing? *A.* Well, I think you might be able to get some very efficient men for those duties, who would not be able to do much in a written examination.
15044. *Q.* Could you not have both? *A.* You could have both examinations, but I do not think it is necessary.
15045. *Q.* Do you not see this: a man might be a practical miner and able to answer verbally certain questions put to him, but he would not be able to make proper reports of the various matters which might come under his notice unless he had some education? *A.* It requires only a very elementary kind of education to make the reports required from a deputy.

15046. *Q.* That is if everything is going on all right, but supposing that certain conditions in a mine require to be described, is it not essential that he should be able to properly write them down? *A.* Yes.
15047. *Q.* Then ought not a person to give evidence that he has this elementary knowledge;—should there not be a written examination conjointly with the verbal examination? *A* I do not think myself that it is necessary.
15048. *Mr. Robertson.*] *Q.* It is necessary that a deputy or a shot-firer should be able to write? *A.* Yes.
15049. *Mr. Lysaght.*] I do not think that they would appoint anybody who could not write; but in some of these reports the spelling is bad.
15050. *Mr. Robertson.*] That does not matter.
15051. *Mr. Bruce Smith.*] Nor the grammar either.
15052. *Mr. Lysaght.*] There was a constant use of one set of phrases—a stereotyped wording of the reports for months.
15053. *Mr. Robertson.*] If the conditions of the mine are safe the wording of the reports must be of a stereotyped nature. All that a deputy has to say is that the mine is safe; and if it is not safe he has to say what the defects are. I take it that when Mr. Atkinson states that he does not require a man to undergo a written examination he means an examination as to that man's scientific qualifications.
15054. *The witness.*] Yes.

[The Commission at 4 p.m., adjourned until 10 a m. the following morning.]

WEDNESDAY, 11 *FEBRUARY*, 1903.

[*The Commission met at the Land Appeal Court, Darlinghurst.*]

Present:—

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq., Commissioner. | D. RITCHIE, Esq., Commissioner.

Mr. Bruce Smith, Barrister-at-Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf of the Crown.

Mr. A. A. Lysaght, Solicitor, appeared on behalf of—
(*a*) the representatives of deceased miners, wheelers, &c., (victims of the explosion);
(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.); and
(*c*) the Illawarra Colliery Employees' Association (the Southern Miners' Union).

Mr. C. G. Wade, Barrister-at-Law, instructed by Mr. G. J. Barry, Solicitor, appeared on behalf of the Mount Kembla Coal and Oil Company (Proprietors of the Mount Kembla Mine).

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings.)

15055. *Mr. Lysaght.*] Before I proceed with my cross-examination, will your Honor permit me to state that I have received a letter from the Delegate Board of the Colliery Employees of the Northern District, Newcastle, containing some new recommendations, and mentioning the names of six witnesses who are prepared to give evidence in support of the Southern Union's recommendations, and of these new recommendations. I think the better way to have them recorded would be if I read the letter, which is not very long, from the Secretary, and then they can be put before Mr. Atkinson in his examination by me.

No. 1.—Agreed to, and to add "All the examinations have to be passed in the State of New South Wales."
No. 2.—Opposed to this, as it stands; but suggest that, where a doubt exists about safety-lamps going into a mine, the Inspector and district check-inspector appoint a third party; the three persons named to be an Arbitration Court to settle the question whether safety-lamps are to go into the mine or not.
No. 3.—Agreed to.
No. 4.—Opposed, owing to its being impracticable.
No. 5.—All cut-throughs to be not more than 30 yards.
No. 6.—Agreed to.
No. 7.—Agreed to.
No- 8.—Agreed to, and add "Not less than 200 cubic feet of air per minute for each man and boy."
No. 9.—Agreed to.
No. 10.—Agreed to.
No. 11.—Agreed to, and add "Instead of monthly, as at present."
No. 12.—Agreed to.
No. 13.—Add "All travelling, main, and horse roads, to be 6 feet high."
No. 14.—Agreed to.
No. 15.—Agreed to.
No. 16.—Agreed to, and add "To be not less than 6 feet high, 6 feet deep, and 3 feet wide; and to be whitewashed."
No. 17.—We are of opinion that Mr Rogers, Manager, should be called on to show cause why his certificate should not be cancelled.
No. 18.—Add "That proper machinery be kept at the second shaft outlet to lift all employees to the surface within one hour.
No. 19.—Agreed to.
No. 20.—Agreed to.

15056. *Mr. Bruce Smith,*] I do not know what that will be analogous to—whether it is a pleading.
15057. *Mr. Lysaght.*] It is the shortest way I can put it before the Court, Your Honor.
15058. *His Honor.*] You see everybody is asked to come in; and, in addition to those who have come in already, this other body of miners now wishes to come in.
15059. *Mr. Bruce Smith.*] But the Court does not take opinions from outside people not under oath.
15060. *His Honor.*] These are only suggestions; and I suppose they wish to call evidence in support of them.
15061. *Mr. Lysaght.*] I have already told your Honor that six witnesses' names are given to support these recommendations. 15062.

Witness—A. A. Atkinson, 11 February, 1903.

15062. *His Honor.*] So I understood.
15063. *Mr. Lysaght.*] And the new suggestions from the Northern Delegate Board are:—

No. 21.—That the miners of each district have the power to recommend for appointment an Inspector for their respective districts.
No. 22.—That a red light be carried on the front of trains or sets on engine-planes, or other self-acting inclines.
No. 23.—That a clause be inserted in the Act whereby better sanitary arrangements should be adopted in all mines where workmen are employed.
No. 24.—That, in our opinion, the management of a mine should not interfere with the right of an employee to go out of a mine when he deems fit.

I have also to inform the Court that the Delegate Board of the Western Miners' Union, Lithgow, desire an addition to be made to Recommendation No. 13 in this way:—

No. 13.—Add "And properly timbered, and kept clear of any tops that may have fallen; and that the travelling roads be made not less than 6 feet high."
No. 18.—Add "And that all escape shafts be properly equipped with means to draw men, in case of accident, and that proper means of signalling be also fixed."

Those complete the whole of the recommendations from the three Delegate Boards; and the witnesses whom the Northern Delegate Board tender, if required, are—William Bower, Pit Town, Wallsend; John Patterson, Minmi; George Reid, New Lambton; S. Reece, Plattsburg; M. Gray, New Lambton; and William Kearsley, Pelew Main, *via* West Maitland; and they await a direction from the Court as to whether they will be called as witnesses or not.
15064. *His Honor.*] How many copies have you got of these recommendations?
15065. *Mr. Lysaght.*] Only the one, the original sent to me.
15066. *His Honor.*] You have only received that this morning?
15067. *Mr. Lysaght.*] They were received a few days ago at my office at Wollongong, but not sent to me here.
15068. *His Honor.*] We should like to have several copies of those.
15069. *Mr. Lysaght.*] They will be typed in the notes by to-morrow morning; and during the day I suppose Mr Atkinson will be fairly well occupied with what I have already, and there will be no difficulty in following them, your Honor.
15070. *His Honor.*] His evidence would, necessarily, not go into these yet? *A.* No; and copies will be available to-morrow, like the revised ones were at Wollongong. I would have prepared copies, only they were not sent to me in time, but I do not propose to ask Mr. Atkinson in any detail on these new ones.
15071. *His Honor.*] He would want time to thoroughly understand them. We will go on, at present, with his cross-examination on the former evidence.

Mr. A. A. ATKINSON, previously sworn, was further examined as under:—

Cross-examination by Mr. Lysaght—(*continued*):—

15072. *Mr. Lysaght.*] I will pass over Recommendation No 2, because you have suggested a certain course.
15073. *Q.* Now, regarding the prohibition of the furnace, Recommendation No. 3. Do you know, Mr. Atkinson, that "the ventilation of mines by furnace is only permitted in case of special consent from the District Surveyor, throughout the whole of the mines of Prussia"? *A.* Yes, I think that is so.
15074. *Q.* Are you familiar with this passage from page 341 of "Hughes on Coal-mining," and do you agree with its conclusions:—

Mr. C. Cockson, after giving a description of a fan at Dairy Pit, Wigan, stated that the plant was erected to take the place of two underground furnaces, having a fire-bar area of 129 square feet, on which 12 tons 17 cwt. of Arley mine mixture were burnt per 24 hours, producing, with the furnace very hard fired, 142,570 cubic feet of air per minute, the cost for wages being 19s. 3d., and for fuel £4 3s. 7d., or a total cost of £5 2s. 10d. per 24 hours, which, multiplied by 365, will be £1,876 per annum. The fan gave the same quantity of air as the furnaces, when running at 52 revolutions per minute, burning 4 tons 3 cwt. of rough buzzard slack per 24 hours, and costing for wages 10s. 6d., and for fuel 15s. 4d., or a total per day of £1 5s. 10d., which, multiplied by 365, gives a cost of £471 per annum, or a saving, by the use of the fan, on the two items of fuel and labour, of £1,405 per annum. Of course, from this an allowance has to be made for interest, depreciation, stores, &c.
Many similar instances could be quoted if it were necessary, but it is now generally admitted that mechanical ventilation is superior to furnace ventilation; as it is more under control, cheaper, more efficient, and capable of being easily varied in quantity whenever desired.

Do you agree with that? *A.* Well, I have no reason to doubt the accuracy of the figures in regard to cost, and I agree with the latter statements.
15075. *Q.* Now, dealing specifically with the Kembla Mine, do you know that in 1886 the then Inspector had suggested two furnaces instead of one? *A.* I do not just remember at the moment, but it is possible.
15076. *Q.* Do you remember the Manager at Kembla in 1886?
15077. *Mr. Bruce Smith.*] How could he? He was not there.
15078. *Mr. Lysaght.*] *Q.* Do you know that the Manager at Kembla in 1886 was prosecuted for imperfect ventilation? *A.* I remember being told by Mr. Rowan that the Manager of Kembla had been prosecuted during his term of office.
15079. *Q.* Did you ever read the correspondence and the reports of the Inspector upon that prosecution? *A.* I may have done so; but I cannot remember.
15080. *Q.* I am now reading from Mr. Rowan's letter to the Chief Inspector, dated 11th January, 1886.
15081. *Mr. Wade.*] Perhaps I might interpose at this stage, and ask whether what took place in 1886 can throw the least light upon what took place in July of last year. Since then there has been a new system of ventilation, and a new furnace has been put up. It may have been absolutely dangerous, for all we know, in 1886; but the conditions are different now.
15082. *Mr. Lysaght.*] I am going to show that it was never intended that the other furnace should be abandoned at all. The proposal was that there should be two furnaces; and, as they have abandoned one of them, the intention in 1886 was not carried out.
15083. *Mr. Robertson.*] Is it suggested there that the existing furnace is not efficient?

15084.

15084. *Mr. Lysaght.*] There is a suggestion here [*referring to a book which he held in his hand*] about putting up a fan, as far back as 1886.
15085. *His Honor.*] Instead of having a second furnace?
15086. *Mr. Lysaght.*] No, with the second furnace. Perhaps, if I read it, Your Honor will see it. This need not be taken down for the present. [*Mr. Lysaght then read from a book.*]
15087. *Mr. Robertson.*] *Q.* Is there any suggestion that the present furnace is not capable of ventilating the mine?
15088. *Mr. Lysaght.*] The suggestion is this, that, owing to the atmospherical conditions, the air does, frequently, become reversed.
15089. *Mr. Robertson.*] But there is a doubt about that.
15090. *Mr. Wade.*] It is when the furnace is stopped, the evidence shows.
15091. *His Honor.*] There is a very grave doubt as to whether there has been any substantial reversal. The evidence is very vague and problematical and unsatisfactory as to whether there has been any reversal.
15092. *Mr. Lysaght.*] Of course, there is the evidence of several of the witnesses as to the places being very hot, and getting no air at all.
15093. *Mr. Robertson.*] That might obtain with a fan.
15094. *Mr. Lysaght.*] I see that. I am putting all this now before Mr. Atkinson on the general recommendation that furnaces should not be allowed.
15095. *His Honor.*] Is the furnace that has been in use now for so many years really the second furnace suggested there (in the report which was read by Mr. Lysaght), or a different furnace altogether?
15096. *Mr. Lysaght.*] It is the second furnace suggested here.
15097. *Mr. Robertson.*] From what you read just now, I thought it was a different furnace, and in a different position.
15098. *Mr. Bruce Smith.*] I offer an objection of another kind to this. Mr. Lysaght is cross-examining Mr. Atkinson on the evidence which he has given; but Mr. Atkinson's evidence with regard to his personal knowledge of this mine is confined to six years. Unless we know exactly what were the conditions of the mine when that recommendation was made sixteen years ago, how can it possibly be made the subject matter of a cross-examination of Mr. Atkinson with regard to his evidence as to the sufficiency of the present furnace. It seems to me that it will lead us into a most elaborate inquiry as to the conditions that existed at that time, to see whether the recommendations at that time, sixteen years ago, have any bearing on the present conditions, and on the opinion expressed by Mr. Atkinson on the present condition.
15099. *His Honor.*] It does appear as if Mr. Atkinson, as an expert, could not speak as to this. It is a matter of history, which occurred long before Mr. Atkinson had anything to do with the mine; and therefore it seems to be utter waste of time, and utterly beside the question, for anybody to cross-examine Mr. Atkinson on it.
15100. *Mr. Lysaght.*] I was anxious to show that the necessity, perhaps, for a fan at Kembla was recognised sixteen years ago.
15101. *His Honor.*] But Mr. Atkinson could not speak of that any more than anybody else could. He may have heard from somebody else, merely at second-hand, something about the former history of this mine. Why he should be cross-examined as to that, and how he could manage to give any evidence, as an expert, in relation to a question of that kind, I certainly fail to understand.
15102. *Mr. Lysaght.*] Perhaps I did not make the position quite clear. I was anxious to get before the Commission the fact that in 1886 a promise was made by the management at Kembla that a fan would be erected if necessary.
15103. *His Honor.*] It is possible you can get that by the cross-examination of some other witness.
15104. *Mr. Bruce Smith.*] I make this suggestion: if Mr. Lysaght wants to put that fact in evidence, and it is an official document, I am quite sure I shall offer no objection to its going in before the Commission; but to cross-examine about it seems to be unnecessary.
15105. *His Honor.*] You can only cross-examine about it if the object of your cross-examination, and the fairly possible result of your cross-examination, is to shake Mr. Atkinson's own opinion on a certain question. How it can do that I do not know. I should imagine that it would be improbable that it could do so. Shortly, what you might possibly put, is—"Because somebody said a long time ago something would do at Kembla, do you still hold to the opinion that the shaft now in action at Kembla, the furnace, is sufficient"? That is the only thing that I can see that you could wish to put, in such a cross-examination.
15106. *Mr. Lysaght.*] I wish to show that Mr. Atkinson's conclusion that 80,000 cubic feet was the ventilation of that mine is altogether erroneous. I am going to show the amounts which the report shows were going into the mine.
15107. *His Honor.*] But that can be shown, as Mr. Bruce Smith said, from the report itself, if that is in it. How can you possibly cross-examine Mr. Atkinson on what he has been told as some question of history. He is not an historical expert; he is a mining expert.
15108. *Mr. Lysaght.*] Could not I put this on the general ground of Recommendation No. 3, that furnaces be prohibited, and fans substituted; could not I show that, even at Kembla, when they were thinking of putting up a second furnace, it was found that they would possibly have to get a fan?
15109. *His Honor.*] Yes; but what is the use of cross-examining Mr. Atkinson as to what he has been told by somebody. That is a matter of history. He cannot say, "I have more reason than anybody else to believe that those statements were true." If he has expressed a strong opinion on a certain matter of science, then you can ask him, "Are you not aware of certain facts?" and "Being aware of those facts, do you still hold to that opinion?"
15110. *Mr. Lysaght.*] I think I would prefer, Your Honor, to put in the whole report hereafter.
15111. *Mr. Lysaght.*] *Q.* Do you know that the Manager's returns from Kembla Mine of the intake air have not exceeded 65,000 cubic feet? *A.* I do not remember the quantity.
15112. *Q.* Do you know that Mr. Ronaldson stated, in evidence, before the Royal Commission, that the average was between 60,000 and 70,000 feet?
15113. *Mr. Wade.*] The same objection applies there. I take the same line as Mr. Bruce Smith does, that, if the documents themselves are of any use at all, I have no objection to the Court having them: but I object to Mr. Atkinson being asked this question on a manner which he could not possibly know except

except by hearsay, through, possibly, four or five channels. It may turn out that, at that time, there were fewer men, and less air required. I say if the document itself goes in as a matter of history, I have no objection to it. Mr. Atkinson cannot say of his own knowledge.

15114. *His Honor.*] He can only speak as a matter of opinion, even if that statement has been made by somebody, after having thoroughly examined the whole report, to see what the meaning of the statement is. But, supposing the statement were there, he would have to read the whole report to see the whole thing.

15115. *Mr. Lysaght.*] Do you know that Mr. Ronaldson gave evidence before the Royal Commission on the Coal Mines Regulation Bill in 1895? *A.* Yes.

15116. *Q.* Did you read that evidence? *A.* Yes.

15117. *Q.* Did not he state there, "We try to get the largest quantity of air possible"; the question then is, "What is your average?" and the answer is, "From 60,000 to 70,000 cubic feet per minute"? *A.* Yes, I have read that.

15118. *His Honor.*] Mount Kembla came in in that Commission as merely one of the mines they were speaking of at that time.

15119. *Mr. Robertson.*] The conditions may have changed since then? They may have had other openings to daylight.

15120. *Mr. Lysaght.*] But I understand the conditions have not changed.

15121. *Mr. Robertson.*] Nonsense. There must be a change.

15122. *Mr. Lysaght.*] Not to affect the ventilation. I submit that the further the mine goes in, the less the power of the furnace to ventilate it.

15123. *Mr. Robertson.*] Oh, no; there may be an alteration in the distribution of the air. It may be possible for the furnace to give an increased ventilation, although the area of the workings has increased since. I do not say it is so.

15124. *Mr. Lysaght.*] *Q.* Now, you spoke about an objection from the Water and Sewerage Board to having works on their catchment area? *A.* Yes.

15125. *Q.* Can you tell me what collieries in the South Coast district have the up-cast shaft on the catchment area? *A.* Mount Kembla; that is the only one.

15126. *Q.* You know that at Mount Keira they are sinking a shaft to erect a fan? *A.* I know that they wish to sink one.

15127. *Q.* Is not that shaft proposed to be on the catchment area? *A.* Yes.

15128. *Q.* Is there any opposition to that shaft being put there? *A.* I do not know whether they have been able to arrange with the Water and Sewerage Board in reference to it or not.

15129. *Q.* Do you know of any opposition to it? *A.* Well, I know the general opposition of the Water and Sewerage Board in connection with mining operations on the surface of the catchment area; but I have not heard anything in connection with this particular shaft to which you refer. I do not know to what stage it has gone yet.

15130. *Q.* No other collieries but Kembla and Keira would require to have an up-cast shaft on any part of the catchment area? *A.* It is quite possible that they may.

15131. *Mr. Bruce Smith.*] *Q.* Do you mean that others may? *A.* Yes.

15132. *Mr. Lysaght.*] *Q.* What others? *A.* South Bulli, Corrimal.

15133. *Q.* Any other? *A.* Mount Pleasant, possibly. I could not say what the future might require.

15134. *Q.* Can you produce any letters or anything in writing showing the objection of the Water and Sewerage Board to these fans on their catchment area? *A.* Well, I have no doubt, with the permission of the Department, I could produce papers which would show their general objections, but nothing in particular reference to this proposed fan.

15135. *Q.* Now, you are aware, are you not, that a number of persons reside on the catchment area? *A.* Yes, I understand so.

15136. *Q.* They have farms, and piggeries, and things like that? *A.* I also understand that they are very particular.

15137. *Mr. Bruce Smith.*] I suppose they have rights.

15138. *His Honor.*] They got there first.

15139. *Mr. Bruce Smith.*] Yes. They were land-owners on the surface.

15140. *Mr. Lysaght.*] *Q.* Do you suggest, as a serious objection to the introduction of fans, that the Water and Sewerage Board may oppose their erection? *A.* I do.

15141. *Q.* But you have never heard of any case in which they have done so? *A.* I do not know of any case in which they have been asked with reference to it yet.

15142. *Mr. Bruce Smith.*] *Q.* You know the general objection; it has been often expressed? *A.* Yes.

15143. *Mr. Lysaght.*] *Q.* Well, then, you recognise that it may be necessary hereafter, at Kembla or elsewhere, to have fans put up? *A.* Yes.

15144. *Q.* Will not the objection from the Water and Sewerage Board be equally as good then as now? *A.* I expect so.

15145. *Q.* Have you got any suggestion as to how you are going to get over that objection then? *A.* Well, I have already made a suggestion to the Commission; if they could do anything to arrange matters between the Mines Department and the Water and Sewerage Board in connection with that question.

15146. *Q.* Well, now, I will pass over Recommendation No. 4. Taking Recommendation No. 5—cut-throughs not more than 30 yards apart—do you know of any crush, or creep, in the South Coast mines? *A.* Yes, there have been one or two, I think.

15147. *Q.* Where?

15148. *Mr. Bruce Smith.*] Does Your Honor think that that is a proper question to be asked? Does your Honor think that the Chief Inspector of Mines should be asked to publish the knowledge that comes to him in his official capacity in regard to any infirmity of that sort that may exist in any particular mine?

15149. *His Honor.*] Well, on the other hand, Mr. Bruce Smith, is it right, is it fair in the interests of the public and the miners, that any danger of that kind should be kept concealed? It seems to cut both ways.

15150. *Mr. Bruce Smith.*] Well, I do not know whether it is a danger; perhaps Mr. Atkinson will say. I leave it entirely to Mr. Atkinson. I do not know whether it has any bearing whatever on this question.

15151. *Mr. Lysaght.*] He says there was a danger of creeps through cut-throughs being driven 30 yards.
15152. *Q.* Where are these creeps? *A.* Some years ago I think they had a little trouble at the Metropolitan Colliery: and they have had trouble also at the South Bulli Colliery.
15153. *Q.* But the trouble at the Metropolitan Colliery was not owing to 30-yard cut-throughs? *A.* I think it was found necessary to increase the size of the pillars.
15154. *Q.* Do you know what the size of the pillars was when they had this creep? *A.* No, I do not know.
15155. *Q.* Then that, really, is no criterion. *A.* I think it is.
15156. *Mr. Ritchie.*] *Q.* Would this be within your time, or previous to your time? *A.* Previous to my time.
15157. *Mr. Lysaght.*] *Q.* Then, at that time, I take it, they had to have the cut-throughs every 35 yards?
15158. *His Honor.*] Mr. Robertson has pointed that out several times: there has been a mistake in reading that provision of the older Act. There was no necessity to have the cut-throughs every 35 yards, if brattice was substituted.
15159. *Mr. Lysaght.*] *Q.* Well, what about the South Bulli creep, when was that? *A.* That was before my time, too. It seriously crippled the main road of the colliery.
15160. *Q.* Since your time you do not know of any creeps on the South Coast? *A.* No, I do not remember any.
15161. *Q.* Now, are you aware that, in the evidence before the Royal Commission on the Coal Mines Regulation Bill, the following evidence was given concerning the distance of cut-throughs:—

Q. What distance do you drive them (the bords) before you put a cut-through over? *A.* We seldom drive over 100 yards without a cut-through. I refer to the bords, not to the headings.

Q. One part of the bord acts as an intake, and the other acts as a return? *A.* Exactly. We could not go these long distances with our bords except through having such a command of ventilation. By having this great ventilation, we can do things which could not be done at other collieries. We are far in excess of what is required for safety, and we have, I think, double the ventilation of the ten mines down below us. (*Vide* evidence of Mr. D. A. W. Robertson, page 100.)

Do you remember that evidence being given regarding the Helensburgh Colliery? *A.* I think it is probable that I read it.
15162. *Q.* So that the fact of drives being 100 yards or so at Helensburgh Colliery without a cut-through is an exceptional case, and no criterion for the district, because, as is said here, they have much more ventilation than is required? *A.* To a large extent it depends upon the ventilation.
15163. *Mr. Robertson.*] *Q.* And also upon the issue of gas? *A.* Yes; that is a material factor.
15164. *His Honor.*] This question has not been gone into yet, but perhaps Mr. Atkinson can give some evidence on it. Primarily, of course, the sustaining weight of a pillar varies directly as its area; that is, primarily, apart altogether from the question of the cuts in it. As you take out of the pillar something, for the purpose of making a cut-through, primarily directly you weaken that pillar by the reduction of its area. But, then, there is another weakening, and that is the putting in of new faces; that is, the taking away of what might be called the horizontal support of the pillar, and increasing its tendency to crush generally. Well, has that been worked out scientifically, Mr. Atkinson, so as to determine what the relative strength of pillars is, standing by themselves as single pillars, and standing as severed pillars containing the same area; comparing, for instance, two pillars with a given sum of area, with one pillar of that same area?
15165. *Witness.*] The matter to which your Honor refers is mentioned and explained very simply in Professor Lupton's "Book on Mining."
15166. *Mr. Bruce Smith.*] Your Honor means that the increase or decrease of strength would be geometrical.
15167. *Witness.*] The crushing strain, of course, is about 3,000 or 4,000 lb. to the—— [*interrupted*].
15168. *Mr. Robertson.*] *Q.* Is not the effect of putting cut-throughs through a pillar to take away the lateral support of the pillar? *A.* Certainly, the area of excavation causes the weight of the strata to be cast on to the pillars entirely. But I think I might bring that little book—I see Mr. Ritchie has it.
15169. *Mr. Ritchie.*] *Q.* Yes. Perhaps you might point out the part referred to? *A.* It is referred to on page 158:—

Size of Pillars and Stalls.—The ordinary size of stalls has been above given, as varying from 4 to 6 yards; and the ordinary size of pillars may be taken as varying, from 5 yards wide and 10 yards in length, to 30 yards wide and 40 yards in length. As the development of the coal-fields of the country takes place, the average depth increases, and the size of the pillars increases to a corresponding extent. To take an illustration, suppose a mine 1,500 feet in depth, and the pillar 10 yards wide and 20 yards long, with stalls 4 yards wide, and cross-cuts the same width. The mine may be divided into rectangles of 14 yards by 24 yards, equal in area to 336 square yards. Of each of these rectangles the pillars have an area of 200 square yards; and, therefore, this area of 200 square yards has to bear the pressure originally resting upon an area of 336 square yards, the original pressure being 1,500 lbs. per square inch. The pressure per square inch upon the remaining pillar is found by the following Rule-of-three sum:—200 : 336 :: 1,500 : x = 2,520.

It is probable that this pressure will be a great deal more than either the coal, or the roof, or floor, will bear without injury, and the working of the mine will become exceedingly costly, if not impossible. Supposing the pillars are increased to 30 x 40, the stalls remaining the same size, the whole of the mine may be divided into rectangles of 34 x 44 yards. Therefore, each rectangle contains 1,496 square yards, and each pillar contains 1,200 square yards. The original pressure of 1,500 lbs. per square inch upon the original area of 1,496 square yards has now to be entirely sustained on the remaining pillar of 1,200 square yards, and the pressure per square inch will be found by the following Rule-of-three sum:—1,200 : 1,495 :: 1,500 : x = 1,870 lbs. per square inch.

Thus, by increasing the size of the pillar, the pressure per square inch upon it has been reduced from 2,520 to 1,870. These are some of the considerations that guide the mining engineer in setting out the dimensions of pillars. There are, however, other considerations, such as the inclination of the seam. In a level seam, or one lying at a moderate inclination, there is no difficulty in conveying the coal along the stall; but, if the seam lies at a steep inclination, special arrangements have to be made for haulage, which will be dealt with in the chapter on haulage. Other considerations are, the amount of gas yielded by the coal, and the means of ventilation. It is evident that the larger the pillars the greater will be the length of single roads to be ventilated between cross-cuts; and, in a mine yielding a great deal of fire-damp, this is a very important consideration, of which notice will be taken further on.

There are other passages referring to creep.
15170. *Mr. Robertson.*] *Q.* A large pillar, of, say, an acre in area—is that not infinitely stronger than a number of smaller pillars of the same (aggregate) area? *A.* Certainly it is.
15171. *Q.* That is to say, in the acre area in small pillars they have insufficient lateral support? *A.* I do not quite catch that.

15172. *Q.* In the case of the smaller pillars, they have not the same lateral support as in the large pillars? *A.* No; and I think the fact of so much surface of pillars being exposed has a weakening effect as compared with the smaller area exposed in the larger pillars to which you refer.
15173. *His Honor.*] *Q.* It comes to this, does it not, Mr. Atkinson, that by using larger pillars you might be able safely to take out the same proportion of the whole of the coal as you could not safely take out of the same mine by using smaller pillars? *A.* Yes; I might explain it in this way: the small pillars are sometimes left in such a condition that they are barely able to support the superincumbent strata; but, when the removal of those pillars commences, the effect is to put such a weight on the neighbouring pillars that they are unable to bear it; and frequently many pillars are lost in that way, crushed down entirely, so that large pillars facilitate the getting of a large percentage of coal in the second working or the removal of the pillars; besides any advantage there may be in the first working.
15174. *Q.* But, independently of that, supposing you contemplate the mine as one to be left some time before taking out the pillars, and to be able to stand safely without crushing the pillars that are left, the superincumbent weight to be safely borne by the pillars; it is a fact that, with a given proportion of the coal being taken out, a mine may be in a condition of safety with pillars of a certain size, and may be in a condition short of safety with pillars of a smaller size;—you see, the bords and stalls having been shorter, the pillars would be smaller? *A.* Quite so.
15175. *Q.* One—the principal—difference being the actual crushing strength of the pillar due to the smaller or larger perimeter of the pillar—the extent of the perimeter in relation to the bulk of the pillar is a weakening element? *A.* Yes, Your Honor.
15176. *Q.* If they were circular, the area of the whole would vary, as the square of the diameter?
15177. *Mr. Bruce Smith.*] Is not this another way of putting your Honor's proposition—that the reduction of the strength of the pillar weakens the support in a greater ratio than you reduce the coal?
15178. *His Honor.*] Yes. If the pillars were circular, their contents would vary as the square of the diameter, whilst the perimeter would vary directly as the diameter; and, therefore, the smaller the pillar the larger the perimeter in relation to the actual contents of the pillar.
15179. *Mr. Robertson.*] *Q.* Mr. Atkinson, you have heard of the disastrous accident at Hamilton, near Newcastle? *A.* Yes.
15180. *Q.* Can you say how that occurred, from what you have heard or read? *A.* Yes; I think it was due to the smallness of the pillars.
15181. *Q.* It is just an illustration of what you were describing before, pillars too small in the first place, and attempting to extract them? *A.* Yes; that is what they were doing. It set on a creep.
15182. *Q.* There were ten or eleven men killed there? *A.* I forget the number; it was before my time.
15183. *Mr. Lysaght.*] *Q.* On that point, Mr. Atkinson, do you know what the size of the pillars was at the Hamilton Pit? *A.* I do not remember just now.
15184. *Q.* Do you remember reading this, page 193 of the Appendix to the Royal Commission on the Coal Mines Regulation Bill:—

> I am also of opinion that the standing pillars were too weak to withstand the pressure brought to bear upon them by the weight of the superincumbent strata, and that if the pillars had originally been left of a larger area than the so-called 4-yard pillars, common to the system usually adopted in working the Borehole coal-seam in the Newcastle district, or a modification of the district custom had been introduced, whereby almost all the pillars could be extracted as soon after they are formed as possible, it might have prevented extra deterioration and loss of coal from a "crush" such as that which has so recently taken place at the Australian Agricultural Company's Colliery, and on previous occasions at the Australian Agricultural Company's, Newcastle-Wallsend, Co-operative, Lambton, and Newcastle Coal Companies, &c.—J. M., 7/8/89.

Do not you see there that the pillars were very, very small? *A.* Yes, I see that; but the cover overhead was also very small.
15185. *Q.* What was the cover overhead? *A.* I have not the figures.
15186. *Q.* Have you any idea? *A.* Probably 100 feet.
15187. *Q.* The Hamilton Pit is about 190 feet deep;—there is a cover of nearly 200 feet, you see? *A.* Well, the pillars were not taken out of the shaft bottom.
15188. *Q.* Never mind; that is the cover, is it not?
15189. *Mr. Wade.*] No; it is the shaft.
15190. *Mr. Lysaght.*] *Q.* Now, do you suggest that in that case, where the pillars were only 4 yards square —— [*interrupted*].
15191. *Mr. Wade.*] I object to that. Mr. Lysaght said, under his breath, "square." Mr. Atkinson could not hear that, I am sure.
15192. *Mr. Lysaght.*] *Q.* Will you suggest that, where the pillars were only 4 yards, that is any criterion to guide the Commission as to the danger of cut-throughs at 35 yards; do you seriously offer that as a criterion to guide the Commission as to the danger of cut-throughs at 35 yards? *A.* Well, I say seriously, that there has been a tendency in this State to make pillars too small, and it has resulted in the loss of a great deal of coal by crushes, of which that is simply one illustration.
15193. *Q.* It is a very weak illustration, is it not? *A.* On the contrary, I think it is a very strong one.
15194. *Q.* I suppose you will agree with this, from page 181 of Hughes:—

> There does not, however, appear to be any common system regulating the dimensions of pillars, as nearly every conceivable size and shape can be found in practice, the procedure at each colliery depending on the individual opinion of the manager. Mr. Atkinson, in a report to the New South Wales Government, quotes numerous instances in seams varying from 2 feet 2 inches to 8 feet thick, and at a depth varying from 210 feet to 1,800 feet, where amounts of from 59 to 95 per cent. of the coal is left in pillars after the bords and walls have been driven. In the best modern practice never more than from 30 to 35 per cent. of the coal is removed in the "whole" workings.

We may take it, generally, Mr. Atkinson, that no rule can be fixed for the size of the pillars? *A.* I think you can.
15195. *His Honor.*] That is exactly what you are trying to fix.
15196. *Mr. Robertson.*] That is just exactly what you are trying to fix.
15197. *Mr. Lysaght.*] There is a little more of Mr. Atkinson's report here, which I have not yet read.
15198. *Witness.*] Let me have the rest of the article.
15199. *Mr. Robertson.*] You say they should be 30 yards square. You are trying to fix it.
15200. *Mr. Lysaght.*] *Q.* Did you not say that it should be fixed, Mr. Atkinson? *A.* To what do you refer?
15201. *Q.* I am asking you can the strength of the pillars be properly fixed? 15202.

15202. *His Honor.*] *Q.* As a general proposition? *A.* As a general proposition, yes.
15203. *Q.* I do not know that that is as a general rule to cover all cases. Is it possible to say, having any depth unknown, having any quality of coal unknown, having all the co-efficients of the mine unknown, that you can legislate safely for any maximum size of pillars? *A.* Certainly not. I think it would be a very wrong step to take, your Honor. You must have regard to the particular condition and circumstances in connection with the mine.
15204. *Mr. Lysaght.*] *Q.* That is what I am going to put to you, you having admitted that the size of pillars, as a general principle, can be fixed;—I now say, are not pillars 30 yards square ample for every possible conceivable danger, anywhere you like? *A.* No, I think not.
15205. *Q.* Will you point to any colliery in this State where you think a pillar 30 yards square would be dangerous? *A.* Yes, the Metropolitan.
15206. *Q.* Any other? *A.* No, I do not know that there are any others.
15207. *Q.* Then, do I take it that, with the exception of the Metropolitan, you consider that pillars 30 yards square would be ample? *A.* I think so, if regard is had to the width of the drives which are made.
15208. *Mr. Bruce Smith.*] *Q.* Is that under present conditions? *A.* Yes.
15209. *His Honor.*] *Q.* Existing mines? *A.* Existing mines.
15210. *Mr. Robertson.*] *Q.* At comparatively shallow depths? *A.* Yes.
15211. *Mr. Lysaght.*] *Q.* Do you know of anything that would make pillars 30 yards square dangerous, in any conditions, in New South Wales mines? *A.* Yes, if you take out too large a proportion in the stalls or bords.
15212. *Q.* But you mean that would be with the waste hanging? *A.* I mean that, if you took out too great a percentage of coal in the first working, it would put too much weight on to the pillars left, which might be a source of danger.
15213. *Q.* But does not the taking out of the coal let the roof of the waste fall, and thereby relieve the pressure on the pillars? *A.* No, certainly not.
15214. *His Honor.*] *Q.* Mr. Atkinson is not talking about the waste: he is talking about pillars and bords and cut-throughs? *A.* The weight comes on to the neighbouring pillar when the coal is removed.
15215. *Mr. Lysaght.*] *Q.* I admit that, but what I am putting is this: is not 30 yards square ample? *A.* I have already said that 30 yards square is ample with the existing mine under the existing conditions, providing regard is had to the width of the drives made, or the percentage of the coal extracted, in the first working.
15216. *Mr. Bruce Smith.*] *Q.* It really depends upon the number that you leave of that size? *A.* Yes; you might take out 30 yards and leave 30 yards; on the other hand, you might leave a 30-yard pillar and only take out 8 yards.
15217. *Mr. Lysaght.*] *Q.* In practice, then, there can be no objection to the cut-throughs being every 30 yards? *A.* I have not said so.
15218. *Q.* Well, I ask you what objection can there be now in practice to making the cut-throughs every 30 yards? *A.* Well, I think I have explained it sufficiently. I do not know what further explanation is required.
15219. *Q.* Now, you do admit that the conditions at the Metropolitan Colliery are altogether exceptional? *A.* Yes, as compared with the other collieries.
15220. *Mr. Bruce Smith.*] *Q.* Do you adopt the expression "altogether" exceptional? *A.* His Honor has once or twice, or three times, before directed your attention, Mr. Lysaght, to that infirmity, the putting in of adjectives.
15221. *Mr. Robertson.*] *Q.* Is it not objectionable to lay down any hard-and-fast rule for the working of any coal-seam? *A.* I think it is. You must have regard to the circumstances and conditions, which may alter as the workings advance.
15222. *Q.* The conditions vary, not only in every mine, but also in different parts of the same mine? *A.* Quite so; they do.
15223. *Q.* And it is not advisable that the Manager should be limited in any way as to the methods of working coal, so long as safety is secured? *Q.* I think that is all that is desirable.
15224. *Q.* Then do not you think, unquestionably, that safety is more likely to result from large pillars? *A.* Certainly.
15225. *Mr. Lysaght.*] *Q.* But, Mr. Atkinson, no matter how the conditions may vary, are you not of opinion that 30-yard pillars are ample? *A.* No; I have already said no.
15226. *Q.* Now, Recommendation No. 6 you have approved. Recommendation No. 7, "Monthly examination by the deputies with the hydrogen flame";—you disapprove of that, because it is not safe to trust the hydrogen lamp in inexperienced hands? *A.* Yes.
15227. *Q.* Would you approve of the monthly examination by the under-manager instead of the deputy? *A.* Well, provided he was sufficiently experienced, I do not see any objection to it.
15228. *Q.* Well, then, would you put it this way: that you would approve of a monthly examination and report by the Manager or under-manager with the hydrogen flame? *A.* Yes; I do not see any objection to that.
15229. *Mr. Robertson.*] *Q.* Do you consider that it is a safe lamp to take into a place where an explosive mixture of gas may be met? *A.* Well, it is not a place where you should use the hydrogen lamp if you can see gas with the ordinary safety-lamp flame, of course.
15230. *Q.* But you, yourself, if you knew you had to test in an explosive atmosphere, would you not have some hesitation in doing so with the hydrogen flame? *A.* I should not use the hydrogen part of the lamp for testing under those circumstances.
15231. *Q.* As a matter of fact, is it not positively dangerous? *A.* Yes, in the hands of inexperienced persons, it is.
15232. *Q.* Or any persons? *A.* Well, you require to be very careful.
15233. *Q.* Even in the hands of experienced persons, in any place where an explosive atmosphere may be met with, is it not positively dangerous? *A.* To use the hydrogen?
15234. *Q.* Yes? *A.* It would be—yes.
15235. *Mr. Ritchie.*] *Q.* But I take it, Mr. Atkinson, that the hydrogen is only used where you are unable to discover gas by the ordinary flame of the lamp? *A.* That is so.
15236. *Mr. Lysaght.*] *Q.* Recommendation No. 8—the minimum of 500 cubic feet of air to be provided for every horse; you have also heard this recommendation from the Northern District, which they desire added,

added, "And 200 cubic feet of air per minute for each man and boy";—now, do you know that the Royal Commission on the Coal Mines Regulation Bill recommended 150 cubic feet as a minimum for every man, boy, and horse? *A.* Yes, I have heard so.

15237. *Q.* But that was reduced in Parliament? *A.* Yes.

15238. *Q.* Now, all the collieries, as far as your reports have shown, had a considerable margin above the minimum? *A.* Generally speaking, yes.

15239. *Q.* So that, in practice, there would be no hardship imposed on any of the collieries that ever came under your notice by increasing the minimum? *A.* In some cases it does not get up to 200 feet per minute all round.

15240. *Q.* Would it, in all cases, get up to 150 cubic feet per minute? *A.* Well, for instance, in the case which Mr. Wynn reported at Corrimal it was under the 100 cubic feet.

15241. *Q.* Well, do not you think that it would be a very exceptional case that would not go up to 200 cubic feet per minute, in the way the collieries are now being managed?

15242. *Mr. Bruce Smith.*] Well, then, why require to increase the minimum, if it is always up to double?

15243. *A.* No, I could not say that it would be a very exceptional case.

15244. *Mr. Lysaght.*] *Q.* Then do I understand that there are collieries, to your knowledge, that are saillng pretty close to the wind, so far as ventilation is concerned? *A.* Oh, there have been one or two cases.

15245. *Q.* And was the air then circulating considered adequate? *A.* Well, steps were taken in several cases.

15246. *Q.* To have it increased? *A.* To have it increased.

15247. *Q.* Does not that clearly show that the minimum was too low, and should be increased? *A.* And was increased.

15248. *Q.* And that it should be increased by the Legislature? *A.* We have the power—the Inspectors have the power—to ask that more air be supplied; and I think that that is sufficient.

15249. *Q.* Is it not much safer to start of with a minimum of at least 200 cubic feet per minute, instead of the Inspectors having to wait for complaints, investigate them, and then order it? *A.* Well, there are cases of mines, in which no fire-damp is given off, where I think it would be quite unnecessary to ask for a minimum of 200 cubic feet; whereas, in another mine with a quantity of gas, it may be advisable to have 200 or perhaps a good deal more.

15250. *Q.* But, Mr. Atkinson, as you say all the mines have considerably over the minimum, whether they have fire-damp or not, where can the objection be to the Legislature fixing a minimum of 200 instead of 100? *A.* Well, I have not said it exactly as you have put it, Mr. Lysaght; but I think that the existing state of the law is sufficient for dealing with that.

15251. *Q.* Well, that is a matter, then, for the Commission? *A.* Except, of course, as I recommended, that in cases of defective ventilation it should be brought under the provisions of the arbitration clause.

15252. *Mr. Ritchie.*] *Q.* Have you any record of your Inspectors having directed that more air be supplied when they have found the minimum circulating? *A.* Yes; I think there are cases of that sort.

15253. *Q.* You have got them on record? *A.* I think so.

15254. *Q.* Have you any record of cases where less than the minimum quantity has been supplied? *A.* Well, we have the account of that case at Corrimal.

15255. *Q.* Where less than the minimum was supplied? *A.* Yes; we have the papers in connection with that.

15256. *Q.* Have you any other reports from the South Coast about collieries where less than the minimum quantity was supplied? *A.* Well, there may be; but I do not remember just at the moment.

15257. *Q.* What steps are taken when a report is brought under your notice that less than the minimum quantity has been supplied? *A.* Well, I either ask the Inspector of the district to go himself, again, to see how things are; or I sometimes go myself, in company with the Inspector.

15258. *Q.* And, if you found the report to be verified by your subsequent inspection, what steps are then taken;—if you find, upon the subsequent inspection you have spoken of, that the quantity circulating is less than the minimum stated by Act of Parliament, what do you do then? *A.* I do not remember such a case.

15259. *Q.* Do I understand that you have had reports sent to your Department stating that less than the minimum quantity was being supplied, and, upon making a subsequent visit, you found it not to be verified? *A.* Yes.

15260. *Q.* Has that always been the case? *A.* I think so. I do not remember a case in which that was not so.

15261. *Mr. Bruce Smith.*] *Q.* You have had a good many complaints from the miners that there was too much air? *A.* In some cases, although not official reports, not sent to the Department, to that effect.

15262. *Mr. Ritchie.*] *Q.* Have you had check-inspectors' reports submitted to you from the South Coast distinctly stating that less than the minimum quantity was being supplied? *A.* Yes; I think the Corrimal check-inspector's report was submitted to the Department.

15263. *Q.* Have you had any from the Bulli Colliery? *A.* Well, I do not remember. I do not think so.

15264. *Q.* Do I understand you to answer, in answer to Mr. Bruce Smith, that the miners have sent reports to you stating that there was too much air? *A.* No; I have not received reports to that effect.

15265. *Mr. Bruce Smith.*] *Q.* You have had complaints? *A.* In passing round the mine, they would sometimes say the brattice was too close up.

15266. *Mr. Ritchie.*] *Q.* A single individual here and there? *A.* Yes.

15267. *Q.* Who would, perhaps, have the current beating on his bare skin? *A.* Yes.

15268. *Q.* You do not take that as a defect in the ventilation of the mine? *A.* No; I like to see it.

15269. *Mr. Robertson.*] *Q.* As a matter of good mining practice, do you consider it is a proper principle to govern the ventilation by the persons in the mine? *A.* No; I think rather the governing principle should have regard to the gas which is given off by the coal, or rather that one of the governing principles—— [*interrupted*].

15270. *Q.* In the case of a gassy mine, if there happens to be no one in the mine, according to the Act there is no necessity for ventilation? *A.* No, I suppose not, when there is no one there. Of course, that is not a principle that I wish to go forth as having my approval, the ventilation being suspended when persons are not in the mine. I do not wish to convey that.

15271. *Q.* That is the point I was coming to. As a matter of fact, have you not had to take steps to require mines to be ventilated when no one was in them? *A.* Yes.
15272. *Q.* Can you say whether there is such a provision in the English Act? *A.* With reference to the constant ventilation?
15273. *Q.* Governing the ventilation by the persons in the mine? *A.* No; and there is no minimum fixed in the Imperial Act.
15274. *Q.* The English Act only requires adequate ventilation? *A.* Yes, that is so.
15275. *Q.* And, after all, is not that all that is required? *A.* Yes, that is so.
15276. *Q.* And is not there a danger that, with a minimum quantity, a careless or reckless Manager may cut it down to the minimum? *A.* Well, there is that danger; but, of course, there is the saving clause under which the Inspector has the power to have the ventilation increased.
15277. *Q.* But do not you think that the term "adequate ventilation" covers all requirements? *A.* I think it does.
15278. *Mr. Ritchie.*] *Q.* Would not that necessarily entail your Inspectors visiting frequently, in order to ascertain whether there was an adequate quantity travelling or not, if it was left entirely to the Inspectors in that way? *A.* I do not think it would necessitate any further visits than it does at present.
15279. *Q.* Do you think a visit once in three months would be sufficient to test whether there was an adequate quantity going or not? *A.* I think so, yes.
15280. *Q.* I suppose you do know that, with furnace ventilation especially, the quantity might vary very much within that period? *A.* It does vary to a certain extent, with different atmospheric conditions, if not attended to.
15281. *Q.* And you still think that once every three months would be sufficient for your Inspectors to test the ventilation to see whether an adequate quantity was travelling or not? *A.* I think so, yes.
15282. *Mr. Robertson.*] *Q.* Then, even with the minimum quantity, you have no better means of ascertaining the ventilation in the mine than the visits of the Inspectors every three months, or as often as they can go? *A.* No; I do not see that that alters their ability to ascertain the quantity.
15283. *Q.* No matter what may be the principle laid down in the Act? *A.* Quite so.
15284. *Q.* No matter what may be the principle laid down in the Act, it requires the visit of an Inspector to actually test whether the quantity is being supplied? *A.* Yes.
15285. *Mr. Ritchie.*] *Q.* I suppose you have got on record the whole of the complaints regarding ventilation which have been brought under your notice during your term? *A.* Yes; they are in the records of the Department.
15286. *Q.* Would there be any difficulty in furnishing them to the Commission to see how many there have been during your time? *A.* I think there would be a good deal of work in picking them out. If you could direct my attention to any particular one, perhaps it would assist.
15287. *Q.* But I should like to personally know whether they are numerous or not? *A.* No; they are very few.
15288. *Q.* Could you give us any approximate idea how many you would have, say for a period of twelve months? *A.* I do not think we should have an average of one.
15289. *Q.* One in twelve months? *A.* From the Southern district.
15290. *Q.* But I am speaking generally now of all the coal and shale mines under your jurisdiction to which the Act applies? *A.* In reference to ventilation.
15291. *Q.* Yes, complaints in regard to ventilation? *A.* I do not think there would be more than two or three per annum.
15292. *Q.* Then perhaps you might be able to furnish us with some of those within a reasonable period—say, for the last two years. Could you get them? *A.* Yes; I will endeavour to do so.
15293. *Mr Lysaght.*] *Q.* The complaint from Corrimal Colliery resulted in your Inspector's record agreeing with that of the check-inspector—the air was deficient? *A.* I think the result of his visit was to prove, so far as I remember, that at the time of his visit, if I remember rightly, more than the minimum quantity was then being supplied.
15294. *Q.* But did not the report state afterwards that his anemometer was out of order? You remember the evidence of Mr. Wynn? *A.* Yes.
15295. *Q.* What I want to know is this: Where the check-inspector's record and the Government Inspector's record agreed, what steps were taken to have that ventilation made adequate? *A.* Do you refer to the Corrimal case?
15296. *Q.* To the Corrimal case, yes? *A.* Well, I think the result of the measuring of the air at that time—which was done, if I remember rightly, by the Colliery machine—showed that the air was then above the minimum; but I might explain that, just at that time, the Company were erecting a new fan, and were endeavouring to get that fan into operation as early as possible, which I believe was done within a month of this complaint; since which time the ventilation has been much improved.
15297. *Q.* And that is the reason why no further steps were taken on that report? *A.* Yes.
15298. *Q.* This aspect of the question, as to having any minimum in an Act of Parliament, was thoroughly gone into by the Commission on the Coal Mines Regulation Bill in 1895? *A.* I think it was.
15299. *Q.* I ask you finally on this: Do you see any objection to having the minimum increased from 100 to 200 cubic feet for every man, boy, and horse? *A.* I do. I think that in some mines it is unnecessary; and that the present law is sufficient.
15300. *Q.* And that is the only objection you have? *A.* The only one that strikes me for the moment.
15301. *Q.* Recommendation No. 9 you have approved; and you say it is in force now. Recommendation No. 10—double doors—I think you have approved now. Recommendation No. 11—I think you consider the monthly record of the air is sufficient? *A.* Yes, I think so.
15302. *Q.* Of course, you will admit that the air might be good one day in the week and deficient the next day owing to atmospherical conditions. *A.* There might be a slight difference.
15303. *Q.* Might there not be a considerable difference? *A.* Not if the ventilating arrangements were properly attended to.
15304. *Q.* But does not it depend upon the ventilating arrangements being properly attended to *A.* Certainly.

15305. *Q.* Now, is not there a greater check on the ventilating arrangements being properly attended to if the measurements are taken every week instead of every month; is there not three or four times the check? *A.* Well, it is a check on the quantity of air circulating at the particular time.
15306. *Q.* Is not any record only an evidence of the particular air flying at the particular time? *A.* Yes.
15307. *Q.* Is it not better to have such a record every week than every month—is not that self-evident?
15308. *Mr. Bruce Smith.*] Then why ask it?
15309. Well, I do not think that the benefits would be commensurate with the additional labour imposed.
15310. *Mr. Robertson.*] *Q.* Carrying that out to its logical conclusion, it would be better taken every hour? *A.* Yes.
15311. *Mr. Lysaght.*] But I am suggesting something that is reasonable.
15312. *Q.* Recommendation No. 12. Now, you have only recommended that thirty lamps should be kept in excess where the safeties are being used. Is not that so, Mr. Atkinson? *A.* No; I think it is a definite proportion of the men underground.
15313. *Q.* But I am taking it now, as it would apply to the men underground (in Kembla). There were, I think, about 300 men underground on the day of the disaster, and the proportion of lamps in excess would have been thirty? *A.* Yes.
15314. *Q.* Do not you see that thirty would have been altogether inadequate? *A.* No, I think it would have been quite adequate.
15315. *Q.* For rescuers? *A.* Yes.
15316. *Mr. Wade.*] There were not 300 men underground, only 200. You have made a mistake about that, Mr. Lysaght.
15317. *Mr. Lysaght.*] *Q.* You said something about the difficulty of obtaining safety-lamps—I suppose it is only a matter of ordering them from England? *A.* Yes.
15318. *Q.* So that they can be got within a couple of months? *A.* Or more, perhaps.
15319. *Q.* An adequate supply of lamps for the whole of the State could be got within, say, two or three months? *A.* No. It would be within a few months.
15320. *Mr. Robertson.*] I can only say, from my own experience, that I can never get supplies under about six months; and I suppose I am in the best position to speak with authority on it.
15321. *Mr. Ritchie.*] *Q.* Do I understand you clearly to say that you thought thirty lamps would have been sufficient to man the rescue parties in Kembla Mine after that disaster took place? *A.* In my previous evidence with reference to this question, I mentioned that in a colliery where safety-lamps are in use, which is the case now under discussion, it is probable that a part at least of the ordinary lamps would be available, in addition to those thirty.
15322. *Q.* I suppose you would admit that it is possible that they might be all in use? *A.* Well, I think it is a very remote contingency to think that the men belonging to all three shifts would be in the mine at the same time.
15323. *Q.* Taking Kembla itself on the day of the disaster, how many were there out on the front shift; how many were there escaped; it just occurred at the time when they were about to take leave of their work? *A.* It, unfortunately, occurred at the time when both the day shifts were nearly all in; but, in addition to them, there are a certain number of workers in the night who would be at home, and were at home.
15324. *Q.* But is it not possible that those who are working on the night shift, if the night shift comes in early enough, may have their lamps in use at the same time as the day shifts? *A.* Well, I am supposing that there are lamps available for each workmen in whatever shift he works.
15325. *Q.* Narrowing it down, do you think that thirty lamps would have been sufficient to man the rescue parties at Mount Kembla Mine after the disaster? *A.* I would not bind myself to that.
15326. *Q.* I suppose you know that there were a very large number of men there alive who were unable to get out?
15327. *Mr. Bruce Smith.*] But it is fair to say that he would have had a very much larger proportion in a mine where no safety-lamps were in use, probably fifty.
15328. *Mr. Ritchie.*] *Q.* Do you think thirty would have been sufficient for such a purpose? *A.* I would not be prepared to offer an opinion on that, Mr. Ritchie.
15329. *Q.* After all the evidence you have got? *A.* I think sixty would be sufficient.
15330. *Mr. Bruce Smith.*] He has proposed already that, in a mine where safety-lamps are not in use, there should be one-fifth of those in the mine—that would be sixty at Kembla.
15331. *Mr. Ritchie.*] You are working on the assumption that, at a mine where safety-lamps are used, a number of them would be always out of use.
15332. *Mr. Bruce Smith.*] No. I do not think you quite understand what Mr. Atkinson said. He proposed that, in mines in which safety-lamps were not used at all, except for the deputies, one-fifth of the total number of men should be the proportion of lamps to be provided; so that there would have been sixty at Kembla on the day of the disaster. He was not counting at all upon men being out. If safety-lamps had been in use at Kembla, he would have had thirty extra.
15333. *Mr. Ritchie.*] *Q.* Well, I suppose you would think it necessary to have the same number in excess at a colliery where they were using safety-lamps as where they were not using safety-lamps—that is, it would be necessary to have the same number for the use of rescue parties? *A.* Yes.
15334. *Q.* Then you are basing your estimate on the assumption that a number of the lamps in a mine where they were all using safety-lamps would be idle? *A.* Yes.
15335. *Q.* Then, if it is possible that they would be all in use, the number that you have suggested here as adequate would be inadequate? *A.* Yes, I suppose so.
15336. *Q.* Then, is it not better to be on the safe side with appliances for rescue work than otherwise? *A.* Yes, I think it is wise to have a sufficient number; but I also think that the possible contingency which you have mentioned is so extremely remote—and it is impossible to provide for every contingency—that the provision which I have suggested would be ample.
15337. *Q.* Have you any idea of what the additional cost would be of keeping, perhaps, sixty lamps instead of thirty at the collieries, where they were using safety-lamps, as you proposed? *A.* I suppose the lamps would cost about 10s. each.
15338. *Q.* And I suppose they would not deteriorate very much in value for years if they were not used? *A.* They would require constantly cleaning, and examining, in order to prevent them from getting rusty and out of order, so as to be ready for use.

15339. *Mr. Bruce Smith.*] They become obsolete.
15340. *Mr. Ritchie.*] Not necessarily.
15341. *Mr. Bruce Smith.*] You have read a paragraph condemning three kinds already.
15342. *Mr. Ritchie.*] *Q.* But when were they first brought into use? *A.* Long before either of us were born.
15343. *Q.* And you still think, although the expense would be very small, comparatively speaking, that it is unnecessary to have this quantity of lamps? *A.* I think that the provision which I have suggested is sufficient.
15344. *Mr. Robertson.*] *Q.* From your experience in gassy mines have you not found that there is an ample number of spare lamps always at any colliery? *A.* There has always been sufficient at any colliery with which I have been connected.
15345. *Q.* At collieries, they do not work with the exact number of lamps corresponding with the number of men employed? *A.* I have never known of an explosion in the Old Country, where they were using safety-lamps at a colliery, where there were not a sufficient number for rescue purposes.
15346. *Mr. Ritchie.*] *Q.* That may be so; but there is no obligation on them to keep them there? *A.* No, there is not.
15347. *Mr. Lysaght.*] *Q.* Then, Mr. Atkinson, this recommendation of yours would not at all affect what is being done at mines in New South Wales where gas has been discovered—you say that they do keep this surplus supply *A.* Yes.
15348. *Q.* Then, in your opinion, this recommendation of yours will not at all affect what is being done at mines in New South Wales where safety-lamps are in use? *A.* No; I do not think it will.
15349. *Q.* So it is only in the case where the flare-light is used that your recommendation will affect the proprietary? *A.* Yes.
15350. *Q.* Well, now, can you see any objection to making it a fifth, instead of a tenth, for the surplus supply, inasmuch as you say all the collieries have a considerable surplus in hand? *A.* I think that that number, together with the lamps which, under ordinary circumstances, would be available, is ample for the purpose required.
15351. *Q.* Then, on Recommendation 13, you are awaiting the evidence of the managements? *A.* Yes.
15352. *Q.* On Recommendation 14 you admit that the Manager does delegate too much to the under-manager? *A.* In some cases.
15353. *Q.* As a Manager yourself, you were able to go two or three times a week underground, I think? *A.* Usually, yes.
15354. *Q.* Do you know of any objection to Managers being compelled to go underground at least once or twice a week? *A.* So far as is reasonably practicable, I think they should.
15355. *Mr. Robertson.*] *Q.* Mr. Atkinson, in your evidence you say that the Managers should visit the working places two or three times a week? *A.* I think the reporter did not understand my evidence correctly in that respect.
15356. *Q.* That is what I want to get clearly explained? *A.* What I meant was that I thought the Managers should go underground, and visit part of the workings and returns two or three times a week.
15357. *Q.* As a matter of fact, it is absolutely impossible, is it not, in a large mine, for a Manager to visit the working places two or three times a week? *A.* It is impossible—the whole of the workings.
15358. *Mr. Bruce Smith.*] You mean that it is impossible that he can visit the whole.
15359. *Q.* Do you mean, in your two or three visits, that he should manage to go round the whole of the working places every week? *A.* No, I do not suggest that; because in one part of the mine there might be places that might be left for a time.
15360. *Mr. Robertson.*] *Q.* Do you think it is wise in any way to restrict the movements of the Manager, considering the varied character of his duties? *A.* Well, I think it is desirable, whether by legislation or not, that the Manager should go underground, under ordinary circumstances, and visit part of the workings two or three times a week.
15361. *Q.* But you see, legislation, foreseeing the difficulty of the Manager's being tied down to a certain number of visits per week, has provided for either a Manager or under-manager being in daily attendance? *A.* Yes; I recognise that.
15362. *Q.* Therefore legislation has contemplated the impossibility, or the objections that may be raised to a Manager being tied in any way in his movements? *A.* Well, I recognise the fact of the appointment of the under-manager. At the same time I think that, in some cases, too much is delegated to him; and Managers, in some cases, spend more time on the surface than is absolutely necessary.
15363. *Q.* In some cases? *A.* Yes, in some cases. I speak with reservation.
15364. *Q.* Do not you think that the average Manager is fully seized with his responsibilities, and carries out his duties, according to his discretion, to the utmost of his ability? *A.* Generally speaking, I think so; but I do not see any objection to requiring them to visit underground two or three times a week, so far as is reasonably practicable.
15365. *Q.* But you can see that, the larger the mine, the more administrative duties he has to perform, and, nowadays, the Manager is more frequently called away on clerical or legal or commercial work than formerly? *A.* Yes; I daresay that that may operate to a certain extent; but I do not know of any mines in New South Wales where a Manager might not reasonably get down into the workings, under ordinary circumstances, two or three times a week.
15366. *Q.* But do not you see the danger of putting anything down in an Act of Parliament tying the Manager down in the slightest in his movements? *A.* I do not see any danger, so far as looking after the safety of the men is concerned.
15367. *Q.* But did you, as Manager of large collieries, find it possible, on every occasion, to go underground two or three times a week? *A.* Well, the exceptions to that would be quite unusual; for instance, if I was taking a holiday, or anything of that sort.
15368. *Q.* It is within your knowledge, I suppose, that Managers in this, the Southern district, have been, particularly last year, called away on other duties—necessary duties—and had to be away, and stay away, from the mine for days, practically weeks? *A.* Yes. Well, that would be provided for in the legislation, if such was brought about. I only ask that he should do it when reasonably practicable.
15369. *Mr. Robertson.*] Well, to my mind, the responsibilities that are placed upon the Manager should be a sufficient check—a good enough whip to any man.

15370. *Witness.*] Generally speaking, they are; but I think there are cases where I think they are not.
15371. *Mr. Lysaght.*] *Q.* Summed up, Mr. Atkinson, you think it wiser, safer, for the Manager to delegate clerical work and outside work, than for him to delegate the practical management of the colliery? *A.* Well, I do not know that it is desirable for me to make any such distinction. I do not think I can add anything to what I have already said.
15372. *Q.* Would this be a way out of the difficulty suggested by Mr. Robertson: that it might be provided that if Managers desired to absent themselves for more than a fortnight, they should get special permission from the Chief Inspector? *A.* Well, I do not think that is a necessary provision.
15373. *Q.* You make no further suggestion on that?
15374. *Mr. Bruce Smith.*] *Q.* Do I understand you to say that those two or three visits a week should be in the aggregate a complete visit to the whole of the mine? *A.* No, I do not suggest that, because it is not possible.
15375. *Q.* You do not say how much he should see of the mine? *A.* No, I do not say that.
15376. *Mr. Ritchie.*] *Q.* You mean that he ought to see as much as possible in those two or three visits? *A.* As much as is reasonably practicable.
15377. *Mr. Robertson.*] *Q.* Should it be a matter of physical capacity, or should it be a matter of discretion as to what part of the mine he considers it is necessary for him to see;—is not it conceivable that a Manager might go down the mine every day for a week, and visit one particular point? *A.* Yes, I think it should be left to his own discretion.
15378. *Mr. Ritchie.*] *Q.* Of course, you do not mean by that that he may, in order to comply with the provision of the Act, simply get to the bottom of the shaft and come up again? *A.* No, certainly not.
15379. *Mr. Bruce Smith.*] You could not define how long he should stay in.
15380 *Mr. Ritchie.*] No.
15381. *Mr. Lysaght.*] *Q.* Recommendation No. 16—size of manholes—Do you know this proposal, that they should be whitewashed? *A.* Well, it is a very good direction.
15382. *Q.* You approve of that? *A.* Well, there may be cases where whitewash would blacken so soon that to make the whitewashing of any real effect it might require to be done every two or three days, or every week, perhaps; but, generally speaking, it is a good thing to distinguish the position of the manholes.
15383. *Q.* Would you approve of the recommendation that they be whitewashed and kept renewed from time to time—it would not be much expense, would it? *A.* I do not think that is a matter which the Legislature should be asked to deal with.
15384. *Q.* Or a Special Rule? *A.* I do not think that.
15385. *Mr. Robertson.*] *Q.* Do you know that there are hundreds of manholes in some collieries? *A.* Yes.
15386. *Mr. Ritchie.*] *Q.* I suppose you have seen manholes whitewashed? *A.* Yes.
15387. *Q.* It is not entirely new? *A.* No.
15388. *Mr. Lysaght.*] *Q.* As a matter of fact, in places where there would be a lot of traffic the manholes would want to be whitewashed once a week or once a month, but other places would require to be whitewashed only once in twelve months? *A.* Possibly.
15389. *Q.* I think you approve of the recommendation that employees should be instructed on the ways out of the mine? *A.* Yes.
15390. *Q.* You did not say anything about the direction boards?
15391. *Mr. Ritchie.*] Yes, he did.
15392. *Mr. Robertson.*] *Q.* Mr. Atkinson, you can see the difficulty in a very large mine of giving effect to this recommendation; where there are so many outlets, so many miles to travel, it would become unworkable to show every man in every district the outlets in that district and every other district. Do not you think it would comply with your idea if the employees were shown an alternative route, because there are many alternative routes? *A.* I only suggest that they be shown the road every three months. I do not intend to convey by that that they should travel every possible route every three months, but only the route from their own districts.
15393. *Q.* Yes, but there may be half a dozen routes;—would it meet your views if they were shown one alternative route?
15394. *His Honor.*] Or as many alternative routes as the Inspector might from time to time prescribe—how would that do?
15395. *Mr. Robertson.*] *Q.* It is very easy;—if there are half a dozen roads from a district, do you require them to be shown every road? *A.* I think it would be better to show them one road specially, if that road was well-defined, so that in the event of their getting into it they would not get lost in the old workings—the pillars.
15396. *Q.* Yes, but the majority of those return airways cannot be described as well-defined. Do you think that travelling once would be sufficient to educate the men on the way out? *A.* Well, I think it is probable that a number of men who travel once would be able to find their way out, although each individual man going alone might not be able to do so.
15397. *Q.* Do not you think that in the multitude of councillors, without having been shown the way out at all, they would find their way out? *A.* Well, generally speaking, that may be so; but I think that they should be afforded some opportunity of learning alternative routes.
15398. *Q.* What I want to know is, do you think it necessary to show them every alternative route out, or would one be sufficient? *A.* Well, taking the case of the Kembla Mine, I think it would be desirable that they should know the way out by the daylight heading, and also by the heading near to the Manager's house; and the suggestions as to one alternative route would hardly cover those two.
15399. *Q.* Then the men working here (No. 1 Main Right section) would have to be shown this way (the daylight heading), and also this way (route *via* Long-wall faces round to Adit Manager's day hole)? *A.* Yes, but I do not suggest that that should be done each quarter. They should be shown the route out from their own district each quarter.
15400. *Q.* Yes, but from this district there are those two ways. One might be blocked. Should the men be shown the way out by both? *A.* Well, during the course of the next three months, or whenever they got into the other district, they would then have the opportunity of knowing the way out of this other district. I admit that to put it into language is rather difficult, to suit all the cases which might arise; but, as a general rule, the miners should be made aware of the ways out.

15401. *Mr. Robertson*] I consider it is absolutely impracticable.
15402. *Mr. Lysaght.*] *Q.* Regarding Recommendation No. 19—black-list—you said you did not think that such legislation as was suggested should have a place in the Coal Mines Regulation Act? *A.* Yes.
15403. *Q.* Well, in what Act do you think it should have a place?
15404. *His Honor.*] That is a very big question.
15405. *A.* It is. I could not say.
15406. *Mr. Lysaght.*] *Q.* Where is the objection at all to having it in the Coal Mines Regulation Act? *A.* Well, the Coal Mines Regulation Act is framed for the purpose of looking after the safety of the workmen.
15407. *Q.* Do not you know that there are a large number of provisions in the Coal Mines Act—for instance, the recovery of wages, and other things like that—that have nothing to do with the safety of the men? *A.* Yes, I am aware of that.
15408. *Q.* Now, where is the objection to having that legislation, if at all, in the Coal Mines Regulation Bill, as it is in the American laws? *A.* Well, in my opinion, I think it is undesirable and unnecessary.
15409. *Q.* That is on the whole principle? That is that the legislation is undesirable and unnecessary? *A.* Yes.
15410. *Mr. Bruce Smith.*] He did not say so. He said it was undesirable to have it in the Coal Mines Regulation Bill.
15411. *Mr. Lysaght.*] *Q.* Where is the objection to having it in the Coal Mines Act, any more than in any other Act?
15412. *Mr. Ritchie.*] *Q.* The question is, first, do you believe that it should be legislated upon at all? *A.* I should just like to hear the terms of the recommendation.
15413. *Mr. Bruce Smith.*] Mr. Ritchie, do you include in an Act the Rules and Regulations under that Act? There may be power given in an Act to make rules.
15414. *Mr. Ritchie.*] I mean, should this principle, which the recommendation speaks of here, be embodied in any Act of Parliament?
15415. *Mr. Bruce Smith.*] Do you include in the Act the Rules made under the Act, and having the same force as the Act?
15416. *Mr. Ritchie.*] Just the same as they are under the Coal Mines Regulation Act.
15417. *Mr. Lysaght.*] *Q.* (After reading Recommendation No. 19.) Now, firstly, do you say that those matters should not be legislated upon at all?
15418. *Mr. Bruce Smith* objected to the question.
15419. *His Honor.*] That is the question Mr. Ritchie was putting, and Mr. Lysaght took it up.
15420. *Mr. Ritchie.*] I prefer to have it put in the way that Mr. Lysaght has put it. If he answers that, it will answer me.
15421. *A.* I have not considered the question in that aspect very much; and I think it is really a matter for the Commission to decide.
15422. *Q.* Then you have no opinion to offer on the matter at all? *A.* No.
15423. *Mr. Lysaght.*] *Q.* Well, supplementary to that, you recognise, by receiving anonymous communications, that men are afraid to report? *A.* Yes.
15424. *Q.* You know that the directions of the Home Secretary are that the Home Inspectors shall receive anonymous communications and give them every attention? *A.* I do.
15425. *Q.* The same principle was recognised in England? *A.* Yes.
15426. *Q.* Now, if the Commission think there should be legislation upon that subject, what objection is there to that legislation being in the Coal Mines Act, which deals with a lot of other things besides the safety of the mine? *A.* I do not see that the case which you have put alters my opinion, Mr. Lysaght.
15427. *Q.* I want to know why it should not be in the Coal Mines Act, if at all?
15428. *Mr. Bruce Smith.*] I will ask your Honor, really, is this a matter upon which Mr. Atkinson's opinion can be asked? He is an expert in coal-mining, and this is really a question of legislation.
15429. *His Honor.*] A question of that kind had better be asked of a Parliamentary expert or a legal expert. I think it is hardly fair to put a question like that to a coal-mines expert.
15430. *Mr. Lysaght.*] With every respect, your Honor, Mr. Bruce Smith asked him:

> "*Q.* Well, Recommendation No. 19 was that question of a black-list. What do you say about that? *A.* Well, as this is a matter not affecting in any way the safety of the persons employed in or about mines, I am of opinion that it should not have any place in the Coal Mines Regulation Act. As to whether the question should be dealt with by legislation is a matter for the Commission."

15431. *Q.* Now, I ask you, having told Mr. Bruce Smith that you did not think it should have a place in the Coal Mines Act, why should it not have a place in the Coal Mines Act?
15432. *Mr. Bruce Smith.*] I understood that Mr. Lysaght was going to quote something to justify him in asking this question, because I asked Mr. Atkinson something. He has done nothing of the kind. I asked Mr. Atkinson, "What do you say about that?" And Mr. Atkinson simply said, as to the propriety of putting it in an Act, that is a matter for the Commission. Why should all this be raked up now; and what is the relevancy of quoting my general questions?
15433. *His Honor.*] It does not matter, Mr. Lysaght, whether it has been asked before. It is a matter for the Commission to decide whether it is a proper thing to waste time by asking a coal-mines expert a question on legislative policy which had better be asked of a Chief Secretary. If he had been a Chief Secretary for some years, it might be put.
15434. *Mr. Lysaght.*] Very well, Your Honor. I suppose Your Honor will take it that it is scarcely fair to ask Mr. Atkinson any questions on these new recommendations yet.
15435. *His Honor.*] If he prefers ——
15436. *Witness.*] I would prefer, Your Honor, to have an opportunity of considering them.
15437. *His Honor.*] Some of them may be simple enough; others may not be.
15438. *Mr. Bruce Smith.*] How many are there that are new?
15439. *Mr. Lysaght.*] Four, except this addition to No. 16 about the size of the manholes.
15440. *Mr. Bruce Smith.*] Generally I would ask that the same course be pursued in regard to these that has been pursued in regard to the others—that Mr. Lysaght's cross-examination of him should come after he has expressed his tentative opinion.
15441. *His Honor.*] Yes; but it is convenient for Mr. Lysaght to ask him his tentative opinion.

15442. *Mr. Bruce Smith.*] But he had the advantage in the other case of studying them word by word, and thinking them out.
15443. *His Honor.*] If Mr. Atkinson requires time to consider them, it is as well that he should have it But, as to the size of the manholes, that is a question he has already had time to consider: and now it is suggested that they should be a certain size; and that is a question that could be, reasonably enough, put to him.
15444. *Mr. Lysaght.*] *Q.* I think you have already said what you thought adequate? *A.* I should like to know what the proposal is.
15445. *Q.* Six feet high, 6 feet deep, and 3 feet wide, and to be whitewashed? *A.* Well, I think it would be better if I had a little time to consider that.
15446. *Q.* Regarding this addition to Recommendation No. 13—"Travelling and haulage roads, and other places necessary, to be properly watered; and all travelling, main, and horse roads to be 6 feet high? *A.* Yes; I should like that.
15447. *Q.* You approve of that? *A.* I do not say I approve of it; but I would like it. If the seam is only 4 feet high, it might become a question of a great deal of cost to maintain a 6-foot road, although, personally, I should like it.
15448. *Mr. Bruce Smith.*] *Q.* And it might become a danger to the roof? *A.* There is the question of cost in taking down the roof-stone.
15449. *His Honor.*] *Q.* Is it safe to interfere with the roof, or is it better not to interfere with the roof? *A.* I do not suggest that as a reason for not making it 6 feet high; but the principal question would be one of cost.
15450. *Q.* Supposing you had a roof which was in a safe condition, but might get into a hanging condition, what would you say as to the advisability of knocking holes in it, in order to make these manholes 6 feet high? *A.* The breaking of the roof?
15451. *Q.* Yes. Where you have a roof running from 5 ft. to 5 ft. 6 in. up, and you do not treat that as of sufficient height—that is a solid roof, immediately over the coal—is there or is there not a likelihood of an injurious effect by making holes in it to give this increased height to the manholes? *A.* In some cases I think so. I think it is unnecessary to define the height of travelling roads.
15452. *His Honor.*] This is a suggestion dealing with the height of the manholes.
15453. *Mr. Lysaght.*] No. We are on the travelling roads now. The suggestion was that all travelling, main, and horse roads be 6 feet high. Mr. Atkinson said he would like it, but there might be a difficulty in carrying it out.
15454. *Q.* Now, may I take it that, where the seam is 6 feet high or over, there would be no difficulty in carrying it out? *A.* Well, I think that the suggestion that I should have a little time to consider these matters might be carried out.
15455. *Q.* Then there is added to that, "The travelling and haulage roads to be properly timbered and kept clear of any tops that may have fallen"? *A.* Well, I understand that I am to have time to consider these.
15456. *Q.* Then, on the 18th Recommendation—the instruction of employees on the way out—this addition is proposed: "And that all escape shafts be properly equipped with means to draw men in case of accident, and proper means of signalling be also fixed"? *A.* Yes, I believe in that.
15457. *Q.* So that the one from Lithgow, and that from Newcastle—which says, "Proper machinery to be kept at the second shaft outlet to lift all employees to the surface within one hour"—are practically the same suggestion? *A.* Well, you continue to go on with these, and it has already been agreed that I should have time to consider them.
15458. *Mr. Lysaght.*] I beg your pardon. I thought it was understood that you could go on and answer some of them.
15459. *Witness.*] No; I prefer to have time.

Cross-examination by Mr. Wade:—

15460. *Q.* You gave, nearly a week ago, a number of suggestions that have been offered for allaying the dust in coal-mines? *A.* Yes.
15461. *Q.* One suggestion was the use of deliquescent salts, was it not? *A.* Yes.
15062. *Mr. Bruce Smith.*] I do not know that he suggested that.
15463. *Witness.*] No; I mentioned that they had been used.
15464. *Mr. Wade.*] I am coming to his suggestions now. He mentioned, first of all, suggestions put forward by different people. Now I am coming to his own particular view of the matter.
15465. *Q.* Would you suggest the use of deliquescent salts as a practical method? *A.* No, I would not.
15466. *Q.* Now, another suggestion which you quoted was spraying at the screens of the downcast? *A.* Yes.
15467. *Q.* That would be actually outside the pit? *A.* Yes.
15468. *Q.* Now, bearing in mind the relative positions of the screens and the tunnel mouth at Mount Kembla, do you see any occasion, even at the present moment, to suggest sprays at the screens? *A.* No; I do not think it would have the effect there of preventing the dust going into the tunnel mouth, which is the object of such sprays wherever they are used.
15469. *Q.* And there is a considerable distance between the screens and the tunnel mouth at Mount Kembla? *A.* Yes; I do not exactly know how far.
15470. *Q.* Sixty or 70 feet at least? *A.* I should think so, yes.
15471. *Q.* And a large portion of that is open air? *A.* Before you arrive at the underground.
15472. *Q.* There is a zinc roof, open on both sides? *A.* Yes.
15473. *Q.* And the screens face down hill, away from the tunnel mouth. *A.* Yes.
15474. *Q.* Another suggestion you have quoted is watering certain set lengths? *A.* Yes.
15475. *Q.* Do you think that, by itself, would be a certain safeguard against the spread of an explosion? *A.* If done thoroughly over a certain length, separating districts, it has been found to be possible to prevent the spread of explosions.
15476. *Q.* Has not experience shown that, in some instances, these lengths, being watered and damped, have not stopped the spread of explosions? *A.* No; I do not know of any particular cases where it has been regularly attended to.

15477. *Q.* Did not Mr. Hall say so, in the Pen-y-graig case? *A.* Yes. Mr. Hall mentioned what happened between the two districts in the Pen-y-graig Colliery.
15478. *Q.* And in that case had not that explosion travelled over a wet area of tunnel? *A.* I think he says that the districts were separated by a stone drift, and suggests that there was no coal-dust in that drift; although I do not know what guarantee he had that there was no coal-dust in the stone drift. On the other hand, there are numerous instances where explosions have been known to be stopped by wet lengths.
15479. *Q.* I see it is referred to here (page 399 of the evidence). Mr. Hall's opinion is, "I imagine that, at any rate in a coal-dust explosion, there will always be a pioneering cloud of dust travelling forward in advance of the actual flame, sufficient to feed the explosion for some distance when passing over ground either damp or free from dust"? *A.* Yes; I have read that.
15480. *Q.* So you have that element in every explosion in which coal-dust is concerned—there is a pioneering cloud of coal-dust in advance of the actual flame? *A.* Yes.
15481. *Q.* And, if you only water limited portions, you run the risk that the pioneering cloud of dust may be sufficient to carry the explosion over the damp part? *A.* Yes, if it is not sufficiently long.
15482. *Q.* So that you are really driven back to this, that, if you are going to water the roads at all, the partial application of water is not sufficient—it should be thorough and continuous? *A.* Well, it would be better, although there are several cases on record where the wet lengths have stopped explosions, and men have actually got out of the district.
15483. *Mr. Robertson.*] *Q.* Did the wet lengths at Kembla stop the explosion? *A.* Well, the explosion was confined to the No. 1 Right district.
15484. *Q.* But it came right out and wrecked the buildings at the tunnel mouth? *A.* Well, I could not describe the entrance to the tunnel, where there are some drops of water, as a wet length.
15485. *Q.* Is it not a fact that the tunnel, from the entrance right to the junction of No. 1, was always in a damp condition, and that there are sections along the No. 1 main heading itself, which are wet, and always were? *A.* Yes; there are places where, particularly, there is damp on the floor; but I do not know of any which could be described as sufficiently wet to constitute a wet length on that No. 1 Right.
15486. *Q.* But is not that main tunnel, from the tunnel mouth to the junction of the No. 1, damp; and has not it always been in a damp condition? *A.* Yes; there are drops from the roof in a few places.
15487. *Q.* But is not it all along? *A.* I think not sufficient to prevent the deposition of some dust on the side, for instance.
15488. *Mr. Robertson.*] Well, I beg to differ from you, Mr. Atkinson. As far as my observation has gone, that was always a damp section; and, moreover, it is not driven in the coal, but in the stone; and that was not sufficient to arrest the explosion.
15489. *Mr. Bruce Smith.*] Well, Mr. Robertson, is not there a very great difference between the generation of a fresh explosion in a wet place, and the passing of an explosion over a wet part of the mine?
15490. *Mr. Robertson.*] But here is an explosion carried right through a long damp section, 300 yards, I suppose, in length.
15491. *Mr. Bruce Smith.*] There is no evidence that any fresh explosion took place in that length.
15492. *Mr. Robertson.*] I did not say it was a fresh explosion; but I do say, here was an explosion that was carried right through this long damp section of 300 yards; therefore damp sections, unless they exceed 300 yards—I am assuming, of course, that that is the length of the section—will, in certain cases, fail to arrest the explosion.
15493. *Mr. Wade.*] *Q.* Now, let us take the first few hundred yards from the tunnel mouth in Mount Kembla to the junction of No. 1 Right, as a matter of fact the roof there is stone? *A.* Yes.
15494. *Q.* And the deposit of coal-dust in the roof is very slight indeed? *A.* Yes.
15495. *Q.* And are there not patches from time to time between the tunnel mouth and the 4th Right, the floor of which, at all events, was damp at that time? *A.* Well, I think that is so, more particularly on the travelling road, in two or three places.
15496. *Q.* But is not there a swallow somewhere between the 4th Right and the 2nd Right, a hollow where water collects? *A.* I do not think there is at that point.
15497. *Q.* Where is it, do you know? *A.* There is a little water on the inbye side of the 4th Right.
15498. *Q.* Do you know the 3rd Right, that is on the outbye side of the 4th Right? *A.* Yes.
15499. *Q.* Is not there a sump, or hollow, there for the collection of water; and is not the water drawn from that hollow, eventually, out of the mine by pipes? *A.* I think the hollow that you refer to is beyond the 4th Right.
15500. *Q.* But you do not know of any hollow anywhere near the 3rd Right? *Q.* I do not remember that.
15501. *Q.* Now, with regard to this question of watering certain sections, Mr. Hall is a man of vast experience? *A.* Yes, he is.
15502. *Q.* And a man whose judgment you rely upon, whose judgment you would not question, at all events? *A.* Oh yes, I would question him. I would not altogether agree with him.
15503. *Q.* It is a fairly responsible step to take, at the present day, is it not, to decline to recommend watering at all along the roads? *Q.* Yes, it is.
15504. *Q.* He has taken that step, has he not? *A.* Well, I think it practically amounts to that.
15505. *Q.* Here it is, page 1397, in the same extract from his report, "In this inspection district," that is referring to the district over which he has control? *A.* The Liverpool district.
15506. *Q.* "In this inspection district, attempts to deal systematically with the dust throughout the mine by means of water have been abandoned"? *A.* Yes.
15507. *Q.* And then his suggestion is that precautions should be taken to water in the vicinity of shots? *A.* Yes.
15508. *Q.* You can see this, that there is some risk that a damp area may not be sufficient to arrest the progress of an explosion? *A.* Yes, I think so.
15508½. *Q.* It is a question which has not been definitely decided as to what length is absolutely necessary, so that you are driven, logically, to this position, that the watering must be throughout the length and breadth of the mine—that is, logically, we will come to the question of practicability afterwards? *A.* I do not see that exactly. It is a matter of some difference of opinion yet, I admit; but I also say, and can show proof, that wet lengths have, in some cases, arrested explosions.

15509. *Mr. Robertson.*] *Q.* Do you know of cases where dusty places have also arrested the explosion; or, at all events, where the explosion has stopped at dusty places? *A.* Yes, I have also heard of that.
15510. *Mr. Wade.*] *Q.* Did not that happen at Camerton?
15511. *Mr. Robertson.*] *Q.* Did not that happen at Kembla?
15512. *Mr. Bruce Smith.*] It does not follow, because they stopped, that they were arrested.
15513. *Mr. Robertson.*] But they stopped; and, logically, one argument is as good as the other.
15514. *Mr. Wade.*] *Q.* Is not that what happened at Camerton, that the explosion was stopped by dusty lengths? *A.* I forget now; but sometimes the stoppage is attributed to the stoney condition of the dust where it has been stopped.
15515. *Q.* And also to the want of air, even on the main intake, arresting the explosion? *A.* I do not remember a case of that sort.
15516. *Q.* But you can conceive of that? *A.* On the main intake? It would be very improbable that there would be a shortness of air in an intake.
15517. *Q.* Well, leave that out;—say on a road where there is dust, and the dusty condition might be expected to feed the explosion, the explosion has not gone on, but has stopped, apparently from want of air, and not from want of dust? *A.* I think it is unlikely to happen.
15518. *Q.* But the difficulty you have to contend with, the risk, is this: that the pioneering cloud of coal-dust may be sufficient to cross over the damp area? *A.* Yes.
15519. *Q.* And the length of pioneering dust you cannot foretell? *A.* Not very well.
15520. *Q.* Now, would you suggest the watering of the haulage roads, speaking generally? *A.* Where dry and dusty. Of course, that is a term which has never been properly defined yet; and some care should be taken to define it.
15521. *Q.* Whatever it means, you have said, I think, that you would not apply that term to Kembla—a "dry and dusty" mine? *A.* I have said that, on certain portions of the haulage roads, you could call it dry and dusty; but that you could not call it altogether a dry and dusty mine.
15522. *Q.* You have told us, I think, that watering the floor may lead to a creep sometimes? *A.* Yes; it causes the floor to lift.
15523. *Q.* And watering the roof may lead to disintegration of the strata? *A.* Yes.
15524. *Q.* Do you think it would have any effect on the timber, supposing there is timber in the road that you are watering? *A.* Well, timber generally lasts longer in a dry mine than a wet one; and adding water to it may have the effect, to some extent, of rotting the timber.
15525. *Q.* That is, where the air of the mine is naturally damp, the timber perishes sooner than it does in a mine where it is dry? *A.* Yes.
15526. *Q.* And I suppose that watering it continuously would have the same effect, even in a dry mine? *A.* To some extent it might.
15527. *Q.* Could you say how many gallons it would take per mile to water the floor, say? *A.* Well, in order to water to any good effect it should be thoroughly watered.
15528. *Q.* Yes. *A.* Well, I have seen it estimated variously. Of course, it depends to a great extent on the quantity of air which is passing.
15529. *Q.* Take a mine of normal temperature first, and leave the hot ones till afterwards? *A.* It depends to a great extent on the quantity of air which is passing, because it will lick up the moisture; and, of course, as you suggest, it would depend on the temperature.
15530. *Q.* Take a mine with a normal temperature, and leave the hot ones till afterwards? *A.* I have seen a calculation that a quarter of a gallon to a square yard was sufficient to water the roadway.
15531. *Q.* Now, take the case of a mine with a high temperature, would the watering require to be done more frequently in that case? *A.* Yes.
15532. *Q.* And what would be the effect on the men themselves of continual watering in a mine of high temperature? *A.* Well, I think it generally has a cooling effect.
15533. *Q.* Would not it tend to make the air very moist? *A.* If it required an abnormally large quantity of water; although, where they have watered in dry and dusty and hot mines, I think the general effect has been to reduce the temperature of the air without adding to the discomfort of the workmen.
15534. *Q.* But, although you would have the reduced temperature, you would have much more moisture in the air, would you not? *A.* Yes; I suppose there would be.
15535. *Q.* Now, with regard to the removal of the dust bodily—do you think that is practicable—that is, carting the dust that lies on the floor out bodily? *A.* No; I do not think that is practicable.
15536. *Q.* And that has been condemned, has it not, by various authorities? *A.* Well, it is very often resorted to, even after the watering, to prevent the accumulation getting too great.
15537. *Q.* Well, of course, take this case, where a lump of coal may fall off the skip, it is only tidiness to clean that up? *A.* Yes, that is so.
15538. *Q.* But I am speaking, of course, of the fine dust that is deposited on the roadway, say, from the travelling of the skips, or anything like that? *A.* Yes; generally speaking, the idea of bodily removing the dust, with a view to ensure perfect safety, cannot be relied on; but there are cases where it is desirable to occasionally remove deposits of dust, especially if they do not water.
15539. *Q.* If they do not water occasionally, it ought to be removed? *A.* Although it cannot be relied upon as an effectually safe method, or practicable.
15540. *Q.* Now, with regard to all these explosions in England, which have given rise to the elaboration of the coal-dust theory, has not nearly every one of those been traced to a shot in the main road? *A.* Most of them; several of them have.
15541. *Q.* Have not most of them? *A.* Well, I could not say that most of them have.
15542. *Q.* Is not Tudhoe one of them? *A.* Yes.
15543. *Q.* Was not Seaham? *A.* Yes.
15544. *Q.* Usworth? *A.* Yes.
15545. *Q.* Those are the three leading cases? *A.* Yes; well, there were several others in South Wales.
15546. *Mr. Robertson.*] *Q.* Albion? *A.* Albion was very reckless blasting on the haulage road.
15547. *Mr. Wade.*] *Q.* Was not Camerton the explosion in Somerset that was said to be pure coal-dust? *A.* Yes.

15547½. *Q.* That was from a shot in the haulage road? *A.* Yes.
15548. *Q.* And what about Timsbury;—was not that the same? *A.* Timsbury was a shot as well.
15549. *Q.* In all those cases, was it not a fact that the vicinity of the shot had not been watered? *A.* Yes.
15550. *Q.* And there was dust? *A.* Yes.
15551. *Q.* So, do not you think that when you have a place that is dry and dusty in the vicinity of a shot, if you thoroughly allay the dust in the vicinity for practical purposes, you secure safety? *A.* If that is done, I think you do. Of course, there is just the remaining possibility of anyone tampering with the safety-lamp, which would not be covered by that.
15552. *Q.* But I will take a case even where you do not use the safety-lamp;—take the case of a man blasting a shot in a main road that is dusty; supposing the dust is either removed from the neighbourhood of the shot or it is properly damped, does not that practically secure safety? *A.* Yes; if that is properly attended to.
15553. *Q.* And you know that there is a certain limit to the flame that spurts out from a shot? *A.* Well, putting it in another way, 20 yards of watering is supposed to cover any possible danger from the flame.
15554. *Q.* That is all you want to guard against by watering—to have no dry dust in contact with the possible limit of the flame of the shot? *A.* In order to safeguard any ill effects from shot-firing.
15555. *Mr. Robertson.*] *Q.* In the case of those explosions you have referred to, can you say whether, in any one instance, safety explosives were used—"permitted explosives"? *A.* No; they were all gunpowder, blasting powder.
15556. *Q.* Or dynamite? *A.* Or, in the case of Albion, I believe it was dynamite.
15557. *Mr. Wade.*] *Q.* And the nature of the explosive, again, may further tend to the safety of shot-firing? *A.* Yes.
15558. *Q.* And the condition of the watering? *A.* Yes.
15559. *Q.* And by these "permitted explosives" you either limit the length of flame or else you do away with the flame altogether? *A.* Yes; you reduce the danger to a minimum.
15560. *Q.* Now, is not this a fact, too, with regard to all these explosions I have quoted—Tudhoe, Seaham, Usworth, and so on—that the haulage was at a high velocity? *A.* I think it was all on the main and tail rope system.
15561. *Q.* And, under that system, the trains travel up to, sometimes, 10 and 12 miles an hour? *A.* Yes, they do.
15562. *Q.* And they would be travelling out against the air? *A.* Yes.
15563. *Q.* So that you have the pace of the intake air meeting the pace of the outgoing train of coal? *A.* Yes, that is so.
15564. *Q.* And that fact tended to set up almost a cloud of dust, did it not, from the travelling train of coal? *A.* Yes; it tended to cause the deposition of more coal-dust on the roadways.
15565. *Q.* And that finer dust would probably settle on the roof and sides? *A.* The roof and sides.
15566. *Q.* Can you tell me this, either from your reading or your own knowledge, are not most of the coal skips in the old country open; that is, not dust-tight? *A.* Well, they are not dust-tight, but in South Wales they were a good deal more open than in other parts of the country.
15567. *Q.* In South Wales they are absolutely open? *A.* Yes; only two large bars across to keep the coal in.
15568. *Q.* So that, in those cases, apart from the deposition of the dust on the roof and sides, all the coarser dust could be shaken out from the tub on the roadway? *A.* That applies particularly to the South Wales description of tub.
15569. *Q.* So that it is in the haulage roads that you get the greatest deposit of fine dust? *A.* Yes.
15570. *Q.* Under those conditions, main and tail rope, travelling at a fair velocity? *A.* Yes.
15571. *Q.* And, to make the dust explosive, that is, to help in a coal-dust explosion, must not you have certain conditions operating, or combining, in the dust itself? *A.* Well, you require to have a cloud of dust.
15572. *Q.* There would be a cloud first? *A.* And the dust would be fine.
15573. *Q.* And the dust has to be of a certain fineness? *A.* It has to be fine; yes.
15574. *Q.* I mean, every fine dust will not necessarily be explosive? *A.* You are referring to coal-dust.
15575. *Q.* Yes; there must be a certain purity about it, must there not? *A.* Well, I am not very sure about that, whether they have found that any coal-dust was absolutely impervious to explosion.
15576. *Mr. Robertson.*] Would not the percentage of volatile matters be a factor? *A.* Yes, it would, certainly.
15577. *Q.* That is to say, given two dusts of the same degree of fineness, the one that contained the greatest percentage of volatile matter? *A.* Would be the more explosive.
15578. *Mr. Wade.*] *Q.* And the liability to explosion of coal-dust depends, to some extent on the length of time it has been lying exposed to the air? *A.* I think it is generally admitted that air passing over dust makes it more sensitive to explosion.
15579. *Q.* Now, so much with regard to the haulage roads, the main haulage road. Take the horse roads that are used for feeding the flats to make the train up; there is practically no dust in the roof of those horse roads, is there? *A.* Well, there may be a very little dust, after the passage of a large quantity over a certain roadway; but it would be much less than you would be likely to find in a haulage road.
15580. *Q.* And one reason is that there is less coal passing over that horse road in the course of a day? *A.* Yes.
15581. *Q.* And another reason is that the pace the horse travels drawing the skip is much slower than the pace the train travels? *A.* Usually, especially if it is main and tail rope.
15582. *Q.* I am speaking of main and tail rope, in drawing the comparison. Then, again, the dust you get in the actual working places has not got the age that the dust in the haulage road has, has it? *A.* No.
15583. *Q.* And, therefore, I suppose, it is less likely to be explosive? *A.* Generally speaking, yes.
15584. *Q.* And, in addition to that, where you are filling all the coal away, shandy-gaff, or shovel-filling, as they call it, you get less dust still in the working places? *A.* Yes, less than if they were filling with the fork.
15585. *Q.* Yes. *A.* Well, I do not know. There might be a little difference; but I do not think it would affect it much.

15586. *Q.* But you know that, when filling with the fork, there is always a certain amount of small coal left behind? *A.* Yes.
15587. *Q.* And when you are filling with the shovel it is all put in the skip? *A.* Yes.
15588. *Q.* Now, just take Kembla for a moment; they have the endless rope system there, have they not? *A.* Yes.
15589. *Q.* Do you know how long they have had that? *A.* I could not say exactly; but I think it was in operation before I came.
15590. *Q.* Do you know what pace those skips travel up? *A.* Two or 3 miles an hour, I think.
15591. *Q.* Three would be the very outside? *A.* Yes.
15592. *Q.* And are not these tubs dust-tight? *A.* The iron tubs?
15593. *Q.* There are a number of iron tubs which are absolutely dust-tight? *A.* Yes, but I could not say the same with regard to the wooden tubs.

[At 1 p.m. the Commission adjourned until 2 p.m.]

AFTERNOON.

(On resuming at 2 p.m. Mr. W. R. Pratt attended to take shorthand notes of the Evidence and Proceedings.)

ALFRED ASHLEY ATKINSON, previously sworn, was further examined as under:—

Cross-examination by Mr. Wade:—

15594. *Q.* In these horse-roads there is always a certain amount of impurities mixed with the dust *A.* Yes, with the floor-dust. Where the horses travel they disturb some of the stones composing the floor.
15595. *Q.* There is also the dung of the horses? *A.* Yes.
15596. *Q.* Do these impurities tend to make the coal less explosive? *A.* They do.
15597. *Q.* In regard to the travelling roads—there is no coal drawn through them at Kembla? *A.* No.
15598. *Q.* And do the horses travel in by these roads? *A.* I think they do in some places.
15599. *Q.* There is nothing in the condition of the travelling roads in Kembla to help an explosion from coal-dust? *A.* Part of the travelling roads are rather dusty.
15600. *Q.* Whereabouts? *A.* There is some dust between the 4th Right and the 5th Right.
15601. *Q.* Is not that dust largely mixed up with stone dust? *A.* To a certain extent it is.
15602. *Q.* Large pieces of stone are lying on the travelling road and also stone-dust? *A.* Yes.
15603. *Q.* Now, with regard to this opening at the 4th Right. Do you know how the coal came out from the 4th Right; was it by horses or by means of the rope? *A.* It would be attached to an endless rope just after it came out of the 4th Right.
15604. *Q.* Do you mean up to the point of what you call the edge of the goaf—up to that point would it be brought out by a horse? *A.* Yes.
15605. *Q.* And from that point just mentioned to where it actually joins the main No. 1 there would be an endless rope? *A.* It would join the endless rope on the No. 1 main level.
15606. *Q.* There is a pillar-line on the eastern side of No. 1 back heading? *A.* Yes.
15607. *Q.* Now, between the pillar-line and No. 1 main rope road, how does the coal travel—was it by horse? *A.* Well, I do not know whether the horse was taken to No. 1 main rope road or whether the coal was taken by hand a certain distance.
15608. *Q.* The endless rope did not operate anywhere inside the opening into the 4th Right off No. 1 main level? *A.* No.
15609. *Q.* Was there not a gutter near the 4th Right? *A.* I do not remember seeing a gutter; but I remember seeing some water between the travelling road and the goaf edge in the 4th Right.
15610. *Q.* When did you see that? *A.* After the explosion.
15611. *Q.* You were in the mine within twenty-four hours after the explosion? *A.* Yes.
15612. *Q.* Did you see where that water came from; did it come down the travelling road or out of the 4th Right? *A.* Out of the 4th Right I should say.
15613. *Q.* You say you saw some water lying there—to what extent was it? *A.* Sufficient to require me to be careful not to get wet in the feet.
15614. *Q.* Did it stretch across the road from one rib to the other? *A.* I think you could manage to get right up to the goaf edge with care.
15615. *Q.* Over what length did it extend—measured from the travelling road towards the goaf edge—an extent of feet, or yards, or what? *A.* I could not say exactly. I think the water would be in the last 20 yards from the travelling road—that is, as far as I can remember.
15616. *Q.* Now you saw some debris, or rubbish, heaped against the outbye side of some rollers, going inbye the 4th Right? *A.* Yes, I noticed that.
15617. *Q.* What was it composed of? *A.* Small pieces of coal, I think.
15618. *Q.* Were they like the chippings that came from hewing the coal? *A.* I should think that they were small pieces of coal which had dropped off the tubs in transit along the road.
15619. *Q.* In No. 1 road, do you mean? *A.* In No. 1 road.
15620. *Q.* Could these pieces have come from inside the 4th Right? *A.* I do not think so.
15621. *Q.* Why not. Why could they not have been blown there? *A.* Well, I think that anything coming out of the 4th Right would strike against the rib of coal in No. 1 main level.
15622. *Q.* Do you think the force would knock small pieces of coal to powder against that rib? *A.* Well, I would not say that it would knock the coal to powder, but it would reduce the size of any materials thrown out in that way.
15623. *Q.* But these pieces of coal which you speak of—were they not really the chips of coal which are made in hewing the coal? *A.* Yes, small pieces of coal.
15624. *Q.* Do you say that they could not come from the 4th Right or that they might have come from it? *A.* I think it is improbable they came from the 4th Right.
15625. *Q.* You made various visits to Kembla Mine from time to time since you have been Chief Inspector? *A.* Yes.
15626. *Q.* I suppose you know something about the output from the colliery? *A.* Yes.

15627. *Q.* It was pretty regular during the last eighteen months before the accident, was it not? *A.* I should think it was.
15628. *Q.* Do you know whether there are any difficulties in connection with the incline in the mountain? *A.* I have heard that statement in the Arbitration Court.
15629. *Q.* Then it requires that the work shall be done with some precision in order to maintain a regular output at Mount Kembla? *A.* Yes.
15630. *Q.* Would you not say that this pit is one of the best equipped collieries in New South Wales? *A.* Well, the general arrangements of the mine, as to districts and haulage, are very good.
15631. *Q.* Would you go further and say that it is one of the best equipped mines in the State? *A.* Yes, I am prepared to say so.
15632. *Q.* And that has been the impression produced on your mind from time to time by different visits to the colliery? *A.* Yes.
15633. *Q.* Now, did you know anything about a special book that the Manager kept for the use of the day deputies in addition to the book kept for the night deputies? *A.* Is that the book for making reports in not required by General Rule 4?
15634. *Q.* You know that under the "Coal Mines Act" the night deputy has to make reports of his work during the night in a book? *A.* Yes.
15635. *Q.* There is no provision in the Act for the day deputy to make any record of his visits during the day? *A.* No.
15636. *Q.* Would the keeping of a book for the day deputy be a check on his work during the day? *A.* Yes.
15637. *Q.* And it would be a further guide to all persons concerned as to the general condition of the mine? *A.* If they had access to that book it would.
15638. *Q.* Do you know whether a book of that kind was kept by Mr. Rogers? *A.* I believe so.
15638½. *Q.* For some years? *A.* I believe so.
15639. *Q.* You remember that all these books were put in evidence at the Coroner's inquiry? *A.* I do not remember that book. The books under General Rule 4 were.
15640. *Q.* Do you remember Evans, the deputy, being asked about the matter? *A.* I do not remember now.
15641. *Q.* They were some books in diary form? *A.* I do not remember.
15642. *Q.* Have you got Mr. Bates' note-book, which you were asked about yesterday? *A.* I have asked him to come to town and to bring it with him.
15643. *Q.* Now among the possible causes of explosion I think you mentioned the electric current—under what conditions would that be possible? *A.* The cable conveying the electric power breaking and causing sparks.
15644. *Q.* Has such a case as that actually happened? *A.* Yes, there has been an explosion from that cause.
15645. *Q.* Where? *A.* It is mentioned in the Imperial Inspector's Report, by Mr. Stokes, in the Midland district.
15646. *Q.* Recently? *A.* In the reports for 1901.
15647. *Q.* What caused the explosion—did the spark come in contact with dust? *A.* No, with fire damp.
15648. *His Honor.*] *Q.* It would be a white heat spark? *A.* Yes.
15649. *Q.* It takes a white heat spark to fire fire-damp owing to the hydro-carbons? *A.* Yes.
15650. *Mr. Wade.*] *Q.* I think fire-damp ignites at 1,200 Fah. which is just about white heat? *A.* Yes.
15651. *Mr. Robertson.*] *Q.* A red spark would not fire fire-damp? *A.* It might if it were in the mixture some time.
15652. *His Honor.*] *Q.* It takes a very great heat to fire it? *A.* To fire the hydro-carbons. A spark from the old steel mill used for lighting before the safety-lamp has been known to fire the gas.
15653. *Mr. Wade.*] *Q.* Where was this electric cable—in the main road? *A.* I think it was in or near the face of the long-wall working.
15654. *Mr. Robertson.*] *Q.* There was no one in the mine at the time? *A.* There was no one in the mine at the time.
15655. *Mr. Wade.*] *Q.* Another possible cause is from the compression of air—is not that what you say? *A.* No, I do not think that is possible.
15656. *Q.* How did you put it before—you made some reference to it? *A.* I made some reference to explosions contributed to by falls of stone.
15657. *Q.* In what way did you apply that? *A.* The explosion would be caused by sparks from the stone.
15658. *Q.* And not by the percussion? *A.* I do not think the percussion would be the cause.
15659. *Q.* Would it cause an explosion if there were no flinty substance? *A.* No.
15660. *Mr. Robertson.*] *Q.* Do you remember an explosion in an air-compressor in the Ryhope Colliery? *A.* Yes.
15661. *Q.* Was there any coal-dust present? *A.* Yes, there was a considerable amount of coal-dust and oily matter at the bottom of the receiver.
15662. *Q.* I thought that it was simply a deposit of oil? *A.* I think that it was determined that it was coal-dust and oily deposits.
15663. *Mr. Wade.*] *Q.* Did not Professor Bedson make the experiments with coal-dust alone? *A.* Yes.
15664. *Q.* Did he not prove that coal-dust would ignite by compression? *A.* I think that coal-dust ignited at a temperature of 300 Fah.
15665. *Q.* A compression of three atmospheres was it not? *A.* I forget just now. I think I shall be able to get the pressure. I have the book and can produce it if necessary and give the whole of the particulars.
15666. *Q.* You might produce it to-morrow. Will you not admit that it is practicable to produce the ignition of coal-dust without the contact of any flame at all, simply by heat? *A.* Yes.
15667. *Q.* Without any flame at all? *A.* Well, you have the illustration of the explosion in the air-compressor where there was an ignition of coal-dust mixed with the vapour from the mineral oil. There would of course be flame resulting from the ignition.
15668. *Q.* But the cause of the ignition was the rising of the temperature through the compression of the air? *A.* Yes, there was no flame originally.
15669. *His Honor.*] *Q.* Was there anything to show what temperature the air was raised to by the compression? *A.* I think the machine was working at, say 60 lb. to the square inch, and that according to calculations, if I remember rightly, produced a temperature of something over 300 Fah.

15670. *Mr. Wade.*] *Q.* Two hundred and ninety-one degrees will produce ignition? *A.* It did in certain experiments made by Professor Bedson.
15671. *Mr. Robertson.*] *Q.* Of pure coal-dust? *A.* I think it was, but I will have to look it up.
15672. *Mr. Ritchie.*] *Q.* Have you the result? *A.* Yes.
15673. *Q.* Can you produce it? *A.* Yes.
15674. *Q.* Perhaps you will do so? *A.* Yes.
15675. *Mr. Wade.*] *Q.* The temperature was calculated on a theoretical basis?
15676. *Q.* There was an air-tight cylinder and it is only a matter of the extent of compression? *A.* Quite so.
15677. *Q.* Do you know whether the temperature of the air can be raised by a violent impact of air against stationary air, in space, not in an air-tight vessel? *A.* I suppose there would be a certain amount of compression.
15678. *Q.* Once you got compression you would get heat? *A.* Yes, an increase of temperature.
15679. *Q.* If you have a rush of air going down the roadway of any mine, and it encountered other air there, would you get compression? *A.* There would be a certain amount of compression.
15680. *Q.* And excessive heat? *A.* A slight increase of heat.
15681. *Q.* Now a temperature of 300 degrees would burn a man's hair quite apart from the question of flame, when you find that it will ignite coal-dust? *A.* I am not sure, I should prefer to leave that to a medical man.
15682. *Q.* I suppose the highest you have gone through in this world is 180 degrees? *A.* Hardly that I should think.
15683. *Mr. Robertson.*] *Q.* Has 300 degrees been proved to ignite coal dust?
15684. *Mr. Wade.*] I have the papers here myself, 291 degrees is the actual figures given.
15685. *Q.* Talking of the tests of coal-dust made in England were not these very severe tests? *A.* They were.
15686. *Q.* Were they not much more severe than you would expect to find in the ordinary course of practical mining? *A.* Yes, I have no doubt the tests were made severe in order to give the most favourable results for producing an explosion of coal-dust.
15687. *Q.* There was an experiment made at the time of the Chamberlain Commission by means of firing a shot into a box, which had in it air, thoroughly saturated with dust? *A.* Dust was floating in the air.
15688. *Q.* The air was saturated with dust? *A.* I have no doubt, but I do not remember it.
15689. *Q.* It was shown that the dust would ignite through the shot being fired into it? *A.* Yes.
15690. *Q.* Was not the complaint made then that you could not have this test in a working mine? *A.* I think it was.
15691. *Q.* Was not the reason given that the conditions of the air for that experiment were such as could not be found in a mine, because, if they were, the air would not support life, owing to the air being so thick with dust? *A.* I do not remember that—it may be so.
15692. *Q.* With regard to the experiments which were made at Woolwich—they had the dust laid on top of the charge—that is a heap of dust? *A.* Yes, and the flame was propelled into that.
15693. *Q.* And a mound of dust was heaped up round the cannon itself? *A.* Yes.
15694. *Q.* So that you would say, under the conditions under which this experiment was made, that it would be fair to consider the Mount Kembla dust violently explosive? *A.* I do not exactly follow you.
15695. *Q.* I say that under the conditions under which this test was made at Woolwich it would be fair to consider that the Mount Kembla dust was violently explosive? *A.* Yes, as the result of the experiment.
15696. *Q.* You would not apply that remark, unqualified, to Mount Kembla coal-dust, under the ordinary working conditions, would you? *A.* Well, the conditions under which the tests at Woolwich were made were very severe, and would not be likely to occur even in a mine.
15697. *Q.* What I want to get at is that, this expression, "violently explosive" might convey to the ordinary mind—that is to the public—the idea that Kembla coal dust is dangerous? *A.* No, not in that way.
15698. *Q.* It is only explosive if the same conditions were applied to it in the mine as were applied to it when it was being tested? *A.* Yes.
15699. *His Honor.*] It is not that it explodes more easily than other coal-dust, but that it is more violent by comparison with other coal-dust when it does explode.
15700. *Mr. Bruce Smith.*] I think the degrees of explosibility are indicated by the three terms which are used—it is the capability of explosion.
15701. *His Honor.*] It is the force with which it explodes.
15702. *Mr. Bruce Smith.*] Yes, I see it is stated that under the heading of Violent Explosion, there was placed those ignitions in which the volume of flame was greater than in the other two cases.
15703. *Mr. Wade.*] *Q.* If you apply the test which was used at Woolwich, then the explosion of Mount Kembla dust would be a violent one? *A.* Yes.
15704. *Q.* You do not gather from that, that the Mount Kembla dust would be more liable to explosion than any dust which is characterised as "mild explosion"? *A.* I think that it is intended to convey that when it does explode it is more violent than some other dusts.
15705. *Q.* Not that it is more likely to explode under ordinary mining conditions? *A.* I think not.
15706. I may state that I have here, Your Honor, extracts given me, by Mr Sellers, giving a table showing the heat produced by compression.
15707. *His Honor.*] By whom is it prepared?
15708. *Mr. Wade.*] It is an article from the Transactions of the Federal Institute of Mining Engineers.
15709. *His Honor.*] Are these tests made in the cylinder by pumping air into it, or by ramming by a piston. It is easy to calculate the compression when it is forced into the cylinder by a pump, but I do not think it would be so easy to calculate it if the compression is produced by the ramming down of a piston. I have seen brown paper lighted by being rammed by a piston.
15710. *Mr. Wade.*] I think that one steady compression would do it also.
15711. *His Honor.*] I think that you could calculate the compression easily by pumping into a cylinder, but I should be very sceptical about the calculations made by the other process.

15712. *Mr. Wade.*] *Q.* Coming to No. 1 main road again, is this correct—in your opinion did any flame pass up the 4th Left from No. 1 main road? *A.* From my own observations I have not noticed any sign of flame, and a sample of coal-dust which was collected from the floor of the 4th Left was examined, and reported not to have coked.
15713. *Q.* Now the dust on those props in the 4th Left was on the side nearest No. 1 main road? *A.* I did not notice much dust on the props there, it was mostly on the bottom.
15714. *Q.* There were not too many props to start with? *A.* No.
15715. *Q.* Did the dust seem to have been deposited from No. 1 main rope road? *A.* I do not remember having observed it.
15716. *Q.* Did the dust on the floor have the appearance of having been blown into there? *A.* I think some of the dust had been taken there by the explosion.
15717. *Q.* Did it seem to have been blown there. Did it have the appearance that you would expect it to have if it had been blown in there by the wind alone? *A.* The appearance of the dust did not strike me in any way.
15718. *Q.* What was there in the appearance of the dust not consistent with it having been blown in there by the wind? *A.* There was nothing particular about the appearance of the dust.
15719. *Q.* Was it inconsistent with that theory? *A.* I think it might have been blown there by the wind, if the wind was sufficiently strong.
15720. *Q.* Suppose you were dealing with the 4th Left alone, and were asked to confine yourself to appearances there only. Was the appearance of the dust there in any way inconsistent with it having been blown there by the wind? *A.* I do not think it was.
15721. *Q.* Now, in that particular 4th Left, there happened to be more dust than in any other part of the mine near there? *A.* I noticed more dust there.
15722. *Q.* Now, take the 5th Right. Did you notice any signs of flame having passed down that Right? *A.* I cannot say that I did.
15723. *Q.* I think you stated that in coal-dust explosions, you may travel many yards from the initial point of the explosion without seeing any signs of the explosion? *A.* Yes, that has frequently been observed.
15724. *Q.* Has not this been observed—when you come to a larger air-surface, you find signs of the explosion? *A.* Yes, I think that is in accordance with some scientific opinions.
15725. *Q.* Was that not one of the conclusions established in the explosion at Camerton by a series of experiments made by Mr. Donald Stuart, where between the seat of each explosion he failed to trace any sign of explosion? *A.* That is so.
15726. *Q.* And where these different explosions were manifested was there not always a little larger air-space—do you remember that? *A.* I do not remember it.
15727. *Q.* Is not this the principle—you may get sufficient heat to distil the coal-dust, but not sufficient oxygen to bring about an explosion—you may go a little further on, and when you get an increased supply of oxygen that liberates the constituents in the dust, and you get an explosion? *A.* I think that Donald Stuart traced several continuous explosions in just the same way as is explained by Godfrey Lushington, when he states that one explosion follows on another.
15728. *Q.* With regard to Kembla, would an increased supply of oxygen bring about an explosion? *A.* I do not see how you could get an increased supply of oxygen in a single road.
15729. *Q.* Take the 5th Right—have you not got a larger junction there? *A.* Yes.
15730. *Q.* And you would expect to find some further increase of explosion there under ordinary circumstances? *A.* There is the separation of a door between the two roads in that case.
15731. *Q.* But the door was not standing on the No. 1 rope road, and, therefore, there was a bigger area there? *A.* Yes.
15732. *Q.* What is the difference between the ribs of the two headings? *A.* Ten yards.
15733. *Q.* And the door would be 5 yards back from the rib of the main road? *A.* Yes.
15734. *Q.* And the cut-through is 3 or 4 yards? *A.* Yes.
15735. *Q.* And about 5 feet high? *A.* Yes.
15736. *Q.* There would be a fair amount of oxygen there to help to develop the explosion? *A.* There would be a fair supply at that point.
15737. *Q.* If the explosion took place at young Morrison's light—what do you say about that? *A.* That was one of my opinions at first.
15738. *Q.* I am not dealing with the outbye side of the 4th Right, but with the inbye side. You said that the first explosion, inbye, took place at young Morrison's light? *A.* No; I think the first ignition took place somewhere near the 4th Left.
15739. *Q.* By whose light? *A.* Probably Morrison's.
15740. *Q.* I am speaking of young Morrison, the wheeler, who was found on the road outside the 4th Left? *A.* Yes.
15741. *Q.* You think that the first ignition, about the 4th Left, was at that point? *A.* I think it took place somewhere near the 4th Left, at Morrison's lamp.
15742. *Q.* Do you mean to say that there was an actual explosion? *A.* An actual explosion.
15743. *Q.* When you get an actual explosion, does not the force radiate in all directions? *A.* Yes.
15744. *Q.* Did you see any signs of radiation of force at the 4th Left? *A.* There were signs of force in the 4th Left; also inbye to the north, and also to the east.
15745. *His Honor.*] There is one point not touched on yet, and I do not know whether a deduction has been worked out from it. Assuming there was a body of inflammable gas, with its centre somewhere about the 4th Right, this is shot into the haulage road and distributed along that road, the air moves slowly up all the time inbye; the centre of the gas would, therefore, remain for an instant almost exactly opposite the 4th Right. Supposing that body of gas extends itself as it would do to the north, and reaches Morrison's light—and suppose it is ignited by that light, could the fact of that gas being lighted by Morrison—could that place be taken as the centre of the explosion—or would it not be that the lighting taking place at the extreme north end of the inflammable gas, it would flash to the south, and thus the centre of the explosion be about the centre of the body of gas. Thus, although the gas might be lighted at the northern end, would not the centre of the explosion be practically about the middle of the body of inflammable gas, assuming

that it was the least diluted there. Can you give any centre, for what would be an instantaneous beginning, or would you expect to find the centre in the body of the explosive mixture? *A.* I see your Honor's meaning. Of course as soon as the mixture came to be ignited the flame would travel rapidly through the body, and I would not like to say whether the actual centre of that mixture would be regarded as the centre of the explosion or not.

15746. *Q.* If there were a body of powder in the barrel of a gun, open at both ends, and you lit it at one end, you would expect the explosion to be almost simultaneous out of each end of the barrel, although the powder would not carry chemical action as quick as gas would? *A.* You are supposing that the explosion commenced in the middle of the barrel?

15747. *Q.* No; I am supposing that the powder is lighted at one end—but would it not act as if the centre of the explosion were the centre of the powder? *A.* Practically it would.

15748. *Q.* Practically the same thing would apply to gas—if anything, more so? *A.* I suppose it would.

14749. *Mr. Ritchie.*] *Q.* Did you intend, when giving evidence about the first ignition of gas by Morrison's light, to say that the explosion radiated from that point—did you intend to convey that meaning? *A.* Practically speaking—yes.

15750. *Mr. Robertson.*] *Q.* How do you account for the roller outside Morrison's light being drifted up with dust on the outbye side, the force evidently having come from the 4th Right? *A.* I think that is the position the stuff would be found in.

15751. *Q.* If the ignition took place at Morrison's light, the evidence of force from the 4th Right inbye seems inconsistent? *A.* I think it is possible that the deposit of this stuff may have been caused by the same force which displaced the canvas doors, although there is not much importance to be attached to the rubbish in front of the rollers.

15752. *Q.* It must have been a considerable amount of force to drift them up tight with small coal? *A.* A considerable amount of force, no doubt; but nothing like the force exerted in some explosions.

15753. *Q.* It is not easy to conceive that being done by a blast of air not caused by an explosion? *A.* No, it is not easy.

15754. *Q.* Did not the drift seem to increase in amount from the 4th Right? *A.* I did not observe that.

15755. *Mr. Wade.*] *Q.* Were there any signs of force going outbye from Morrison's light that you saw? *A.* There was very little on the road between the 4th Right and the 4th Left, so far as indications of force were concerned.

15756. *Q.* Was there not a rail which had been in position outbye of Morrison's light, found inbye of Morrison's light? [*No answer.*]

15757. *Q.* Look at the plan (No. 26). There is a point marked with D on the plan, just at the top of the 4th Left outbye; then you have a D outbye of Morrison's body. The rail on this plan is inbye of Morrison's body? *A.* I do not think it is fair to assume that the ignition took place exactly where Morrison's body was found.

15758. *Q.* He may have travelled? *A.* He may have travelled or been blown some distance.

15759. *Q.* Do you know where Morrison's work took him? *A.* His duty was to liberate the empty tubs outbye of the points.

15760. *Q.* Are not all the centres of force between the 4th Left and the 5th Right—inbye? [*No answer*].

15761. *Q.* Do you remember saying at the inquest that the contradictory forces which troubled you were between the 4th Left and Morris' place, and you spoke about Dungey's body and some wire entanglements? *A.* I do not remember just now.

15762. *Q.* What you said at the inquest is reported on page 60 as follows:—"The contradictory evidences of force in No. 1 Level were the contradictory statements with reference to the relative positions in which the body, arm, and head of Dungey had been found, the entanglement of the telephone wire amongst three empty tubs, it being attached to the in-end of one of these tubs, round the draw-bar, and threaded underneath one of the boards of the same tubs at the out-end, and generally speaking, the difficulty in ascertaining the direction of force amongst all those tubs between No. 4 Left to a point a little beyond No. 5 Right, and the general absence of timber supports between No. 4 Right and the face."? *A.* I remember that.

15763. *Q.* Leave out all about Dungey's body, the next difficulty was the entanglement of the telephone wire round the tubs? *A.* Yes.

15764. *Q.* Have you looked where the wire came from? *A.* From the outbye side.

15765. *Q.* These tubs had been driven inbye? *A.* Yes.

15766. *Q.* Another tub with wire round it was inbye of the 4th Left? *A.* Yes.

15767. *Q.* It was blown inbye too? *A.* Yes.

15768. *Q.* You found wire attached to the plug in the 4th Left? *A.* Yes.

15769. *Q.* Are there any indications of force between the 4th Left and the 5th Right, going outbye? *A.* No, I do not think so, unless there are contradictory evidences as to Dungey.

15770. *Q.* Taking the proved fact. There is only evidence of force going outbye between the 4th Left turn and the 5th Right turn? *A.* No, I do not think there is.

15771. *Q.* Is there any evidence of force going outbye anywhere between the 4th Left turn and the 4th Right turn? *A.* No, there is not.

15772. *Q.* Where do you say there was force to the east near the 4th Left? *A.* The force from the door opposite the 4th Left travelling road.

15773. *Mr. Robertson.*] What force does he mean?

15774. *Mr. Wade.*] He said that the force to the east was in the cut-through between the two main headings and the travelling road.

15775. *Mr. Robertson.*] The building stone and the door itself were distinctly blown towards the east.

15776. *Q.* That is in the 4th Left? *A.* Opposite the 4th Left travelling road.

15777. *Mr. Wade.*] *Q.* Between the 4th Right and the 5th Right, all the stoppings between the two main headings were blown towards the east? *A.* Yes, towards the east—towards the travelling road.

15778. *Q.* Do you remember whether those doors, opposite the 4th Left travelling road, were wooden doors *A.* I think one was a wooden door.

15779. *Q.* There was some building there? *A.* Yes, I think one was a wooden door.

15780. *His Honor.*] *Q.* Which one? *A.* The one opposite the 4th Left travelling road.

15781. *Mr. Wade.*] *Q.* Was it blown open, or was it blown down, or had it disappeared? It was forced through an upright towards the travelling road or return.
15782. *Q.* Was it on its hinges or just blown open? *A.* It was not blown open, it opened to No. 1 main level, but it was blown right through the upright on one side.
15783. *Mr. Robertson.*] That is consistent with what I said about the door on the 5th Right. It was blown against its natural position.
15784. *Mr. Wade.*] *Q.* Under ordinary conditions if the explosion were ignited by either Aitken's or Morrison's light, on the 4th Left, would you not expect the explosion to travel along the 4th Left feeding on the dust? *A.* You would, and it is probable the explosion has gone along there.
15785. *Q.* But there is no evidence of it? *A.* I think that the evidence I have heard with reference to the burning of Stafford, and also the evidence of a witness named Stafford who was working in Price's flat shows it.
15786. *Q.* That brings you back to the point that from facts outside the 4th Left you think the explosion may have passed through it? *A.* Yes.
15787. *Q.* And in the 4th Left there is no evidence of it? *A.* There is evidence of force.
15788. *Q.* I am speaking of an explosion. You said that what you say was consistent with a mere blast of wind? *A.* Quite so, if there were sufficient pressure.
15789. *Q.* Is it not usual, in cases of explosion, to find dust deposited on the opposite side to that from which the explosion came? *A.* It is usual, although there is occasionally a little deposit on both sides.
15790. *Q.* You occasionally get deposits on both sides? *A.* Yes.
15791. *Q.* You do not find deposits of coke-dust on the side on which a gas explosion came along? *A.* There is no dust at all in gas explosions.
15792. *Q.* I mean a gas explosion mixed with coal-dust? *A.* Yes.
15793. *Q.* You say that it is usual to find deposits of dust on the side opposite to that from which the explosion came? *A.* Yes.
15794. *Q.* Do you know of any instances where dust has been deposited on the side from which the explosion came and on that side alone? *A.* No.
15795. *Q.* Is it a kind of back lash which deposits dust on the side opposite to that from which the explosion came? *A.* Yes, it is a retrograde action.
15796. *Q.* Do you remember examining the props on the line of cut-throughs left of No. 1 rope road, next to Purcell's bord and Aitken's place? *A.* I saw a little dust there.
15797. *Q.* Was not the dust on the side of the props nearest main No. 1 heading? *A.* I think there was some dust on both sides.
15798. *Q.* Can you say whereabouts? *A.* Not far from Aitken's place on the inbye side.
15799. *Q.* Which side would that be? *A.* The greater quantity was on the west side.
15800. *Q.* The side nearest the actual working face? *A.* The working face is towards the north.
15801. *Q.* What was that, dust or coke-dust? *A.* I think it had been subjected to flame.
15802. *Q.* What was it—what would you call it? *A.* It was not so severely coked as some dust collected in the back heading, but I think it had been subjected to flame.
15803. *Q.* Are you prepared at the present moment to say flame rather than heat? *A.* I think it would be flame.
15804. *Q.* You can get dust partially coked by heat, without flame—you admit that? *A.* Yes, I believe you can.
15805. *Q.* Can you tell from the appearance of it whether it is the result of heat without flame, or the result of flame itself? *A.* I do not think you can.
15806. *Mr. Robertson.*] *Q.* Was any of that dust coked? *A.* Well, it was not coked to the extent that it was in the back heading.
15807. *Q.* Was it coked at all? *A.* Well, I did not have any of it examined by the microscope.
15808. *Q.* Was it not a glomerate? *A.* I do not know, I am sure.
15809. *Q.* You can form coal into a paste without much heat? *A.* Yes. It certainly was not coked in the sense that you make coke artificially, but I should say it had been deprived of some of its volatile hydrocarbons.
15810. *Q. Mr. Wade.*] Did you have any analysis made of the dust gathered from near Aitken's place? *A.* No.
15811. *Q.* How many samples did you obtain of what was coked dust? *A.* Twelve samples were obtained from the tunnel mouth down to a point, the last one being at the turn 100 yards from the 4th Left travelling road.
15812. *Q.* One hundred yards inbye? *A.* No, outbye.
15813. *Q.* Did you not have any samples taken on the inbye side? *A.* I took samples from the back heading, near where the Morrises were found, and examined them in the microscope, but I had no special report made.
15814. *Q.* You examined them microscopically from Morris' place? *A.* Yes.
15815. *Q.* You came to the conclusion that they were coked? *A.* Yes.
15816. *Q.* There is a distinct difference in appearance between the coked dust from Morris' place, and the dust you saw near Aitken's place? *A.* It was more severely coked in Morris' place.
15817. *Mr. Robertson.*] *Q.* Was not the dust which you took from Morris' place taken from the side? *A.* Some of it, and also some of it from the props.
15818. *Q.* Not from the floor? *A.* No.
15819. *Q.* The twelve samples were taken from the floor? *A.* No, from the timbers and the sides.
11820. *Q.* The dust from Morris' place was pastey? *A.* Yes, it was.
15821. *Q.* The others could be scraped off loosely? *A.* Mr. Watson collected them, he told me that he got them off the timbers near the roof.
15822. *Q.* They were not pasted on tight? *A.* Not in the same way as the deposits were found in the back heading near Morris' place.
15823. *Mr. Ritchie.*] *Q.* Have you got the particular points where the twelve samples of dust were collected from? *A.* Yes. Mr. Mingaye, the Analyst of the Mines Department made a report with reference to them.
15824. *Q.* Do you remember Adam Frost giving evidence at the Coroner's Court? *A.* Yes.

Witness—A. A. Atkinson, 11 February, 1903.

15825. *Q.* He placed himself in No. 2 Right close to the cross-cut heading? *A.* I think he said he was up there.
15826. *Q.* How far is that fron the 4th Right—by scale? *A.* I should like to know the exact points.
15827. *Q.* From the tommy dodd's? *A.* In a straight line.
15828. *Q.* No, as the air would go? *A.* Somewhere about 45 chains.
15829. *Q.* A little over half a mile? *A.* Yes.
15830. *Q.* How far is it from the 4th Right to the 4th Left? *A.* About 9 chains.
15831. *Q.* About 200 yards as near as possible? *A.* Yes.
15832. *Q.* Adam Frost said in his evidence "There was a great blast of wind came up the 2nd Right while I was there; it blew out my light." He also said "It nearly blew us off our feet," and likewise "I then walked 200 yards, towards the main road and met smoke and dust."? *A.* The force of the explosion was evidenced by about thirty tubs which had travelled up the 2nd Right rope road, and the force would naturally blow his light out.
15833. *Q.* Do you not think that his light was blown out by the displaced air, in front of the blast of wind? *A.* I think it would be blown out by the blast of wind itself.
15834. *Q.* Do you not think that the blast of wind would displace the air in front? *A.* Yes.
15835. *Q.* His light might have been blown out by the displaced air in front of the blast of wind that came from the 4th Right? *A.* I do not think that is at all probable.
15836. *Q.* Suppose there is a blast of air coming out of a narrow passage—do you not think that it would drive a certain portion of air in front of it? *A.* Yes.
15837. *Q.* Do you not think that what would put out Adam Frost's light was a cushion of displaced air—displaced by a blast from the 4th Right? *A.* I do not think so, having regard to the force shown to have been exerted in the 2nd Right. I think that that same force also blew his light out in coming up that 2nd Right rope road.
15838. *Q.* The air that blew his light out was the actual air that came out of the 4th Right? *A.* I do not say so.
15839. *Q.* Or was it a cushion of air in front of it—it makes all the difference? *A.* I think that the force exerted on those tubs was caused by the explosion and that the force of air going up that rope road blew his light out.
15840. *Q.* Would not the force of the explosion, as shown by the condition of the tubs, have displaced a body of air in front? *A.* Yes.
15841. *Q.* Could not that same body of pure air have blown his light out before the air from the 4th Right got near the light? *A.* I do not think that any force of pure air produced would be likely to disturb those tubs in the way they were disturbed.
15842. *Q.* Will you admit this—if you have a large body of air rushing through a narrow passage, that will drive ahead of it, like a cushion, some air already there? *A.* Yes.
15843. *Q.* Supposing a blast of air came in the 4th Right, before the actual blast which did the damage to the tubs in the 2nd Right, and it drove before it a certain body of air in advance? *A.* I do not think that any force of air that came out of the 4th Right in that way would disturb the tubs in the way they were disturbed.
15844. *Mr. Bruce Smith.*] *Q.* You mean not air alone? *A.* No.
15845. *Mr. Wade.*] *Q.* Call it air or gas, or whatever you like—would not whatever it was displace in front of it a certain body of pure air? *A.* Yes.
15846. *Q.* And is it not probable that Adam Frost's light was put out by the pure air which came in advance of the explosive air from the 4th Right? *A.* Yes, I think that is possible.
15847. *Q.* Would not the same explanation account for Hammon's light being put out? *A.* I think that might be the case if the force of air was sufficient.
15848. *Q.* Then the force of air which was displaced would put out Hammon's light? *A.* I do not think Frost's light or Hammon's light would be put out by the force of air and gas which came out of the 4th Right.
15849. *Q.* No, I have been saying that all along. The explosive air would split—inbye and outbye. Would it not drive before it a small quantity of air that did not come out of the 4th Right? *A.* Yes, no doubt it would.
15850. *Q.* Would not the cushion of air, not coming out from the 4th Right, be the air which in all probability put out Hammon's light? *A.* No, I do not think so.
15851. *Q.* Why not? There would be a cushion of air in front of the blast? *A.* Hammon was working through some doors from the No. 1 main level.
15852. *Q.* Could not the blast go by the travelling road in the 4th Right? *A.* A certain force might go up the travelling road.
15853. *Q.* And would not the explosive mixture have in advance of it a certain cushion of air that did not come from the 4th right? *A.* Yes.
15854. *Q.* Would not the air, not coming from the 4th Right, be the cause of the light being put out—I mean the cushion of pure air, before the explosive mixture got to it [*No answer.*]
15855. *Mr. Bruce Smith.*] I think this is a positive form of questioning.
15856. *His Honor.*] Mr. Wade is asking the witnes whether he will or will not assent to a hypothesis.
15857. *Mr. Wade.*] I am asking about a cushion of air, displaced in front of the blast.
15858. *His Honor.*] If there was a cushion of air in front it would put the light out, but that only goes to show that if the conditions were such as you say, a second explosion would not take place from the naked light as the cushion of air would blow it out.

[The Commission at 4 p.m. adjourned until 10 o'clock the following morning.]

THURSDAY,

THURSDAY, 12 *FEBRUARY*, 1903.—10 *a.m.*

[*The Commission met at the Land Appeal Court, Darlinghurst.*]

Present:—

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq., Commissioner. | D. RITCHIE, Esq., Commissioner.

Mr. Bruce Smith, Barrister-at-Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf of the Crown.

Mr. A. A. Lysaght, Solicitor, appeared on behalf of—

(*a*) the representatives of deceased miners, wheelers, &c. (victims of the explosion);
(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.);
(*c*) the Illawarra Colliery Employees' Association (the Southern Miners' Union).

Mr. C. G. Wade, Barrister-at-Law, instructed by Mr. F. Curtiss, Solicitor, appeared on behalf of the Mount Kembla Coal and Oil Company (Proprietors of the Mount Kembla Mine).

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings).

Mr. A. A. ATKINSON, previously sworn, was further examined as under :—

Cross-examination by Mr. Wade (continued) :—

15859. *Q.* I have found that passage, Mr. Atkinson, that I was referring to about the character of the dust that is necessary to promote or encourage an explosion. It is Question No. 2213 in the Chamberlain Royal Commission. This is a question by the Chairman to Mr. W. N. Atkinson :—

"*Q.* Now, the conditions which you think are necessary are, first, a requisite degree of fineness ; secondly, "a sufficient quantity ; and, thirdly, an exciting cause like a blown out shot ? *A.* Yes ; and purity."

That covers the position I put to you yesterday, does it not ? *A.* Yes ; that is, with coal-dust and air alone.

15860. *Q.* Yes. Now, is not one of the characteristics of a fire damp explosion the shattering effects that are produced ? *A.* Yes ; there is a force expended in all directions from the centre at the commencement.

15861. *Q.* Is not the distinction this : that the force is shattering rather than driving : take its action on a stopping, for instance, does not it tend to shatter that stopping rather than to blow it away ? *A.* No. I think it would blow it away, in the same way as a coal-dust and gas explosion. I am unable to make any clear distinction in that way.

15862. *Q.* At a point at the seat of the actual explosion, do not you get a great concussion and rapid expansion ? *A.* Rapid expansion, and, consequently, force.

15863. *Q.* And is not the result more likely to be a shattering than if you have a blast coming up ? *A.* I am unable to make the distinction in that way ; but a purely gas explosion is very local in its effects, as compared with a coal-dust and gas explosion.

15864. *Q.* I do not say it is local ; but I take the actual locality where its effects are shown, are not the effects more a shattering than a blowing away ? ——

15865. *Mr. Robertson.*] *Q.* Would not it be the same distinction as, say, between dynamite and gunpowder ; they are both explosions, but the one is more rending than shattering ?

15866. *His Honor.*] *Q.* After all, would not it depend, to a great extent, upon the mixture ? *A.* Yes ; the explosion would probably be more rapid than the coal-dust explosion.

15867. *Mr. Robertson.*] *Q.* As a matter of fact, a coal-dust explosion is really a long drawn out thing, comparatively speaking ? *A.* Yes, it is slower than the pure gas explosion.

15868. *Mr. Wade.*] *Q.* However, you draw no distinction even at the seat of any particular explosion ? *A.* I am unable to make any clear distinction in that way that you indicate.

15869. *Q.* Well, in this main No. 1 at Mount Kembla, you found no doors smashed up, for instance, did you, or anything like that—no wooden doors, to be quite correct ? *A.* No, I do not think any of them were smashed up.

15870. *Q.* For instance, this door in the cut through between the two headings near the 5th Right ; that, apparently, I think, was blown through its stopping rather than smashed ? *A.* It is the one opposite the 4th Left travelling road that shows the most distinct signs of force.

15871. *Q.* Yes ; and that was a case where it had been apparently blown through its stopping—it was not in any way smashed ? *A.* It was forced through its upright.

15872. *Q.* I have not been able to follow your evidence very closely ; but do I understand you to say that, after the first ignition took place at Morrison's light, there was a further ignition at the light of Morris ? *A.* Oh, I think that the whole thing, once commenced, was continuous ; but I think it is possible that there was a further increase of force, due to a small percentage of gas in the air, near the face of those headings.

15873. *Q.* Then, do you say there was flame between the point where Morrison's light was and close to the face of No. 1 heading ? *A.* That is the back heading ?

15874. *Q.* Yes, where you say there was a further access of force ? *A.* I think so.

15875. *Q.* The flame would not come into being at Morrison's light and then die out, would it ;—there must have been a flame through the whole of that distance ? *A.* It is very difficult to understand the passage of flame in an explosion. There appear many instances where, over long distances, there are no evidences of flame ; but where it is well known that the explosion has passed.

15876. *Q.* Yes, and is not it also admitted in those cases where you have an explosion at A, and then a length of road with no signs of flame, and an explosion at B, that the conditions at B have brought about a fresh explosion, and, possibly, a fresh flame ; and that there may have been no flame between A and B ? *A.* Yes, I think the explanation is given somwhat in that way.

15877. *Q.* That is, you may get an increased supply of air at the second point B, which will bring about a condition of explosiveness which did not exist between A and B ?

15878. *Mr. Robertson.*] *Q.* Is it not that the intensity of the explosion is increased by the addition, possibly, of more air ? *A.* Yes, there are very distinct evidences of increase of force at different points in coal-dust explosions.

15879.

15879. *Q.* But they are not separate and distinct explosions? *A.* Well, it is very difficult to separate them, there being all one continuous action, as it were, by different degrees of intensity at different spots. It is all one continuous action.

15880. *Mr. Wade.*] *Q.* What I want to know is this: between two points, A and B, which evidently are the seats of two explosions, can you have, between those two points, intense heat without actual flame? *A.* I think that is the evidence afforded by many explosions—by the opinions on many explosions of experts.

15881. *Q.* Then what brings about the evidences of a second explosion is an increased supply of air—is not that supposed to be so? *A.* I should think so; that is the only supporting agency for the combustion.

15882. *Q.* So that, as the area narrows, you would be less likely to find an increased supply of air, and, therefore, a further access of force—is not that so? *A.* Unless there were suitable openings at intervals, affording fresh air.

15883. *Q.* Is there anything in the face at No. 1 heading which, you think, would give an increased supply of air, that would, in its turn, lead to a fresh access of force? *A.* Yes, I think that the fact that there would be a scale of air, probably, always going up the back heading itself——[*Interrupted.*]

15884. *Q.* Where from? *A.* From the 5th Right.

15885. *Q.* Then it would come in at the junction of the 5th Right, do you mean that, where the 5th Right joins the back heading? *A.* Yes.

15886. *Q.* If that is so, would not you expect to find your increase of force at the 5th Right, rather than 100 yards farther up—you see the air is quite fresh at the 5th Right? *A.* No; I am suggesting that there is an independent supply of air, which goes up the back heading towards Morris' place, and which would assist in any increased combustion near where they were.

15887. *Q.* You see there is a door, marked "D" on the plan, between the back heading opposite the 5th Right and the front heading? *A.* Yes.

15888. *Q.* Was not that door between those two headings blown from the front heading to the travelling road? *A.* The buildings at the side of the door certainly were.

15889. *Q.* And the door was open? *A.* The door was open.

15890. *Q.* So, evidently, the force had gone in there from the front heading? *A.* Yes.

15891. *Mr. Robertson.*] *Q.* Was not this cut-through opposite Morris' place the only opening on either side of the No. 1 main heading from the 4th Right not closed by a dirt-stopping or a door? *A.* The cut-through on the outbye side of that was the one through which the air travelled to Morris. The other places were closed.

15892. *Q.* That is the place I mean: all the other cut-throughs or haulage roads were closed by doors? *A.* Doors or stoppings.

15893. *Q.* So that this cut-through would be the only possible place where there would be an access of oxygen—fresh air? *A.* Well, there is always a scale of air through doors.

15895. *Q.* I know that; but that is the only place where the explosion could expand, and lick up, as it were, fresh oxygen? *A.* With the exception that a small quantity of air would scale through the door and go up the back heading.

15896. *Q.* Quite so; but this is the only opening from the 4th Right all along that main heading not closed by a stopping or a door? *A.* That is so, the cut-through on the outbye side of the cut-through opposite Morris' place is the cut-through through which the air goes to the Morrises.

15897. *Q.* And, if explosions increase in intensity in the neighbourhood of larger areas, that would be the place where it would increase in force? *A.* With an additional supply of air, no doubt.

15898. *Q.* Yes, but that is the only place where it could? *A.* I do not exactly follow you on that.

15899. *Q.* Well, you know, I suppose, what is Donald Stuart's theory. Mr. Wade is explaining it now. It is that the cause of increased zones of intensity in explosions is due to larger areas of roadway supplying increased volumes of air? *A.* Yes, I believe that is his theory.

15900. *Q.* Well, this is the only point where that could take place along the main heading? *A.* Which point?

15901. *Q.* That cut-through next to Morris' place where the air divided. Do you see, Mr. Atkinson, that cut-through that supplied Morris' place with air is the only opening from the 4th Right right into the main heading face; every other opening is closed up by ——? *A.* By either wooden doors, or stoppings, or canvas doors.

15902. *Q.* Then that is the only opening where this could take place, this expansion? *A.* Well, at the 4th Left there were only canvas doors.

15903. *Q.* But it is closed by a canvas door? *A.* Well, canvas doors do not so effectually prevent air going through, as wooden doors, or stoppings, say.

15904. *Q.* No doubt, but to some extent they do? *A.* To some extent they do, yes.

15905. *Q.* What I want to find out is this, that the only possible place where this increased area of roadway is to be found is at the cut-through supplying Morris' place with air; all the others are closed by doors and stoppings? *A.* Yes, that is correct; but these places are closed by either doors, or stoppings, or canvas doors.

15906. *His Honor.*] There is one element that has been lost sight of all through, it seems to me, in these assumptions; and that is, that, in enclosed tunnels—I mean that we may treat them as more or less enclosed spaces—there is a tremendous compression of air in front of the mass behind that we call the explosion; and as it progresses that compression keeps increasing, until, in point of fact, a certain tension is arrived at which enables the supply of oxygen to be sufficient—that is, of course, that nitrogen and oxygen mixed are compressed into a smaller compass—and, in point of fact, that oxygen is the supply for a fresh ignition, quite independently of any larger chamber to which the explosion reaches; that supply, ahead of the explosion, can always be considered to, at different intervals, possibly, complete the conditions of explosion; so that you would expect, if the flame reached through (a kind of flame), to find a series of explosions following one another almost instantaneously, in any case, if the explosion runs down a long tunnel.

15907. *Q.* Is not that the case? *A.* In the case of a coal-dust explosion.

15908. *His Honor.*] There you have the element of the coal-dust; that is the fuel; and the other element you want is oxygen. If you have sufficient heat to cause an explosion, you have the chemical elements of explosion continually travelling, one being the oxygen, as the expanding gas forces it on from behind; and the other the coal-dust, the fuel, present in the air, picked up, and driven along by the pad of air that is being forced along ahead of the explosion, and with the explosion. Explosion of course is a term which means a great deal.

15909. *Mr. Bruce Smith.*] It presupposes a starting force.

15910. *His Honor.*] I do not see where the necessity comes in of assuming large areas, or openings, as it were, in the tunnel, to be arrived at for the purpose of enabling you to get a fresh supply of air ; because there is the air in front of the explosion all the time, partly exhausted, as the explosion goes on, by the explosion (partly exhausted of oxygen), but fresh oxygen being continually arrived at. As this explosion travelled it would keep the column moving, and compress it.
15911. *Witness.*] I think Mr. Wade is referring more particularly to Donald Stuart's theory. He has devoted a great deal of time to explosions.
15912. *His Honor.*] That is practically another phase of what I suggest ; but is it necessary to assume anything, for the purpose of putting this theory into practice, more than what we will call a mere gun-barrel ?
15913. *Mr. Wade.*] Only this, your Honor, I understood that, in working out this theory, and drawing these deductions which he drew, Stuart based his conclusions on the fact that, in those two explosions in Somerset, at Camerton, and Timsbury, there was a series of seats of explosion, showing evidences of great force, and deposits of coal-dust ; and at each of those seats of explosion there was evidence of increased space ; from that he drew his conclusions that the increased access of oxygen from these increased spaces would lead to an access of fresh force to the explosion. Our case is not that of a coal-dust explosion. What we propose to submit is that by the mere compression of air in a cylinder you can get your heat, and you can get your coked dust, without an atom of further air or gas. The No. 1 Right here is a dead end, and may be treated for the purposes of the argument as a cylinder.
15914. *Q.* Do you believe in that theory or not ? *A.* I cannot follow Donald Stuart altogether ; in fact I think that, although he was regarded as a man with a good deal of knowledge on these subjects, many men were not able to follow him in his deductions where he attempted to define as many as seventeen or eighteen separate and distinct explosions—at Camerton, I think it was.
15915. *Q.* Well, has any suggestion ever been offered with regard to those separate explosions at Camerton which you think is more plausible than Stuart's ? *A.* Well, I am not able to say just at the present moment ; but there have been discussions in some of the Institutes, where many of the members did not agree with him, and were not able to follow him in his deductions.
15916. *Q.* I may take this, then, assuming for the moment that theory of Stuart's to be true ; then, as Mr. Robertson said, the only place where there is actually an opening for a fresh access of air is the cut-through just outbye of Morris' place ? *A.* Yes, the only opening.
15917. *Q.* So that, if his theory is correct, you would expect indications of the seat of a more intense explosion just there, would you not ? *A.* Yes.
15918. *Q.* You do not get that, do you ; you have not got any evidence of that, have you ? *A.* No, there was no very great exhibition of force just at that point.
15919. *Q.* Then again, you mentioned the scale of air that comes through from the 5th Right ; well, if the scale was to have any effect at all, it would take effect at the 5th Right, would it not, in giving a fresh supply of oxygen ? *A.* No, I do not think so. I referred to the air which was travelling up the back heading. After the explosion reached the face of the back heading there would be a volume of fresh air in the back heading from the 5th Right.
15920. *Q.* Will you not admit this, that some of the air which came from the 4th Right went up the back heading to start with ? *A.* In the travelling road ?
15921. *Q.* Yes, in the travelling road ? *A.* Yes, no doubt there would be a certain amount of force in that direction.
15922. *Q.* And the force in the main heading evidently broke into the back heading through all those cut-throughs, and through the door at the 5th Right ? *A.* Yes, the force was in the direction of the travelling road at the stoppings between the 4th Right and the 5th Right.
15923. *Q.* And, if the air was explosive at the 4th Left, there is no reason why it should not be explosive when it got to the point of the 5th Right ? *A.* No.
15924. *Q.* Then you would expect, if the fresh oxygen is to help it, that the effects would be shown at the 5th Right ? *A.* I think there were some effects in that vicinity.
15925. *Q.* What did you see there ? *A.* Between the 4th Left and the 5th Right the telephone wire and the tubs were disturbed.
15926. *Q.* But the scale of air could not operate before the blast got to the 5th Right. You are talking of points outbye. The point where the scale of air could operate to add fresh oxygen would be at the 5th Right ; would it not, if at all ? *A.* Yes, about the 5th Right.
15927. *Q.* At the 5th Right, about that wooden door, did you see any signs of greater intensity of force : *A.* The intensity of force does not seem to vary much as between about the 4th Left and the 5th Right.
15928. *Q.* And the only actual force, actually off the main No. 1 road near the 5th Right, was that door in the cut through which was blown towards the 5th Right ? *A.* The only force off the No. 1 Main Right ?
15929. *Q.* Once you leave the No. 1 Main Right ? *A.* Yes, the stoppings and the doors in the main heading were the principal indications.
15930. *Q.* And they are much the same all the way along, as far as indications of force go ? *A.* Yes.
15931. *Q.* What is your reason for saying that there was probably gas in the face of No. 1 main heading, the back heading ? *A.* Gas was found there four days after the explosion ; it was evident that a certain quantity was issuing.
15932. *Q.* Issuing from where ? *A.* From the coal.
15933. *Q.* Where ? *A.* Near the face of the headings.
15934. *Q.* No. 1 heading ? *A.* The No. 1 headings ; and I think it is possible that there may have been a small percentage of gas in the air when the explosion occurred.
15935. *Q.* Was not the air short circuited, shortly after the explosion at all events, by this door at the 5th Right being opened ? *A.* Yes.
15936. *Q.* So that there was no current of air operating on the face of No. 1 ? *A.* If there were any, there would be very little. The ventilation would be altogether deranged, of course.
15937. *Q.* Would it be fair to say this, that there was, practically, no current of air operating on the face of the No. 1 headings ? *A.* I think it would.
15938. *Q.* And you did not find that gas until four days after ? *A.* No.
15939. *Q.* And, if the gas was issuing, would not you expect it to accumulate there on the day after the explosion, and the day after that ? *A.* I should.

15940. *Q.* You would not expect that there would be practically nothing for two days, and then an enormous quantity four days afterwards? *A.* No, I should expect it to gradually accumulate.
15941. *Q.* Well, ¾ per cent., I suppose, is practically inappreciable? *A.* Except in its effects to make clouds of coal-dust more sensitive to explosion.
15942. *Q.* And you spoke of thousands of cubic feet being found four days after—if it was being given off from the face of No. 1 you would expect, probably, some thousands of feet, even two days after, would you not? *A.* I think there would be, proportionally, a smaller quantity, in regard to the time.
15943. *Q.* How many thousand cubic feet did you make it? *A.* The area from the point where the explosive mixture was found, and assuming that the same mixture was in the cut through and the back heading, would amount to about 12,000 cubic feet. Of course, I do not say that the whole of the 12,000 cubic feet were fire-damp.
15944. *Q.* You say the cubical contents of that space —— ? *A.* Were about 12,000 cubic feet; and there would be a certain percentage, I think, all through that cubical capacity.
15945. *Q.* How far from the face did you say that you found these signs of explosive gas? *A.* About 20 yards, I think it was.
15946. *Q.* Then, if it was giving off gas, as you think possible, you would expect to find a good deal more than ¾ per cent. at the very face, say, twelve hours after the explosion, would you not? *A.* Yes, I would expect more than that.
15947. *Q.* And, under the conditions of deranged ventilation, supposing it was gas, could not that gas have come there from the lower parts of the mine, have risen, even supposing it was fire-damp? *A.* It could have; but I think it is improbable.
15948. *Q.* Why? *A.* That is the highest point, or one of the highest points in the mine; and I think it is the position where gas is more likely to be given off than places at a lower level, especially having regard to the fact that they are headings going into the virgin coal.
15949. *Q.* Is there no fire-damp distilled, do you think, during the process of an explosion, and from the dust? *A.* Yes.
15950. *Q.* And might not there be fire-damp, generated by the distilling of the coal-dust, unconsumed? *A.* There might be; although I have never seen that theory advanced, so far as I remember, when fire damp has been found after an explosion.
15951. *Q.* And does not the distillation of the dust produce also carbon monoxide? *A.* Yes.
15952. *Q.* And there was carbon-monoxide in this pit, undoubtedly? *A.* Doubtless, yes.
15953. *Q.* In different parts of the pit? *A.* Yes.
15954. *Q.* Is not carbon-monoxide lighter than air? *A.* Just about the same specific gravity: a trifle lighter.
15955. *Q.* Is there any difference on the light of a safety-lamp between carbon-monoxide, and what you call fire-damp, that is between CO and CH4? *A.* No, it gives the same indication of a cap.
15956. *Q.* And carbon-monoxide, under certain conditions, is also explosive, is it not? *A.* Yes.
15957. *Q.* You say that this heading was going into the virgin coal, but the longer the heading stands, the more likely it is to drain, is it not, even if there is gas? *A.* Yes, that is so.
15958. *Q.* And do not you think, this having been standing for eight months, that that period would give ample time for any gas in that neighbourhood to drain out? *A.* Not altogether.
15959. *Q.* Is this correct, that a volume of air came out of the 4th Right, and some went outbye, and some went inbye? *A.* Mixed probably with some fire damp.
15960. *Q.* Some of that went up the main rope road; you admit that? *A.* Yes.
15961. *Q.* Did some also go up the travelling road? *A.* Yes, I think it is probable.
15962. *Q.* And, would some of the air, mixed with fire damp as you say, in the main rope road, be continually working in to the travelling road as it advanced, through these stoppings? *A.* Where there was any leakage, yes.
15963. *Q.* Or where it was blown down. Now, when the force came up to that cut-through outbye of Morris' place, how do you say it travelled then? *A.* There was evidently a force straight up the No. 1 main level to the face.
15964. *Q.* Straight up past Purcell's cut-through? *A.* Yes.
15965. *Q.* And what else? *A.* And there was evidently force which went along towards Purcell's, and along towards that direction.
15966. *Q.* And what about the back heading? *A.* There were evidences of force in the back heading as well.
15967. *Q.* Well, do you think the force came in the back heading from the front heading at the cut-through outbye of Morris' place. *A.* Well, I think part of it would come in there, and possibly part of it nearer the face.
15968. *Q.* Through the next cut through in advance? *A.* Yes, and the face cut through as well. It is really difficult, really impossible, to say how the force distributed itself.
15969. *Q.* Take the back heading: were the forces from the cut-through just outbye of Morris' place going towards the face, inbye? *A.* There was evidence of an inbye force just on the inbye side of the junction of Morris' place with the back heading, as shown by a small piece of canvas which was round the bottom of a prop. The canvas in Morris' place was disarranged, and had evidently been thrown towards the north.
15970. *Q.* That would be inbye, would it not? *A.* That is inbye.
15971. *Q.* What I want to know is this: Were all the forces in that locality going inbye? *A.* I do not remember anything in an opposite direction.
15972. *Q.* Then, if Morris was the man whose light ignited gas, the probability is that at that time there was inflammable gas 80 yards from the face: would not that be so? *A.* Well, it is not always a fair indication to assume that the position where men's bodies are found is the exact point where the ignition took place. As a matter of fact the bodies of the Morrises were about 80 yards from the face.
15973. *Q.* And do not all the evidences you have heard suggest that they were going in at the time they fell, rather than going out? *A.* Well, I did not see the bodies.
15974. *Q.* But you heard the description of their being found with their heads facing inwards, and this can or bottle rolled round a prop, or rather caught in a prop, lying not far from them? *A.* I have heard of that; but I forget just now the evidence with reference to the position of their bodies.
15975. *Mr. Robertson.*] *Q.* Do you know about that bottle? It might be as well, Mr. Wade, to explain that to Mr. Atkinson, if he does not know it. 15976.

15976. *Mr. Wade.*] *Q.* You did not see it? It has been described as a prop lying on the ground, and the leather strap attached to the bottle being caught on the end of the prop, as it were, and the bottle having been going in that direction (inbye), and the strap having caught on the prop, which detained it? *A.* I saw that; but I do not know how long after.

15977. *Q.* Was not Morris' son lying with his hand on the back of his head, and his pipe in his hand: would not that suggest that they were hurrying in that direction from their own place after the trouble began? *A.* If they were found with their heads lying inbye I would take that as the best sign that they had been going inbye. I do not know that I can attach much importance to the fact of his having his hand at the back of his head, or his pipe in his hand.

15978. *Q.* You would scarcely expect to have inflammable gas before the explosion 80 yards from the face? *A.* No, I would not.

15979. *Q.* And if it had been inflammable even 40 yards from the face, would not you expect it to have effect on Purcell long before this? *A.* If there had been much fire-damp in the headings I should have expected that.

15980. *Q.* I say, even taking 40 yards, that is half the distance from the face? *A.* Yes, I think if there had been 40 yards —— [*Interrupted*].

15981. *Q.* Then you would have expected Purcell to have lit the gas up, as the current came to him long before? *A.* Yes, I think so.

15982. *Mr. Robertson.*] *Q.* In that case the fire-damp would overlap the cut-through in which the air current passed for Purcell and the others on that side: if there had been 40 yards even the fire-damp would overlap the cut-through through which the air passed for Purcell and Aitken, and the other men on that side? *A.* I do not understand you.

15983. *Q.* If there had been even 40 yards of gas in the back heading it would overlap the cut-through through which the air passed for Purcell and Aitken, and the other men on that side? *A.* That is so, with the exception of what would scale through that canvas door on the main heading.

15984. That would be an inconsiderable portion of the main current? *A.* Yes, it would.

15985. *Q.* Therefore those places, Purcell's and Aitkens and the others, would have been fouled with fire damp from the back heading? *A.* Probably, yes.

15986. *Q.* But, is it not only probable, but certain: if the fresh air had to pass through fire-damp overlapping the cut-through? *A.* Yes, it is certain, if the fire-damp was in any quantity.

15987. *Q.* But is it possible that fire-damp could overlap the cut-through with the whole of that air current passing through it? *A.* Not without being carried away by the air-current.

15988. *Q.* The air-current must, almost certainly, have cleared the cut-through? *A.* Yes.

15989. *Q.* So that it is absolutely impossible that the fire-damp could have extended beyond the cut-through? *A.* At the time of the explosion?

15990. *Q.* Yes, it is absolutely impossible, unless on the assumption that Purcell and Aitken, and the other men there were able to work with naked lights in a foul atmosphere? *A.* I think it is very improbable; but there would be a certain scale of air through that door, which would have the effect of further diluting anything which came round from the face of the headings. In the conditions which you state I think it is probable that the air would be fouled in being carried along to those places, even having regard to the scale of air which would pass through the canvas door.

15991. *Q.* Do not you think the two things are inconsistent, the presence of gas, and men working with naked lights on the return side of the gas with impunity? *A.* Yes, I do.

15992. *Mr. Wade.*] Which is the cut-through? *A.* —— [*Witness pointed to the cut through on the plan.*]

15993. *His Honor.*] Mr. Wade, perhaps I have made a mistake as to the tenor of your cross-examination; but it seems to me that you were cross-examining Mr. Atkinson just now on the assumption that Mr. Atkinson was in favour of the theory that Morris' light was the light that caused the explosion.

15994. *Mr. Wade.*] No, not exactly. Evidence has been given here in Court by other witnesses that they are in favour of it.

15995. *Mr. Bruce Smith.*] Mr. Wade, I understand, is enlisting Mr. Atkinson against the theory advanced by other people.

15996. *Mr. Wade.*] Quite true. There are three theories here. There is Morris' place, and the 4th Right under two conditions.

15997. *His Honor.*] There are two theories as to the light that started the explosion, Morrison's and Morris'; they are rather likely to be confused, owing to the similarity of the names; and then there is a third theory, which is yours, that there was not an explosion of gas at all, and that, therefore, lights are immaterial.

15998. *Mr. Wade.*] Yes, but I do not know what view the Commission may take. They may take the view, if the evidence is not corrected, that the theory as to Morris' light was the correct one; and therefore I am trying to get out the facts.

15999. *Mr. Wade* (to Mr. Robertson.] You were speaking of the last cut-through, Mr. Robertson?

16000. *Mr. Robertson.*] Yes.

16001. *Mr. Wade.*] And Morris was found in the last cut-through but one.

16002. *Mr. Robertson.*] Yes.

16003. *Mr. Wade.*] *Q.* What was the distance that the coal face of the back heading was in advance of the last cut-through? *A.* Twelve or 14 yards.

16004. *Q.* Proceeding, now, from this line of cut-throughs opposite Morris' place to a point beyond Aitken's pillar, were not all the indications of force there uniformly from the direction of the main No. 1 going towards Aitken's place? *A.* Yes.

16005. *Q.* And do you remember Aitken's own body—that was also found inbye of his working place? *A.* About 12 or 13 yards on the inbye side of his working place, at the top of a bord.

16006. *Q.* There were, just alongside them, two skips, at the head of that bord? *A.* Between their bodies and their working place.

16007. *Q.* Two skips turned on their sides, evidently forced from the No. 1 main heading in the direction of Aitken's place? *A.* Forced towards the west.

16008. *Q.* And did you notice some canvas wrapped round a prop at the corner of Purcell's bord? *A.* I do not know whether I noticed that; but I did notice a bar with a screen on it for turning the ventilation up Purcell's bord—one prop was knocked out, and the loose end of the bar was forced some distance towards the west.

16009.

16009. *Q.* Do you remember seeing then a bit of canvas wrapped round the prop just on the western side of the place where the canvas door had been? *A.* I do not remember that.
16010. *Q.* There was a similar canvas door, or a similar screen, in the cut-through, to turn the air up into Tost's bord, the next bord to Purcell's, was not there? *A.* I do not remember that: the bord was not so far up, and possibly might not require that; but I could not say that it was not there.
16011. *Q.* With regard to this 4th Right, do you know how long that has been worked from the time it was first opened up? *A.* The coal workings, or the pillar workings.
16012. *Q.* The coal workings? *A.* I do not know.
16013. *Q.* For some number of years? *A.* I think so.
16014. *Q.* The first process would be to drive the headings, would it not, when you are opening up that area? *A.* Yes.
16015. *Q.* If there is gas, you generally find more gas in the headings when you are opening up a district, do you not? *A.* You do, yes.
16016. *Q.* Then, after those headings were driven, the ordinary practice is to drive the bords to extract the coal? *A.* Yes.
16017. *Q.* When that is being done the strata, if there is any gas, are being still further drained? *A.* If the gas is liberated by falls.
16018. *Q.* And by the extraction of the coal? *A.* The extraction of the coal in the bords?
16019. *Q.* Yes. *A.* Yes, if the roof falls, it will afford an escape for gas in the strata.
16020. *Q.* They work the pillars after they have driven a certain number of bords, do they not? *A.* Yes.
16021. *Q.* Is not the method adopted generally this, that the roof in the adjoining bords is allowed to fall, really to make the workings of the pillars safer? Leave out the last part of the question. When they are working the pillars the general practice is to allow the roof of the bords to fall from time to time? *A.* In many places they draw out the timber in the bords, and some of the roof falls.
16022. *Q.* And it generally falls, first of all, in a small fall, perhaps 2 or 3 feet in thickness? *A.* Generally speaking.
16023. *Q.* Then, after that, you get another fall, as a rule, do you not? *A.* In the bords?
16024. *Q.* In the bords—that is what I am speaking of at present? *A.* Well, if you get up to a hard stratum it may stand for a long time.
16025. *Q.* But sooner or later it comes down: is it not the whole point and purpose of coal-mining to let the roof fall and gradually become compact? *A.* I cannot say that with regard to the working of the bords. The intention is for that to take place after the whole of the coal is extracted, or in the Long-wall process of working.
16026. *Q.* Well, that is the process in Long-wall, to let the roof above gradually settle down upon the gob below? *A.* Yes.
16027. *Q.* And you get a fairly solid compact mass? *A.* Practically so.
16028. *Q.* Whether it is done sooner or later, the same principle applies when you are working pillar and stall: the roof by degrees keeps falling and falling until it is finally wedged down upon the stuff that has fallen; and that makes it fairly compact? *A.* Yes.
16029. *Q.* So that, when you have a large area of pillars worked out of a district, you may have an enormous vaulted roof over that area, where it has fallen? *A.* It is very difficult to assume the shape which the cavity above the goaf will take.
16030. *Q.* As a rule when the roof falls it tends to assume the shape of a dome, rather than the shape of a square room like this? *A.* Yes, that is the natural tendency.
16031. *His Honor.*] Are not a lot of these things either absolutely well-known to everybody, or almost self-evident? For instance, that seems to be a propostion which is so self-evident that it is hardly worth while putting it to an expert. Nobody would suppose that the roof would come down in the form of a cube.
16032. *Mr. Wade.*] Some people do say that. I have heard it sworn to in Court.
16033. *His Honor.*] We want to get the Inquiry through as quickly as possible, because I think the country is getting rather weary of this Commission, and thinks it is going too far.
16034. *Mr. Wade.*] Of course I know there are experts on the Bench, but I do not know what class of evidence they want. I will be glad if the Court will stop me if the Court thinks I am covering ground that is not required.
16035. *Q.* Is not the fact this, that, as the falls take place, any gas there may be in that locality is continually draining to a higher altitude? *A.* Yes, that is the natural tendency.
16036. *Q.* And the natural result too is that you get the surface falling in, and there is a natural chance for the gas to escape through the upper strata? *A.* In some cases, yes.
16037. *Mr. Robertson.*] *Q.* There is a limited extent in every mine to which the strata will fall; a vaulted roof would only be correct with reference to a small area? *A.* Yes. Although you may have a subsidence on the surface with a depth of 1,000 feet, I do not imagine that the vaulting takes place through all that depth.
16038. *Q.* You have had experience of working contiguous seams, that is to say seams within 30 or 40 feet of one another vertically? *A.* Yes.
16039. *Q.* And you do not find that the strata are disturbed up to the seam immediately overlying the one being worked? *A.* If you were taken the pillars out in the lower seam altogether you would find a disturbance in the upper seam to a certain thickness.
16040. *Q.* You would find it probably affected the holing in the upper seam; but you would not find the fall extending right up through a contiguous seam, say 40 feet? *A.* I was just going to illustrate it by a case where one seam about 4 feet, or 4 ft. 6 in. thick was taken out 84 feet below another seam, which was worked subsequently to the pillars in the bottom seam, and in some cases the top of the seam had left the roof a little, sagged a little.
16041. *A.* That was subsidence? *A.* Yes.
16042. *Q.* But the strata below had not broken up to that point? *A.* No; there was no evidence of that sort to interfere with the working of the top seam.
16043. *Q.* So that all the vaulting or caving of the roof is limited; it chokes itself, the falling of the roof chokes or fills the cavity up? *A.* Yes.

16044. *Q.* With regard to this current of air, the explosive mixture, that came from the 4th Right, do you say that you think that would come from the strata? Do I understand you to say that the gas which came out of the 4th Right had come from the strata? *A.* Yes; having regard to the fact that I have not been able to hear of any gas having been found in that district, I think it is probable that it came from the strata.
16045. *Q.* And it was liberated, you mean, on that day by a fall of some of the roof? *A.* Yes.
16046. *Q.* But you do not expect, when the roof is falling, that one slab will fall, and another slab will fall immediately from the same hole that that has come from, from the top of it, do you? I will put it this way: you have quoted a continuous fall of the roof, do not you mean by that that the exposed surface has broken off, and, although it has all come down together, it may have come at different intervals of time from different parts of the exposed roof; or do you mean that a stone may come out of a particular part of the strata, and then another stone may come out from the same locality that the first came from, and on top of it? *A.* I think it was one continuous large fall; and it is really difficult, and almost impossible, to differentiate exactly how the stones fell.
16047. *Q.* What I mean is this: that, when you have a fall which is, you say, continuous, you mean that the different portions of the roof break off at different times? Take this roof here; when you say this roof falls continuously, you mean that that corner would fall first, and another piece there next, and another piece there next, and so on, until, finally the whole of the roof falls? *A.* Yes; I suppose it would naturally start towards the bottom first.
16048. *Q.* But would you expect, say, a piece having fallen from the middle of the roof, which let gas loose, another piece would fall from that same spot shortly afterwards? *A.* I could not say. I really do not pretend to be able to differentiate in that way.
16049. *Q.* If there was black-damp present in the 4th Right, it would be present nearest the floor? *A.* Yes.
16050. *Q.* So that the very first fall would drive that black-damp out? *A.* It would disturb some of the black-damp.
16051. *Q.* If you have black-damp in conjunction with the volume of air in the main No. 1 would not that black-damp tend to make any gas present non-inflammable? *A.* There is frequently a large percentage of black-damp associated with fire-damp, and yet the mixture is inflammable.
16052. *Q.* That may be; but does not the black-damp tend to make the fire-damp non-inflammable? *A.* It tends to do so; but I might mention that Dr. Haldane says that, if you have 6 per cent. of fire-damp, the mixture is explosive if there is a third of the whole volume black-damp.
16053. *His Honor.*] *Q.* Black-damp would only check the explosibility by taking the place of oxygen—in no other way? *A.* Yes; I think that is the only way.
16054. *Mr. Wade.*] That is all I suggest.
16055. *Q.* Now, what do you say is your explanation of the disturbance which took place out-bye of the 4th Right? *A.* All the indications of force are outbye there.
16056. *Q.* What is the cause of that? *A.* The explosion from the ignition at the 4th Left, or near the 4th Left.
16057. *Q.* Do you mean that the explosion at the 4th Left has then travelled outbye? *A.* Yes.
16058. *Q.* Do you see any signs of that between the 4th Left and the 4th Right? *A.* Well, there are no evidences—nothing to afford evidences of force.
16059. *Q.* But you have got the seats of the rollers, showing—what indications they do show—a force going inbye? *A.* That is the only thing.
16060. *Mr. Robertson.*] *Q.* Did you not find the remains of a door from the 4th Right, in-bye? *A.* There was a small piece of canvas found on the inbye side; but I could not say that it was the door which came out of the 4th Right.
16061. *Q.* I understood from the witnesses that there was no question of it belonging to the two doors? *A.* I was not able to fix it in that way.
16062. *Mr. Wade.*] Which doors were they.
16063. *Mr. Robertson.*] The remainder of the two doors at the 4th Right. There was one opposite. One was found inbye.
16064. *Mr. Wade.*] And the other outbye?
16065. *Mr. Robertson.*] I do not know.
16066. *Mr. Wade.*] That was Morrison's evidence.
16067. *Mr. Robertson.*] At all events one of them was presumed to belong to the 4th Right.
16068. *Mr. Wade.*] *Q.* Do not you think that that chock at the 3rd Left was blown down when the explosive mixture first came out of the 4th Right? *A.* I do not think so.
16069. *Q.* But you told us, I thought, before, that this force split when it came from the 4th Right; this mixture split, and went partly inbye and partly outbye? *A.* Yes.
16070. *Q.* And you mean that the portions which went outbye in the first instance produced no effect? *A.* Practically no effects.
16071. *Q.* Then, do you think it was going fast or slowly? *A.* Oh, I think it was going fast until it was reduced in speed somewhat by the air current which was coming in.
16072. *Q.* What pace do you think it would go?
16073. *His Honor.*] After all, Mr. Wade, it is hardly correct to talk of it as if it were travelling; it is one body of gas forced into the middle of another body, the air in the tunnel; and you must think of it as a body in itself, tending of course to squeeze out in both directions, impinging, first of all, by its momentum, against the rib on the other side.
16074. *Mr. Wade.*] And splitting.
16075. *His Honor.*] Splitting in a sense, not splitting in the sense of a solid, or even of a liquid; it is a different thing altogether—it is a pad, as it were.
16076. *Mr. Wade.*] Then could you say what pace this explosive mixture, which came out of the 4th Right, travelled outbye from the 4th Right? *A.* I would not like to attempt to estimate that at all.
16077. *Q.* You cannot say fast or slow, or at what rate? *A.* I would not like to attempt to estimate that at all.
16078. *Q.* But, as far as the evidence goes, which you have seen, it only shows one force going outbye from the 4th Right, and one force going inbye—is not that all? *A.* Yes, there are no evidences of force outbye between the 4th Left and the 4th Right, so far as I have been able to find.
16079. *Q.* What little force there is, is inbye? *A.* Yes, what little force there is is inbye.

16080. *Q.* With regard to those stones, this quotation from Atkinson Brothers' book is not parallel with the case of this goaf? *A.* I think so.

16081. *Q.* "With regard to falls of stone, an important point is noticed. Where timber is blown out, and some stone falls at once, and during the explosion, and other stone falls some time after, and may continue falling for days, the stone falling at the time of explosion can be known by the fact of its being blackened with dust then filling the air. The place from which the stone fell can also be known by this blackening. Stone falling after the dust has subsided is, in the newly-exposed surfaces, clean; as also is the place from which it fell. Thus, in a pit after an explosion, we find stone with three characteristics as regards dust:—(1) Stone exposed before the explosion, and usually blackened with the remains of an old coating of dust; (2) Stone exposed during the explosion, and coated thinly with a fresh coating of dust; (3) Stone exposed after the explosion, and clean as regards dust." You see there "the stone falling at the time of the explosion can be known by the fact of its being blackened with dust then filling the air." That is a case, evidently, is it not of the dust which is carried by the explosion passing over the stone? *A.* I think it refers to any fall which may take place.

16082. *Q.* Yes, but it refers to a fall which happens to be in the line of the explosion and of the dust? *A.* That refers to three sets of falls —— [*Interrupted*].

16083. *Q.* "The stone falling at the time of explosion can be known by the fact of its being blackened with dust then filling the air." That refers to stones which have fallen in the line of the explosion? *A.* Yes.

16084. *Q.* "Stone falling after the dust has subsided is, in the newly-exposed surfaces, clean; as also is the place from which it fell." That refers to the case where the cloud of dust has passed away? *A.* Yes.

16085. *Q.* But is not this a very different case: supposing that there had been a fall of roof sufficient to drive the air and dust out of the 4th Right, you would not expect to find dust on the stones that had fallen, would you in that case; would not it drive all the air and dust ahead of it? *A.* Yes, I think so.

16086. *Q.* And the greater the force with which it drove the air, the less chance of any dust settling on the stone after it fell; would not that be so? *A.* Yes.

16087. *Q.* So, so far as the appearance of the stone is concerned, that is consistent with a theory that the roof may have fallen heavily and have driven out forcibly the dust and the air? *A.* Yes, I think that is consistent.

16088. *Q.* And of course there may have been, possibly, some trifling quantity of dust, even afterwards, something very small? *A.* Yes.

16089. *Q.* Just a word in regard to the inspection of the faces of No. 1; up to what point was the brattice, going inbye of Morris' place, in that back heading? *A.* Well, there was no brattice inbye of Morris' place and the last cut-through in the back heading. [*The witness explained this to Mr. Wade on the plan.*]

16090. *Q.* Was not that brattice up there somewhere in the back heading? *A.* Yes, up towards the face from the last cut-through.

16091. *Q.* From the last cut-through to the face of the back heading? *A.* Yes.

16092. *Q.* And that would have the effect of bringing the air down again through the cut-through to the front heading? *A.* Yes.

16093. *Q.* Was some part of that brattice which you have spoken of, deranged or shaken? *A.* It was deranged, and part of it was burnt, just about opposite the cut-through.

16094. *Q.* Was the part that was burnt the part of it that was deranged? *A.* No, I think that was not down.

16095. *Q.* How was it down, this piece that was deranged, was it off the nails at the top, or at the bottom only? *A.* Towards the face, I think, it was, more particularly, deranged, off the tacks.

16096. *Q.* Do you mean off the tacks at the top, or where? *A.* I could not say exactly. I made a note that the brattice was deranged at that point; but I would not like to swear to exactly how it was deranged.

16097. *Q.* But did it seem to be the result of the force that caused that condition? *A.* I think it may have been so.

16098. *Q.* Then there would be no occasion to have any brattice between Morris' place and the innermost cut-through? *A.* No.

16099. *Q.* Do not you think, if anything had gone wrong with that brattice during those previous weeks, that the men working in Purcell's place would have detected the derangement? *A.* No, I do not see how he could do that.

16100. *Q.* Then you mean that the brattice could have been deranged, and there would still be a proper current of air for Purcell to work on? *A.* If the brattice was deranged beyond the last cut-through, if gas was giving off there would be a tendency for it to accumulate; and if it accumulated to such an extent as to reach to the cut-through, it is probable that some of that gas would be carried round to where Purcell was working.

16101. *Q.* And he would know of it then; there would probably be an explosion then? *A.* Yes, if it was an inflammable mixture.

16102. *Q.* With regard to the inspection of these waste workings, of course we know that the regular inspection is only made once a month; but, supposing that Morrison, up to the time the men were withdrawn from the 4th Right pillars, examined those pillars when the men were working every night, and examined the edge of the waste in the adjoining bords, would not that be sufficient to detect gas if there was any? *A.* Yes, if he made an inspection with the safety-lamp at the highest parts.

16103. *Q.* That is in his evidence, that he used to examine the pillars? *A.* Presuming he did so he would have been able to find gas.

16104. *Q.* If it was there? *A.* If it was there.

16105. *Q.* And, assuming he went on doing this until the men were withdrawn—which was eight days, was it not, before the accident? *A.* Eight or nine days.

16106. *Q.* Supposing you were the deputy, and supposing you had found no gas up to the time the men were withdrawn, and you had found the first fall of roof, would not you be inclined to think that the place was safe?

16107. *Mr. Lysaght.*] I would submit that this is not any expert opinion from Mr. Atkinson at all upon any scientific subject. It is a matter for the Commission.

16108. *His Honor.*] It looks very much like your cross-examination put the other way up.

16109. *Mr. Lysaght.*] Perhaps it is.

16110. *Mr. Wade.*] I will not press it.

16111. *His Honor.*] You can hardly call it admissible. It is a little towards the direction of inadmissibility that Mr. Lysaght suggests

16112. *Mr. Wade.*] *Q.* You were at the Dudley Mine after the explosion? *A.* Yes.
16113. *Q.* How soon after the explosion did you get there, how many hours? *A.* About ten hours.
16114. *Q.* Can you tell me what the heat in the pit was like? *A.* It was warm where the air was not conducted.
16115. *Q.* Only warm? *A.* Yes, I would only describe it as warm.
16116. *Q.* Did you go down with Mr. McGeachie the first time, or had people been down before you got there? *A.* They had been down before I got there.
16117. *Q.* Had they been down and rearranged the ventilation before you arrived? To some extent.
16118. *Q.* Do you know Mr. Joseph Dickenson, one of the Imperial Inspectors? *A.* Yes.
16119. *Q.* Do you know if he has laid down any theory about the compression of air producing trouble in coal-mines? *A.* I do not remember exactly what his theory is, but he has some new theory with reference to the discharge of gas, although I do not remember exactly what it is without looking it up.
16120. *Q.* Is it a theory with reference to the discharge of gas? *A.* I think so.
16121. *Mr. Wade.*] I have, your Honor, this report with regard to the explosion on the air receiver at Ryhope. Mr. Atkinson has kindly supplied me with this book, and I would like to hand it to the Commission, Volume 37, "North of England Institute of Mining Engineers' Transactions," pages 197 to 212. [*See Exhibit No.* 36.]
16122. *His Honor.*] Is that a case of explosion suggested to be due to heat generated by the compression of air?
16123. *Mr. Wade.*] Yes. The facts shortly were these: that the cylinder was not dust-proof, and a certain amount of dust appears to have been drawn into the cylinder, and also a certain amount of grease or oil, some kind of lubricant, which got inside the cylinder.
16124. *His Honor.*] The cylinder was used for what purpose?
16125. *Mr. Wade.*] For compressing air. It may have been in the receiver that this explosion occurred.
16126. *Mr. Bruce Smith.*] It was an experiment tried for the purpose of using compressed air as a motive power in the mine.
16127. *Mr. Wade.*] It was not an experiment. It was used regularly in the working of the colliery.
16128. *Witness.*] They took the air down pipes in the shaft about 1500 feet deep; and took it to small engines in different parts of the mine for doing haulage work. The air was compressed on the surface.
16129. *Q.* Do you know what the pressure was? *A.* 58 or 60 lbs.
16130. *Mr. Wade.*] It says 57. [Mr. Wade then read the following passage: —

The engineman at the air compressor said that the three air engines had all been running, two were stopped, and he had just finished oiling the air-compressing engines. He had lubricated the air cylinders, and, when near the door of the house, he was knocked down by the violence of an explosion. The third engine was easing up when this explosion occurred, at 10·40 p.m., on March 1st, 1883.

The pressure of air which he had observed when lubricating the air cylinders was 57 lbs. per square inch. The compressing engine had been running at twenty-three or twenty-four revolutions per minute, and had slowed down, when the two underground engines stopped, and the air was blowing off at the receiver. He further stated that he was rendered unconscious, having been struck on the head with some flying *debris*. As soon as he recovered (he could not say how long he had been unconscious) he found the engine racing away and stopped it. He then observed a fierce fire burning in the No, 1 air receiver, like a furnace, owing to the blast of air playing upon it.

* * * * * * * * * * * *

None of the attached thermometers were in use at the time of the explosion. They are stated to have usually indicated about 180 degrees Fahrenheit, although it was said that the temperature of the air occasionally rose as high as 300 Fahrenheit.

* * * * * * * * * * * *

On one occasion, when the pipes from the air cylinders were 8 inches diameter, they were found almost completely closed, there not being room to push in the hand.

* * * * * * * * * * * *

The deposit found in the pipe and the No. 1 air receiver was evidently a mixture of coal-dust and the lubricant carried over from the air cylinders. It may therefore be said to consist of coal-dust, mineral oil, soft-soap, and water. [*Vide Exhibit* 36.]

16131. *His Honor.*] There is something peculiar there; but I believe they get air up to a pressure of 3,000 lbs. for the purpose of working air engines.
16132. *Witness.*] I think in mines they usually have it about 50 or 60 lb., not more.
16133. *His Honor.*] But air has been compressed for practical purposes to 3,000 lb. per square inch.
16134. *Mr. Robertson.*] Do you suggest, Mr. Wade, that the air pressure resulting from a disaster could possibly reach 60 lb. to the square inch, or 2 lb. to the square inch?
16135. *Mr. Wade.*] Yes, that will be our case. You can get it either in an enclosed vessel such as experiments were made with in this case, and a thermometer; or you can get the same calculation, only roughly, of course, to show what the pace was at which the air left the 4th Right; and, from the velocity, you can get the pressure in the limited area; and of course, the only uncertain element in the calculation is, what was the piston stroke? That varies, of course. If you get the two chains falling in a solid piece you get something incalculable, falling in a small passage like the 4th Right opening, so one has to allow then for the probability of its not falling in one piece.
16136. *Mr. Bruce Smith.*] It is only a fall of two chains, a vertical fall of about 3 feet.
16137. *Mr. Wade.*] I will ask Mr. Atkinson that question.
16137½. *Q.* Did not you say that, when you examined it, there may have been a fall of the depth of 30 feet to the top of the vault?
16138. *Mr. Robertson.*] But that was not the fall of the roof. The roof did not fall 30 feet. It may have subsided. The piston stroke could not be 30 feet; it could only be 3 or 4 feet.
16139. *Mr. Wade.*] Yes, but the weight coming down makes some difference in the force.
16140. *Mr Robertson.*] But the piston stroke could not possibly be above 4 feet.
16141. *Mr. Wade.*] Not 30 feet.
16142. *Mr. Robertson.*] It could not be even 4 feet.
16143. *His Honor.*] The acceleration of a falling body depends entirely on the distance it falls, not upon its weight.
16144. *Mr. Bruce Smith.*] And then the evidence is not that the whole fall was simultaneous.
16145. *Mr. Wade.*] There is no evidence at all on it. It is all conjecture.
16146. *Mr. Bruce Smith.*] The theory is advanced.
16147. *His Honor.*] Mr. Wade, the Commission may be convinced that there is something in this peculiar theory; but it does certainly seem to to be rather an unnecessary taking up of time to try to convince the Commission that such a thing could be in practice unless we have something like a volcano that suddenly shuts itself up with a snap.

16148. *Mr. Wade.*] Perhaps when your Honor hears the evidence your Honor may think differently. We have not got to that stage yet.
16149. *His Honor.*] There is one question I wanted to ask Mr. Atkinson.

Examination by His Honor :—

16150. *Q.* If a pillar is left in a mine, or one or two pillars are left, all the surrounding pillars being removed, the pillar or pillars that are left would take a very much larger pressure than would normally be put on them? *A.* Quite so.
16151. *Q.* That must be so? *A.* Yes.
16152. *Q.* Is there any experience of the result on the coal of a pressure of that kind in relation to the generation of inflammable gas? *A.* I do not know that there is.
16153. *Q.* That is to say, is there any experience in mines of the effect of leaving pillars in the middle of goafs, in relation to the generation of gas; have you got any authorities, or have you got any knowledge on the subject? *A.* I do not remember anything at the moment; but I will endeavour to see if I can find any cases in connection with it.
16154. *Q.* Of course, you do not know of your own knowledge that there was a pillar left in this goaf? *A.* No, it has only been reported in evidence.
16155. *Mr. Bruce Smith.*] I have a few questions to ask Mr. Atkinson, in re examination; but I do not propose to do so until I have gone through the remainder of his evidence.
16156. *His Honor.*] You wish to have an opportunity of looking at the notes?
16157. *Mr. Bruce Smith.*] Yes.
16158. *Mr. Robertson.*] I am in the same position.
16159. *Mr. Bruce Smith.*] I presume Mr. Bates saw the Commission this morning?
16160. *His Honor.*] Mr. Bates does not seem to have any knowledge that would be of the slightest use. I quite agree with you, Mr. Bruce Smith, in the conclusion you have arrived at. We have seen him this morning; and we have all come to that conclusion, that there would be nothing gained at all by calling him.

Further cross-examination by Mr. Lysaght :—

16161. *Q.* When you said Mount Kembla was one of the best equipped collieries, did you mean one of the best equipped as regards the haulage of the coal only? *A.* I think I said particularly with regard to the haulage and the division of the mine into districts.
16162. *Q.* And not, I may take it, as regards the safety appliances? *A.* I would like to know to what safety appliances you refer.
16163. *Mr. Lysaght.*] Never mind, I will go into that in detail later on.

[At 12·15 the Commission adjourned until 2 p.m.]

Afternoon.

(On resuming at 2 p.m. Mr. W. R. Pratt attended to take shorthand notes of the evidence and proceedings.)

RICHARD HIND CAMBAGE was sworn, and examined as under :—

Examination-in-chief by Mr. Bruce Smith :—

16164. *Q.* What is your name? *A.* Richard Hind Cambage.
16165. *Q.* What are you? *A.* Chief Mining Surveyor, Mines Department, Sydney.
16166. *Q.* You were deputed to go to Wollongong, to the Mount Kembla Mine, and make observations of the effects of the disaster with a view of preparing certain plans? *A.* Yes.
16167. *Q.* These plans are the result of your work? *A.* Yes.
16168. *Q.* Will you tell the Commission who actually drew them;—who did the pen and ink work? *A.* The name of the draftsman?
16169. *Q.* Yes. *A.* His name is William Martin. They were done under my supervision.
16170. *Q.* I believe you have gone over the whole of them? *A.* Yes.
16171. *Q.* Over every detail? *A.* Yes.
16172. *Q.* More than once? *A.* Yes.
16173. *Q.* Were the whole of the particulars on this plan (No. 27) seen by yourself, and does the same thing apply to the other plans? *A.* Yes; everything noted is what I saw. There are, however, reported positions of human bodies.
16174. *Q.* Those positions are taken to be right. You got the information elsewhere? *A.* The positions of the bodies are approximate.
16175. *Q.* Excluding the human bodies, everything shown on the plans and sections is information obtained by you personally, and checked by you personally, and afterwards committed to paper? *A.* That is so with regard to every object excepting the bodies.
16176. *Q.* In some cases you have indicated above the object what it is? *A.* In many cases I have.
16177. *Q.* I thought that you had done so in most cases? *A.* Well, with regard to the tubs, they are not indicated by writing, because it was thought they could be seen.
16178. *Q.* Many other things are indicated? *A.* Yes.
16179. *Q.* You have your note-books with you? *A.* Yes.
16180. *Q.* From which the plans were made? *A.* Yes.
16181. *Q.* And you could refer to your note-book showing your original note? *A.* Yes, I could. These plans were tendered conditionally before, your Honor, and I tender them now absolutely. [*The plans are the same as those previously marked* 26, 27, 28, *and* 29 *Exhibits*].

Cross-examined by Mr. Wade :—

16182. *Q.* There is one thing which I should like to ask you about, in the 4th Left. I want to ask you about the telephone wire that was found round a tub. Was that outbye of the 4th Left? *A.* It originally went outbye.
16183. *Q.* There were a number of tubs between the 4th Left rope road and the travelling road. Do the dotted lines on this plan [*Exhibit No.* 27] show the wire? *A.* The dotted lines show the wire.
16184. *Q.* Between the end of the wire attached to the tub and the next piece of wire there is a gap? *A.* Yes.

16185. *Q.* There is some wire blown into a cut-through—286 yards? *A.* Yes. But I do not think it is the same wire as was driven into the tub. I think the signal-wire driven into the cut-through, at 286 yards, is the same as is shown ending in the cut-through on the outbye side of the 5th Right, and opposite the 4th Left travelling road.

16186. *Q.* There would be a distance between the end of the signal wire in the cut through, at 286 yards, and the other portion of it opposite the 4th Left travelling road, of 64 yards? *A.* Yes.

16187. *Q.* Did that dispose of all the signal wire? *A.* There are two wires broken into four pieces. The wire embedded in the tub between the 4th Left rope road and the 4th Left travelling road is broken off the wire at 258 yards, the bearings being taken from a point near the 3rd Left.

16188. *His Honor.*] Are these two similar pieces of the same kind of wire? *A.* I think they are the same kind of wire.

16189. *Q.* It is not by the nature of the wire that you can identify the pieces? *A.* No, by the lengths.

16190. *Q.* Is it insulated wire? *A.* I think it is ordinary telegraph wire.

16191. *Q.* It is not insulated or coated? *A.* No, there is nothing round it.

16192. *Q.* All the wire that you have spoken of seems to have gone inbye of where it was broken? *A.* Undoubtedly.

16193. *Q.* You have spoken of a piece of wire which was driven a foot into a skip, and the end of the skip into which the wire was driven was outbye. Can you form any opinion as to whether that wire was driven from outbye into the skip, or whether the skip was driven on to the wire? *A.* I think the skip was driven on to the wire.

16194. *Q.* How do you account for the fact that the end into which the wire was driven is shown as being outbye. That would indicate to anybody who looks at the plan that if the skip had gone out to the wire, it must have gone outbye, did it? *A.* In my opinion it came inbye.

16195. *Q.* Will you explain to the Commission what led you to that belief when you discovered the skip, seeing that the skip was not facing the direction it was in originally? *A.* I came to the conclusion from this fact: I followed the wire from the tub into which it was driven, and I might say that at that stage I had no knowledge which way it was driven. I followed it with my fingers, under timber and over timber and round a tub further inbye, and eventually to a point where it was fixed in an insulator, just beyond a horse that is shown on the plan. The point is marked C on the plan. The wire was fast in the insulator, and evidently it had never been disturbed there. I found that the distance from where the wire was fast to the insulator to where it was driven into the tub ——

16196. *Mr. Bruce Smith.*] *Q.* The distance on the ground or of the wire? *A.* I mean the distance when the wire was stretched straight.

16197. *Q.* You mean the length of the wire? *A.* No, I do not mean that, the direct line between the two points was 72 feet, but the amount of wire which was twisted amounted to 142 feet.

16198. *Q.* What do you conclude from that? *A.* I conclude from that that the difference, which would be 70 feet, could only come from one direction, and that is outbye. Therefore, this particular tub must have struck the wire when it was travelling inbye, because the wire between the tub and where it was fixed is unbroken, and it would break behind the tub. That proves that the tub was travelling inbye, and that after it struck the wire it travelled inbye 70 feet before it reached the position in which I found it, and it probably turned over, from the fact that it is now pointing outbye. The wire was bound tightly round it.

16199. *Q.* I think you said like a fiddle-string? *A.* Yes, it would actually sound.

16200. *Mr. Robertson.*] *Q.* What do you mean by pointing outbye? *A.* I mean that the end of the tub into which the wire was driven was pointing outbye.

16201. *Mr. Bruce Smith.*] *Q.* Do you mean that the skip struck the wire, and afterwards turned round a couple of times? *A.* Yes.

16202. *His Honor.*] *Q.* When you say that the wire was driven into the skip, do you mean that it was actually driven into it—was the skip perforated by the wire? *A.* The skip was cracked for about a foot, and the wire was locked firmly in the skip.

16203 *Q.* Is the skip wood or iron? *A.* It is a wooden skip.

16204. *Q.* I mean where the wire was driven into it? *A.* There was a split in the wood at the place.

16205. *Mr. Wade.*] Was it a natural division or was it made by the wire? *A.* The wood was absolutely split. I could not say whether the split was made by the wire or whether the tub had been split against the side of the ribs of the mine.

16206. *His Honor.*] *Q.* How was the wire locked in? *A.* I mean that it was locked in the wood of the skip, going this way and that way, all about the skip.

16207. *Mr. Wade.*] *Q.* There was not a division between two boards? *A.* No, it was a split in the wood.

16208. *Mr. Bruce Smith.*] *Q.* Are you able to say where that wire was placed before the explosion—was it on the roof, or on the rib, or on the floor? *A.* It was on the ribs near the roof.

16209. *Q.* At a higher point than the top of the skip? *A.* It would be on an average nearly 6 feet above the floor.

16210. *Q.* How could the skip pick up the wire unless something had broken it down? *A.* From the fact that I saw things blown in all directions I am not at all surprised that the skip was blown high enough to break the wire.

16211. *His Honor.*] *Q.* The skip was "sailing" down the heading? *A.* Yes.

16212. *Mr. Bruce Smith.*] *Q.* And it may have struck the wire? *A.* Yes, and brought it down.

16213. *Mr. Robertson.*] *Q.* Was any portion of that wire fixed to the props? *A.* Yes.

16214. *Q.* Were the insulators fixed to the props? *A.* Yes, in the 5th Right.

16215. *Q.* I mean about here? *Q.* I cannot say because the props were gone.

16216. *Q.* Is there not a prop near a cut-through there with a wire attached to it? *A.* That is not a prop, the wire has caught on the edge of a slab—on the ragged end.

16217. *Q.* If the insulators were attached to the props and the skip bumped against the props, it would be easy to see how it would get caught in the wire? *A.* Judging from the amount of disturbance there is nothing to make one wonder how the skip would reach the wire.

16218. *Mr. Bruce Smith.*] *Q.* Are there any other things which do not explain themselves on this plan? *A.* There is the other wire.

16219. *Q.* It is shown on the plan? *A.* Yes. It proves also that it was dragged inbye.

16220. *Q.* Dragged in, or forced in? *A.* It has been brought inbye. The proof is not so conclusive as in the first case.

16221. *His Honor.*] *Q.* Your theory is not that the wire was blown adrift, but that something which was flying along at the time of the explosion cut it? *A.* Yes. Several things were flying along the heading and some of them may have cut the wire.
16222. *Mr. Wade.*] *Q.* Have you got a sectional plan of the roadway outbye of the 4th Right? *A.* Yes.
16223. *Q.* Did you see some rollers in that road, on the outbye side? *A.* Yes.
16224. *Q.* Was any rubbish heaped up against them? *A.* No, the rollers were smashed away from the frames.
16225. *His Honor.*] *Q.* Is there not an unaccountable heap of coal there? *A.* Yes.
16226. *Q.* Did you form any hypothesis as to how that coal got there? *A.* I searched for a clue over a large area, but I could form no opinion at all, except that I assume that it came out of some tubs.
16227. *Q.* Have you any idea what became of the tubs? *A.* I have no idea.
16228. *Mr. Bruce Smith.*] *Q.* Did you find any empty tubs? *A.* No, except some between the 4th Left rope road and the travelling road. That place is 300 yards off, and there were, between those points, four full tubs upset.
16229. *Q.* One conclusion which you arrive at is, from that part of No. 1 heading, opposite the 4th Right up to the 5th Right, everything was travelling inbye, and all the signs of force were inbye? *A.* All the evidence I got between the 4th and 5th Right was that the force travelled inbye.
16230. *His Honor.*] *Q.* There was a dead point, I presume, and then from that dead point, going south, the force showed signs of travelling outbye? *A.* Yes.
16231. *Q.* Where would you put the centre of that dead point? *A.* Anywhere near the 4th Right. I have to assume something; I have to assume that some canvas I found came out of the 4th Right. I assume that because there is not canvas in the main road, and there is canvas outbye and inbye of the 4th Right.
16232. *His Honor.*] *Q.* That would show that the dead point would be just at the end of the 4th Right? *A.* That is what it shows, provided the canvas came out of the 4th Right, and was not on the main road.
16233. *Mr. Bruce Smith.*] *Q.* You have shown on the side of the 4th Right an accumulation of small coal, indicating a sweep of wind round the corner like a wave? *A.* Yes.
16234. *His Honor.*] *Q.* There is a great mass of roof that has fallen just at the opening of the 4th Right. Did you notice the condition of that. About what was the thickness of it? *A.* Well, the space that it left would show that it is a little over 2 feet. There is the section here which shows it, about 2 feet of stuff has fallen out.
16235. *Q.* Was the place at the top black, or was it clean? *A.* I do not remember.
16236. *Q.* It appears there, unless something has been removed, as though most of the stone was outbye from where it fell. Is it directly under the place it fell from? *A.* Most of the stone appears to be outbye; there is one fairly large stone which is inbye.
16237. *Q.* There is nothing to show at what exact stage of the proceedings the stone fell? *A.* Nothing that I could see. I could only say that it was there.
16238. *Mr. Bruce Smith.*] *Q.* I suppose your note-books show nothing more than is shown on the plan? *A.* Nothing more than is shown on the plan.
16239. I may say, your Honor, that these are all the witnesses that I intend to call. I intended to call two Managers, one of whom was with Mr. Atkinson at the mine, but I do not intend to do so. I should, however, like to ask Mr. Atkinson some questions on re-examination. The Commission has conceded to me the right of putting him in the box again, if there is anything said by the Managers which requires answering. I have also to deal with Mr. Atkinson's recommendations finally after he has heard what the Managers have to say. The few questions which I have to ask him on re-examination will serve my purpose then.
16240. *His Honor.*] Said that he hoped that in the future the Commission would be able to proceed with a little more despatch than it had in the past.

[The Commission at 3·15 p.m. adjourned until 11 o'clock on the following Monday.]

MONDAY, 16 *FEBRUARY*, 1903.

[*The Commission met at the Land Appeal Court, Darlinghurst.*]

Present:—

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq., Commissioner. | D. RITCHIE, Esq., Commissioner.

Mr. Bruce Smith, Barrister-at-Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf the Crown.

Mr. A. A. Lysaght, Solicitor, appeared on behalf of—
(*a*) the representatives of deceased miners, wheelers, &c. (victims of the explosion);
(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.); and
(*c*) the Illawarra Colliery Employees' Association (The Southern Miners' Union).

Mr. G. J. Barry, Solicitor, appeared on behalf of the Mount Kembla Coal and Oil Company (Proprietors of the Mount Kembla Mine).

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings.)

Mr. A. A. ATKINSON, previously sworn, was further examined as under:—

Re-examination by Mr. Bruce Smith:—

16241. *Q.* First, I would like you to ask you about the hydrogen lamp—it was referred to as having been used in some of the mines, and not in others? *A.* Yes.
16242. *Q.* I want to ask you whether the hydrogen lamp is used for the purpose of official inspection in Great Britain? *A.* No.
16243. *Q.* Or in any other country that you know of? *A.* No. 16244.

16244. *Q.* What are they used for occasionally? *A.* More particularly for ascertaining the percentage of gas which may be in the return airways of collieries.
16245. *Q.* They are not provided for in any regulations as a necessary — *A.* No.
16246. *Q.* It has been suggested in some of the questions that a hydrogen lamp might have been used at an earlier stage in the history of the Mount Kembla Mine—suppose the hydrogen lamp had been used in Mount Kembla before the accident, would it, in your opinion, have detected any accumulation of gas in the upper parts of the goaf? *A.* No, it would not be possible to get there with any lamp.
16247. *Q.* On the ground of the danger? *A.* Yes.
16248. *Q.* Not from gas, but from the fall? *A.* From the possibility of falls.
16249. *Q.* Suppose the hydrogen lamp had been used, and a small percentage of gas had been detected, what action could have been taken? *A.* We could have directed the Manager's attention to the percentage of gas found, and have pointed out to him the necessity of complying with General Rules 8 and 12, with reference to the use of safety-lamps, and with reference to blasting.
16250. *Q.* Still those rules existed as a special precaution for a Manager to see, quite irrespective of such investigation? *A.* Yes.
16251. *Q.* Had you called the Manager's attention to those two rules, Nos. 8 and 12, before the accident? *A.* Yes, after the Dudley explosion a circular was sent out giving the conclusions —— [*Interrupted.*]
16252. *Mr. Barry.*] *Q.* What date?
16253. *Mr. Bruce Smith.*] *Q.* Can you give me an idea of the date? *A.* About September, 1898.
16254. *Q.* After the Dudley accident, using the experience of that accident, you sent out this circular? *A.* Yes.
16255. *Q.* Has a copy of that been put before the Commission? *A.* No, I think not.
16256. *Q.* Have you a copy here? *A.* I have not; there are some in the Department.
16257. *Q.* You might just tell me the purport of it? *A.* It gave the conclusions of the Royal Commission on Coal-dust, in order to direct the Manager's attention to that matter, and also to the necessity for complying with the provisions of General Rules 8 and 12; and it also gave the general terms of the explosives in Coal-mines Order.
16258. *Q.* That list of permitted explosives? *A.* Yes, at that time.
16259. *Q.* You were asked (paragraph 13879), "Where a big fall is expected over a large area, what precautions should be taken to guard against possible danger from that fall?" You answered, "Do you mean, if gas is anticipated?" Then there was a series of questions and answers, and you said, "If you were anticipating gas with a fall which might possibly raise a cloud of dust, I think that you should water the place, especially if you are using naked lights." Is there any other suggestion that you think should be made on an occasion of that sort? *A.* If you were anticipating gas, you should abolish the use of naked lights and use safety-lamps.
16260. *Q.* Immediately? *A.* Yes.
16261. *Q.* You did not mention that? *A.* No.
16262. *Q.* You heard Mr. Lysaght read some further suggestions from Newcastle? *A.* Yes.
16263. *Mr. Bruce Smith.*] I do not think any evidence has been given on those yet. I think I will reserve what Mr. Atkinson has to say on those until evidence is given concerning them.
16264. *Q.* That is all you desire to say in addition to your original examination? *A.* Yes.
16265. *Q.* With the exception of the comments that are proposed to be made on those twenty suggestions, and with regard to the new suggestions? *A.* Yes, after we have heard the evidence.
16266. *Mr. Bruce Smith.*] Of course, there is a great deal I could have gone into, going over the evidence again; but I felt that, after all, it is Mr. Atkinson's evidence against that of other people who have criticised him; and I will leave it.
16267. *His Honor.*] Is there any wish to further examine Mr. Atkinson?
16268. *Mr. Lysaght.*] No.
16269. *Mr. Barry.*] No.

Examination by Mr. Robertson:—

16270. *Q.* If an examination had been made in Mount Kembla with a hydrogen lamp, and a very small percentage of gas found in any part, and you had requested safety-lamps to be used, do you think there would have been any objections raised by anyone? *A.* I think there would, certainly.
16271. *Q.* On the part of the management? *A.* Yes, and the miners as well.
16272. *Q.* On the ground of what? *A.* Generally speaking, they prefer to use the naked light, as affording more light than the safety-lamp.
16273. *Q.* Is it not more probable that the objection would be based on the ground that the quantity was so infinitesimal as to be scarcely worthy of consideration? *A.* Yes, if you could not find it with the ordinary safety-lamp, they would object on the ground of the very small percentage as well.
16274. *Q.* So far there has been no standard definition of a gassy mine, has there? *A.* No, there has not. In France, I believe, they divide mines into one or two classes; but, even there, the separation into classes is not sufficiently well defined by any certain percentage of gas.
16275. *Q.* Nor are dusty mines defined? *A.* There is no definition, no.
16276. *Q.* Now, is it not desirable that mines which are gassy should be clearly defined by laying down some broad principle to govern such matters? *A.* It is very desirable.
16277. *Q.* What is your definition of a gassy mine? *A.* I should say a mine which is giving off, more or less constantly, fire-damp from the working places in such a quantity that it can frequently be detected by the ordinary safety-lamp.
16278. *Q.* Would it not be a safer principle to go on, if a gassy mine were defined as "a mine which is giving off explosive gas"? *A.* I think your question was as to the definition of a very gassy mine.
16279. *Q.* No; I said, "What is your definition of a gassy mine"? *A.* Well, that would cover everything.
16280. *Q.* Hardly. It would cover the definition of a very gassy mine; but, you see, we are face to face here with the fact that all the explosions which have occurred in this colony have taken place in mines that are only slightly gassy? *A.* Yes.
16281. *Q.* Is that not so? *A.* Yes, I think that is correct.
16282. *Q.* Take Kembla—you could not describe that as a very gassy mine? *A.* No.
16283. *Q.* Nor Bulli? *A.* No.
16284. *Q.* Nor Dudley? *A.* No.
16285. *Q.* Nor Burwood? *A.* No.
16286. *Q.* Nor Seaham? *A.* No.

16287. *Q.* And yet explosions have occurred with great loss of life at all those collieries? *A.* There have been explosions, both large and small, in all of those.
16288. *Q.* With loss of life? *A.* With some loss of life—Bulli and Kembla very large explosions.
16289. *Mr. Bruce Smith.*] *Q.* You say there have been large and small explosions? *A.* Yes, large and small.
16290. *Mr. Robertson.*] *Q.* Does not that point to the necessity for some definition that would rope in every mine where gas is given off? *A.* Yes, I think it would be well if that were defined; and if safety-lamps were used in all such mines.
16291. *Q.* For the purpose of defining what is a gassy mine, you would not consider the examination with the ordinary safety-lamp sufficiently accurate—I am not referring to the examination by deputies—but, for the purpose of defining whether a particular mine was gassy or non-gassy, would you be satisfied with the examination by an ordinary safety-lamp? *A.* I think so.
16292. *Q.* Under those circumstances you could not define Kembla as gassy? *A.* If we take into consideration the evidence that has been given here, there have been many instances where gas has been seen without the use of the hydrogen lamp.
16293. *Q.* But, in considering this question, are we to take the evidence of irresponsible men, miners; or are we to take the evidence of scientific and accurate observers, such as yourself? *A.* I think you cannot disregard the evidence of the miners, if you believe what they say.
16294. *Q.* But, having had a report from a miner that he had met with gas in a mine, would you, to test the accuracy of that report, take an ordinary safety-lamp or a hydrogen lamp? *A.* If you are unable, after hearing the incident as reported by the miner, to find gas with the ordinary safety-lamp, it is possible that an examination with the hydrogen lamp may show that a certain exudation of gas is being given off.
16295. *Q.* Quite so; but the emission of gas that can only be detected by a hydrogen lamp may accumulate and become in time as dangerous—it is only a question of time—as the emission that is detected by the ordinary safety-lamp? *A.* That may happen, yes.
16296. *Q.* In the light of those disasters referred to, do not you think it is necessary to define a gassy mine as a mine that is giving off explosive gas? *A.* Yes, I think that is a safe definition.
16297. *Mr. Bruce Smith.*] Are you speaking with a view to future legislation? Of course it depends upon the light in which one is looking at this.
16298. *Mr. Robertson.*] Yes.
16299. *Q.* Is it not desirable that such mines, if they are defined as gassy mines, should be worked with safety-lamps? *A.* Yes, I think so.
16300. *Q.* And do not you think that the type of lamps to be used should be subject to the approval of some authority? *A.* So long as they are an acknowledged and approved type of lamp, I think that is sufficient.
16301. *Q.* That is what I mean. I do not mean to say that the authorities should unreasonably request that a particular type of lamp should be used when another approved type is in the market; but what I want to prevent is the use of a lamp of an obsolete type? *A.* Yes, that may be necessary.
16302. *Mr. Ritchie.*] With the approval of what authority?
16303. *Mr. Robertson.*] With the approval of some authority to be determined. Perhaps I should ask that.
16304. *Q.* You mean some official authority outside of the mine? *A.* Yes.
16305. *Q.* You are aware that a number of fires in mines have been caused by the use of the naked light—I am not referring to gassy mines? *A.* Quite so.
16306. *Q.* By naked lights coming into contact with combustible material? *A.* Yes, there have been a number.
16307. *Q.* And, in at least one instance, with fatal results; that is, the Greta fire? *A.* Yes, that was in December, 1900.
16308. *Q.* Is it not desirable that the use of naked lights should be prohibited in mines not naturally wet and free from explosive gas? *A.* Exposed lights?
16309. *Q.* Yes, naked lights? They are of frequent occurrence, are they not, these fires? *A.* Yes.
16310. *Q.* And they may lead to disastrous results? *A.* Yes.
16311. *Mr. Bruce Smith.*] That is, not in a mine, you say, free from explosive gas?
16312. *Mr. Robertson.*] Free from gas, and not naturally wet. Of course, if it is naturally wet and free from gas there is no danger in risk of a naked light.
16313. *Witness.*] A suggestion of that sort would have very far-reaching effects. I do not think there are more than ten or a dozen mines in the State which you could call naturally wet throughout; and I am not prepared to altogether exclude the use of naked lights in all those mines.
16314. *Q.* In dry and dusty mines? *A.* Does the suggestion include the necessity for using safety-lamps?
16315. *Q.* Yes, in dry and dusty mines where combustible materials are to be found? *A.* Well, it would certainly be increasing safety; but, as I say, it would have very far-reaching effects. There might be some difficulty in defining, or drawing the line, as to which was a dry and dusty mine; that would be another difficulty.
16316. *Q.* Then you do not see your way to suggest that? *A.* Not to go quite that length.
16317. *Q.* I take it that safety-lamps are a great safeguard in any mine where gas is given off? *A.* Yes, they are.
16318. *Q.* Speaking in a rough sort of a way, would you put it at something like 90 per cent.; of course I do not say that you can exactly define a certain percentage of safety; but, in a rough sort of way, as a sort of rough illustration, with safety-lamps in a mine and the discipline what it ought to be, would that, in practice, secure 90 per cent. of safety? *A.* Well, say 75 per cent.; and a good deal might be done also in regard to a safer manner of blasting.
16319. *Mr. Bruce Smith.*] *Q.* You apportion that 75 per cent. to safety-lamps alone? *A.* Yes.
16320. *Mr. Robertson.*] *Q.* Has it not been found in practice that, wherever safety-lamps have been brought into use, better discipline is observed? *A.* That is the general result.
16321. *Q.* Better ventilation? *A.* That is also another result.
16322. *Q.* Officials more alert and intelligent? *A.* That is so, yes.
16323. *Q.* And the standard of safety and efficiency raised generally? *A.* Yes; that has generally been observed.

16324. *Q.* In the ordinary sense I take it that you would not describe Mount Kembla as a gassy mine—I am referring to the time prior to the explosion? *A.* No, I could not, from what I knew of it.
16325. *Q.* Would it, in the ordinary acceptation of the term, be a dry and dusty mine? *Q.* Not throughout the colliery; although parts of the haulage road might have been so described, I think.
16326. And what do you describe its general reputation as, from the safety point of view? *A.* I have always heard it described as a safe mine.
16327. *Q.* And did you suspect it to give off gas even in small quantities? *A.* Well, I knew that a man had been burnt; I knew that fire-damp was given off from the same seam in some of the neighbouring collieries; and I think it is probable that a small percentage was being given off.
16328. *Q.* But I say generally, not in any particular parts, did you suspect it to give off gas generally throughout the mine? *A.* Not generally throughout the mine.
16329. *Q.* I take it that mining men may be perfectly seized of the dangers of coal-dust and fire-damp, but differ honestly in opinion as to whether a particular mine could be defined as a gassy or a dusty mine? *A.* Yes, there would be a great variety of opinion if you were to take twelve men and ask them to express an opinion on a matter of this kind.
16330. *Q.* That is, although they were perfectly seized with the importance of the coal-dust question? *A.* Yes, there would be a great variety of opinion.
16331. *Q.* In the matter of using safety-lamps—possibly one man out of one hundred would consider it necessary to use safety-lamps, even if infinitesimal quantities of gas were given off; but is it not a fact that 99 per cent. would not take that extreme view? *A.* You refer to such quantities as could not be seen by an ordinary safety-lamp?
16332. *Q.* Yes? *A.* Yes, they would object to use safety-lamps generally, if you could only find gas with the hydrogen lamp.
16333. *Q.* And probably some of them would object, even if you could detect it with an ordinary safety-lamp here and there? *A.* Yes, that is my experience in this State. There has been great opposition to the use of safety-lamps, even where fire-damp has been detectable with the ordinary safety-lamp.
16334. *Q.* It is not confined to this State only; but are there not mines in the British coal-fields of that character; where gas can be detected with the ordinary safety-lamp, but where they are still using the naked lights? *A.* Yes, there are some few; although the use of safety-lamps is becoming more general.
16335. *Q.* It is unfortunate that Managers do take that view? *A.* Yes, it it.
16336. *Q.* Still, we cannot disregard the opinions of a large number of prominent mining men? *A.* No.
16337. *Mr. Bruce Smith.*] *Q.* You are speaking, I take it, of experts, quite apart from the fact that they are miners or Managers?
16338. *Mr. Robertson.*] Yes.
16339. *Mr. Bruce Smith.*] People whose minds are in an impartial condition?
16340. *Mr. Robertson.*] Yes.
16341. *Q.* And, speaking of miners, as a matter of fact, the most strenuous opposition, generally speaking, to the introduction of safety-lamps, has been from the miners? *A.* Yes, that has been my experience; and on the part of the owners in some cases as well.
16342. *Q.* Do you not think, from what has occurred at Kembla, and at those other slightly gassy mines in the State, that, unless more than the actual danger is anticipated, unless precautions are taken to anticipate the potential danger of a mine even slightly gassy, disaster probably looms ahead even yet? *A.* Yes.
16343. *Q.* And I take it, even amongst the most advanced mining men, the Kembla accident has been an object lesson? *A.* I think in many respects it has.
16344. *Q.* And men who have hitherto not recognised the danger of naked lights in gassy mines and dusty mines, have now realised it, though hitherto sceptical? *A.* Yes, I think it has had that effect.
16345. *Q.* There are many mines, I take it, in the British coal-fields, and also in this State, of the same character as Kembla? *A.* Yes.
16346. *Q.* Of course we know the discipline and the arrangement generally of such collieries would scarcely compare with an up-to-date gassy mine where safety-lamps are used? *A.* No. There is a general tendency for the discipline not to be so strict in collieries where naked lights are used as where safety-lamps are used, and where there is consequently greater viligance in all respects. That is the general result of my observation.
16347. *Q.* But did the arrangements, generally speaking, compare favourably at Kembla or unfavourably with other mines of the same character? *A.* They were just about on a par, I should say.
16348. *Q.* Can you give a single instance of an explosion brought about in the same manner as you yourself suggest this has been brought about at Kembla? *A.* No, I do not know of a similar case. The nearest parallel, I think, would be an explosion at the Hyde Colliery, where the roof, weighting, caused some fire-damp to be liberated; but, instead of being an intake, it was a return; and the fireman met the gas with his naked light.
16349. *Q.* The fireman with a naked light? *A.* Yes.
16350. *Q.* And that is an example of lax discipline, an accident caused by a fireman or deputy's naked light? *A.* Yes; although they had not seen gas in that mine for some considerable time.
16351. *Q.* But still, if the deputy had not been using a safety-lamp, the explosion would not have occurred? *Q.* No.
16352. *Q.* Can you imagine a chain or sequence of more remote contingencies than the accumulation of gas in a district believed to be free from gas; that gas being forced out into a main intake, although surrounded by a return airway, and being forced out with such force and such energy as to raise a cloud of dust, which, being mixed with gas, ignited at a naked light on a main haulage road, where explosive gas would not, except under extraordinary circumstances, ever be found in the lifetime of a colliery? *A.* Well, the combination of circumstances appears to be, so far as I have been able to read and ascertain, unique.
16353. *Q.* Could it have reasonably been foreseen? *A.* I do not think so.
16354. *Q.* Can you trace any connection between the neglect to make a weekly examination of the old waste at Kembla, and this disaster? *A.* No, from the evidence I have heard as to the condition of the 4th Right I cannot see any connection.
16355. *Q.* Do you know anything of an accident which occured at the Broken Hill South Mine? *A.* I do. I have read the particulars.

16356. *Q.* Have you them fresh in your mind now? *A.* Yes, generally speaking; although, perhaps, some of the details may require looking up.
16357. *Q.* Was it a large fall from a very great height? *A.* Yes, it was a fall of some of the stopes, I think, from a height of 30 or 40 feet.
16358. *Q.* Discharging the air from a very small orifice? *A.* Principally through one roadway 7 or 8 feet square.
16359. *Q.* It caused loss of life? *A.* Nine men's lives were lost, I think.
16360. *Q.* Do you know whether it caused any flame, or raised the temperature in any way? *Q.* Well, I have information from Mr. Hebbard, who was the Inspector, and also from Mr. Mayne, who was the Manager, that there was no singeing or burning of any of the men.
16361. *Q.* They were killed by the force? *A.* By the force.
16362. *Q.* Of the air? *A.* Yes.
16363. *Q. Mr. Bruce Smith.*] *Q.* The medical evidence in that case does not show any fire or any singeing or burning, does it? *A.* No.
16364. *Q.* You have the depositions, if the Commission wish to see them? *A.* Yes.
16365. *Mr. Robertson.*] I think we might have those.
19366. *His Honor.*] Yes.
16367. *Witness.*] I also have a letter from Mr. Hebbard and one from Mr. Mayne, if the Commission desire to have them.
16368. *Mr. Robertson.*] Yes, I would like to read them.
46369. *Q.* If safety-lamps had been used at Kembla, do you think this disaster would have occurred? *A.* If they had been used then, as they are being used now—that is, practically from the tunnel mouth—I think it would not have occurred.
16370. *Q.* Assuming that the officials had no knowledge of gas in the mine—I am not saying that they had not—assuming that they had not, you had no knowledge, had you? *A.* No.
16371. *Q.* The miners say they knew of it? *A.* Yes.
16372. *Q.* Do you think that their failure to report complaints to yourself, or the District Inspectors, was primarily responsible for the disaster? *A.* I should not like to go so far as that.
16373. *Q.* But I think you said in your evidence that, if you had been aware that gas was being given off in Kembla, you probably would have taken such steps as might have averted this disaster! *A.* Yes, that is my opinion.
16374. *Q.* And if any man finds a danger or a defect in a mine, and neglects to report it, is not he responsible for anything that may occur through that neglect? *A.* Yes, his duty is to report to the officials.
16375. *Q.* Is he not morally responsible?
16376. *Mr. Bruce Smith.*] Mr. Robertson, I think, is asking you about moral responsibility; and you are answering about the responsibility under the Act.
16377. *Mr. Robertson.*] *Q.* Put it that way, actually or morally? *A.* I am afraid I am not an expert in all these terms.
16378. *Mr. Bruce Smith.*] I do not think Mr. Atkinson considers himself an expert in morality.
16379. *His Honor.*] Mr. Atkinson does not pose as an expert in morality.
16380. *Witness.*] I think not.
16381. *Mr. Robertson.*] I certainly think that a person who knows of a danger or defect—it does not matter how you describe it—if he is not actually responsible, is certainly responsible morally.
16382. *Witness.*] Whether he be official or miner?
16383. *Mr. Bruce Smith.*] It raises the question as to how far certain people realise the danger of certain conditions. If they do not realise the danger, it is a question how far they are responsible.
16384. *Mr. Robertson.*] *Q.* It has been alleged that miners are afraid to report? *A.* Yes.
16385. *Q.* Do you think, speaking from your own knowledge—you have been a Manager yourself—there is any warrant, generally speaking, for such an assertion? *A.* I think there may be some little in it; but I think the miners exaggerate the possible consequences very much. I think it is a very unfortunate feature.
16386. *Q.* But do you not think most Mining Managers would rather welcome reports from the miners, or anybody as to defects? The Managers cannot be at every part of the mine, and must, necessarily, rely upon reports; and, therefore, every additional Inspector that can bring information to the Manager is of assistance? *A.* Yes; they should rather seek to have complaints than to suppress the knowledge of any possible danger.
16387. *Q.* Of course you have read Mr. Hall's report on the matter of watering roadways? *A.* I have.
16388. *Q.* And its failure in his district? *A.* Yes.
16389. *Q.* Do you recollect the explosion at Fernie, in Canada? *A.* During last year?
16390. *Q.* Last year, I think it was? *A.* Yes.
16391. *Q.* This is a report, which I am going to read part of, by Mr. Blakemore? *A.* I have read the report.
16392. *Q.* Mr. Blakemore wrote: "At the Fernie Mine there were considerable areas where water was lying or dripping; and yet these wet areas had no effect upon the spread of the explosion which passed over or through them with apparently the same ease as would have been the case if they had been dry." In view of that, and Mr. Hall's evidence, and also the experience at Kembla, where the explosion jumped long lengths of damp or wet roads, do you still rely upon short sections of wet roads to arrest an explosion? *A.* I think that the information, in regard to even the Fernie Colliery, does not describe it as a length of properly-wetted road. It says there is wet. I certainly know of several cases where properly-wetted lengths of road, or roads which, over a certain length, have been naturally wet, have stopped explosions.
16393. *Q.* This is what Mr. Blakemore says: "At the Fernie Mine there were considerable areas where water was lying or dripping"? *A.* He does not give us the length.
16394. *Q.* He says "considerable areas"—does not that point to the conclusion that, if watering is to be effective, it must be thorough, and must not stop short at 100, or 200, or 300 yards, and it must not be confined to any one outlet from the district, but to every outlet? *A.* Yes, the evidence does certainly point in that direction.
16395. *Q.* So the money is absolutely wasted in watering unless it is done thoroughly over long distances? *Q.* I am not satisfied as to that myself.

16396. *Q.* I am asking you from the light of experience. There is what Mr. Hall says, and what Mr. Blakemore says, and what we have ourselves observed at Kembla? *A.* Yes. On the other hand I could show you quite as many instances, and quite as many authorities, who hold opposite opinions. It is not a matter which has been decided. There is still great variance on the subject.

16397. *Q.* But I think it does generally point to the necessity for watering, if it is to be done at all, to be done on a large scale? *A.* Yes, that would be better and that would exclude the necessity for separate wet lengths if the whole thing were watered.

16398. *Q.* Assuming that the roads are watered, do not you think, in a very dusty mine, the dust in suspension in the air—that is the dust raised by the miners in shovelling into the skips, would be sufficient of itself to carry an explosion through a mine? *A.* No doubt it would have that effect along the faces, especially in a long-wall face.

16399. *Q.* As a matter of fact, I take it, the actual amount of dust required to carry an explosion along is really infinitesimal? *A.* Yes, it is really very small; in fact, one has read an authority saying that sufficient dust to blacken a white handkerchief, just by holding it up, is sufficient to carry it. Perhaps that may be an exaggerated opinion; but some authorities go so far.

16400. *Q.* But have you not observed dust raised in a mine, suspended in the air, sufficient to carry on an explosion? I am not speaking of what is concealed on the timbers and on the floor? *A.* Yes, I think, particularly near the bottom of the downcast shaft, where a lot of dust is coming down from the surface, there might be a sufficient quantity floating in the air.

16401. *Mr. Bruce Smith.*] Mr. Robertson, is it not feasible that, although a length of wet road may not prevent an explosion passing over it, it will prevent that length of road from being the source of another coal-dust explosion to join on to the first?

16402. *Mr. Robertson.*] Yes.

16403. *Mr. Bruce Smith.*] It travels from one place on to raise an explosion in another; but, although it may jump over a wet section, the fact of that section being wet, prevents dust being raised from that section to extend the explosion.

16404. *Mr. Robertson*] But if it jumps over a wet section, it may pick up dust on the other side to extend it.

16405. *Q.* Now, I think you said that watering was admittedly harmful to the roof, and floor, and sides? *A.* In some cases, yes.

16406. *Q.* And, in mines with a very high temperature, it would be destructive to the timber? *A.* It would also have a tendency in that direction, no doubt.

16407. *Q.* And it would be a very serious matter, would it not, to water a large mine systematically? *A.* You mean a costly matter?

16408. *Q.* Yes? *A.* Yes; it would.

16409. *Q.* Both in the first cost, and in maintenance afterwards? *A.* Yes.

16410. *Q.* Is it really practicable, I mean commercially practicable? *A.* You refer now, I take it, to a colliery where it is necessary to water intakes, travelling roads, faces, all workings, and returns?

16411. *Q.* Yes? *Q.* In such a case as that, I think that it would be, possibly, commercially impracticable.

16412. *Q.* To be of any practical use it must be thorough? *A.* Yes; but I do not think there are many mines in this State where it would be necessary to water the returns, equally with the intakes, in order to secure safety.

16413. *Q.* In my experience, speaking of one mine that I am connected with, I find the returns are the dustiest. *A.* Yes, referring to the Metropolitan, of course I know that it is dusty in returns, and working places, and intakes, and all over the place.

16414. *Q.* You have estimated, I think, the quantity of water for damping: I think you said it was a $\frac{1}{4}$ of a gallon to the square yard? *A.* That was in a paper, "The Colliery Manager."

16415. *Q.* That comes to about 5,000 gallons per mile? *A.* Yes.

16416. *Q.* And if you have 40 miles it is 200,000 gallons? *A.* Yes.

16417. *Q.* That would not be procurable at any mine in this State? *A.* Not to do the watering sufficiently often to be of any value.

16418. *Q.* General Rule 12 provides, I think, for either watering in the vicinity of a shot or permitted explosives? Yes.

16419. *Q.* Well, when the circumstances were such that watering was impracticable, by reason of the scarcity of water, or the cost, would it not meet the case if shots were permitted in the faces at night, if permitted explosives were used, and fired by electricity under strict supervision? *A.* I think, even with the permitted explosives, they should observe the same precautions as to watering as with blasting powder.

16420. *Q.* No doubt, if practicable? *A.* If not practicable, I think the safety explosives should not be used.

16421. *Q.* But, under General Rule 12, you can use permitted explosives without watering? *A.* Yes.

16422. *Q.* What is your opinion as to the use of gunpowder in mines not naturally wet, and free from gas? *A.* I think that the use of gunpowder in such cases should be excluded.

16423. *Q.* Prohibited altogether? *A.* Prohibited.

16424. *Q.* And shot-firing entrusted to responsible officials? *A.* s.

16425. *Q.* What is your opinion as to the method of firing shots any kind with a fuse? *A.* In regard to what?

16426. *Q.* With special reference to mines not naturally wet and ree from gas? *A.* Well, are you supposing that they are using gunpowder with the fuse?

16427. *Q.* No; I am supposing that it is necessary to use permitted explosives? *A.* I think that the safest method is to fire with an electric battery in such a case.

16428. *Q.* And you do not approve of firing with a fuse? *A.* With a permitted explosive?

16429. *Q.* Yes? *A.* No.

16430. *Q.* I think most people admit that the phraseology of General Rule 12 is obscure and complicated? *A.* Yes, it is.

16431. *Q.* I think that no mining man has yet admitted that he could interpret General Rule 12 without sitting down and thinking very hard? *A.* No.

16432. *Q.* Do not you think this rule should be redrafted? *A.* Yes, I think it would be much better if it were made much plainer.

Witness—A. A. Atkinson, 16 February, 1903.

16433. *Q.* In such a form that an ordinary man with ordinary education could clearly understand? *A.* Yes, I think that is very desirable.
16434. *Q.* And that is quite possible? *A.* I think so.
16435. *Q.* It is a perfect Chinese puzzle. Would not the framing of such a rule be very much easier if you prohibited gunpowder in certain mines? *A.* Yes, I think it would.
16436. *Q.* Would you favour the appointment of a board, representing the different interests, to whom questions of the expediency of the new Special Rules, or any differences of opinion between the Inspector and the Managers, might be referred? *A.* Yes, I think such a board might do very useful work.
16437. *Q.* We have heard a great deal from the miners as to the necessity for cut-throughs being more frequent? *A.* Yes, I have.
16438. *Q.* Do you think that such a suggestion would be fatal to the safe working and to the economical working of seams at more than moderate depths? *A.* Yes, I think it would be in the case of deep mines.
16439. *Q.* Are not all such restrictions upon a manager's discretion as to the best method of working prejudicial? *A.* I think it is unnecessary to indicate the manner in which a seam shall be worked, even to the extent of cut throughs.
16440. *Q.* Mining is essentially an industry where efficiency and success depend upon the intelligence the management shows in adapting methods to conditions? *A.* Yes, the conditions are so varied that it is almost impossible to lay down any general lines.
16441. *Q.* And it is not desirable for legislation, having imposed great responsibilities upon the manager, to limit his discretion as to what particular method of working he will adopt for a particular end? *A.* I think it is unnecessary.
16442. *Q.* Then, as to any objection that may be raised that a manager is carrying on a system of working which is reckless, the remedy would be to have the matter referred, on the complaint of the Inspector, to arbitration, or to this permanent board that I have suggested.
16443. *Q.* Respecting furnaces, would you favour the following provision—"That, with the exception of existing mines where a furnace is in use capable of supplying sufficient air to meet the requirements of the Act, the ventilation of all collieries where the number of persons employed exceeds thirty shall be produced by fans; provided that when, in the opinion of the owners, the quantity of mineral to be gotten will not warrant the expense, or where, from any cause, the erection of fans would be difficult or inexpedient, the Minister may grant an exemption; or, failing this, that the matter be referred to arbitration? *A.* Yes; I think that contains part of the suggestion which I mentioned.
16444. *Q.* That is to say, it prohibits furnaces being used unless under special conditions approved by the Minister? *A.* Yes; I think a rule to that effect would answer all purposes.
16445. *Q.* And it permits the continuance of the use of furnaces at mines where furnaces are already in use, and capable of supplying sufficient ventilation? *A.* Yes; it seems to be a reasonable suggestion.
16446. *Q.* Then, where furnaces are in use, do you not think that they should be so constructed and surrounded by protecting walls and air passages as to prevent the ignition of the stream or stratum? *A.* Yes.
16447. *Q.* Fires have been caused? *A.* By furnaces, yes.
16448. *Q.* Without some protection? *A.* Yes.
16449. *Q.* And, where a furnace is in use, do you think the shaft should be lined with brick? *A.* Yes, I think the strata in such a case should be lined with brick in this State.
16450. *Q.* And, where a furnace is used, a separate outlet for men should be provided? *A.* In addition to the ordinary downcast shaft?
16451. *Q.* Yes, unless in a case of a mine—I do not know whether there are any—where the upcast is also the second outlet? *A.* There are cases where the upcast has a furnace, and has a second outlet.
16452. *Q.* In any mines henceforth would you permit the furnace shaft to be used as an outlet for the men? *A.* I think regulations for the future might prohibit it; but it must be that there are some existing conditions which will have to be considered.
16453. *Q.* Quite so, I recognise the difficulty with existing mines. Speaking about shafts, I think you made the remark that the strata in this State were rather treacherous? *A.* Yes, generally speaking I think they are.
16454. *Q.* They are affected by the atmosphere? *A.* By the weather.
16455. *Q.* In a way that we, with British experience, are rather surprised at? *A.* Yes; in some cases the strata fret a good deal.
16456. *Q.* And would you think it necessary in any shafts that are sunk after this date, where persons have to ascend or descend, to have them lined with either brick or timber? *A.* Yes, I agree with that suggestion.
16457. *Q.* Something has been said or recommended as to scientific instruments being required at the shaft—is it not a fact that the indications of the barometer are of no practical value? *A.* No, the movements of the gas are so much quicker than the movements of the mercury that the gas may have come and gone before the mercury begins to be moved.
16458. *Q.* Does that take place before the indications are recorded? *A.* Yes.
16459. *Q.* And, with the exception of the water gauge, I take it that no importance at all is attached by the best men to barometrical or thermometrical readings? *A.* That is the general opinion.
16460. *Q.* I take it that, if the ventilation of the mine is regulated by the variations of the barometer there is not a sufficient margin of safety? *A.* No.
16461. *Q.* And the ventilation should be sufficient to meet all possible conditions, such as a variation in the atmospheric pressure? *A.* Yes, it should.
16462. *Q.* General Rule 9 says—"Wherever safety-lamps are used, they shall be so constructed that they may be safely carried against the air current ordinarily prevailing in that part of the mine in which the lamps are for the time being in use, even though such current should be inflammable." As a matter of fact, it is impossible to find a lamp fulfilling those conditions? [*Witness did not answer.*]
16463. *Q.* Do you know of any safety-lamp capable of being safely carried against an explosive current at any velocity? *A.* Not at any velocity; but at the velocities ordinarily prevailing in the mine. Of course, sometimes, in exceptional cases, you get very high velocities—50 feet a second.
16464. *Q.* A good deal more? *A.* In which case a safety-lamp would probably fail; but those conditions are very exceptional.

16465. *Q.* Would it not be better to have this rule so framed that an approved type of safety-lamp could be used; because, in practice, that is what it amounts to? *A.* Yes, that is the general result.
16466. *Q.* There seems to be no evidence that gas had accumulated in the No. 1 back heading prior to the explosion? *A.* No, I think not.
16467. *Q.* As far as you know the brattice was in perfect condition? *A.* The brattice was in the back heading after the explosion; I saw it; and I have no reason to think that it was not up in the usual way.
16468. *Q.* As a matter of fact, very little of it was deranged after the explosion? *A.* No, not much of it.
16469. *Q.* That being so—was not that the second place the fresh air passed through? *A.* Yes.
16470. *Q.* Do you think it is reasonable to assume that gas existed at that point? *A.* I think that, as gas was afterwards found there, there might be a small percentage undetectable even with the safety-lamp.
16471. *Q.* I am quite prepared to agree with you there; but it is not probable that gas could have been found in that place capable of being detected by the ordinary lamp? *A.* No, I do not think I have suggested that.
16472. *Q.* But you suggest that, when the explosion reached that point, it received further fuel, as it were, and fresh energy, from the gas which you supposed had accumulated there? *A.* I do not think I used the word "accumulated"; I think I said a small percentage of gas in the air.
16473. *Q.* I gathered from your remarks that you had assumed some gas to be there of a percentage capable of being detected with the ordinary lamp? *A.* I do not think I have suggested that.
16474. *Q.* Part of the explosion passed on to the left, and part passed down the back heading? *A.* Yes.
16475. *Q.* How is that consistent with the circumstance of Morris' bottle and Morris' shirt and canvas having been blown uphill, in the direction which you say the explosion came out from? *A.* Yes—well, I could not attempt to account for the position of everything you can see after an explosion; and I can only suggest that those things were carried there by the air when it was recovering its equilibrium—"back lash," as it is sometimes called.
16476. *Q.* At all events they seem irreconcilable with the theory of the explosion having come down hill? *A.* I do not think so.
16477. *Q.* In your evidence there is a quotation from Atkinson's work, page 396 of the notes:—

> The coking of the dust is an indication often wanting over long lines, where great force and flame have passed. It is more noticed at the working faces than on the haulage road. It was not observed at the shaft limit of an explosion. A chemical and microscopical examination of dust on haulage roads in the absence of coking, affords reasons for asserting the passage of flame.

You had some samples taken of dust along the No. 1 main haulage road? *A.* Yes.
16478. *Q.* And they were microscopically examined? *A.* Yes.
16479. *Q.* And gave no indication of coking? *A.* It is sometimes difficult for anyone to say exactly when the coking process commences; and an amateur inspecting coal-dust microscopically is very often deceived.
16480. *Q.* But the examination was made by Mr. Hamlet? *A.* By Mr. Mingaye.
16481. *Q.* But he is not an amateur? *A.* Oh no, I do not suggest that. I did not suggest it in his case.
16482. *Q.* I understood the tenor of his report was that the dust was quite unchanged? *A.* No, I did not gather that at all; in fact he said that he thought that it had been subject to flame. Mr. Mingaye is prepared to give evidence, if the Commission desire it.
16483. *Q.* Did not you refer to it in your evidence at the inquest—the samples were taken before the inquest? *A.* They were. I might have made some reference in my evidence to it—I forgot just now. [*Referring to notes of Coroner's inquest.*] At the bottom of page 56 I referred to some dust collected at the bottom of the 4th Left rope road as follows:—"I took a sample of that dust, and had it examined microscopically, to see if it had been coked. The Mineralogist of the Mines Department reported to me that there were no signs of coking."
16484. *Q.* Have you read this report from Mr. Hamlet? *A.* Yes.
16485. *Q.* You know that samples were taken by the Commission of the dust that was found plastered on the side of the seam in the back heading (No. 1 Right Main Back Heading)? *A.* Yes, so I understand.
16486. *Q.* You will observe that the volatile hydro-carbons are, to all intents and purposes, precisely the same in the supposed coked-dust as in the original dust? *A.* Yes.
16487. *Q.* If that is so, and none of the volatile constituents of the dust have been driven off, how do you reconcile that with a dust explosion? *A.* I must say that I was surprised to see that none of the volatile hydro-carbons had been driven off.
16488. *Q.* It is absolutely certain, if that sample represents the dust throughout the mine, and if none of the volatile matter has been driven off, that there has been no dust explosion: you could not have a dust explosion without changing the chemical constituents of the coal-dust? *A.* I think there has been a coal-dust explosion in spite of Mr. Hamlet's analysis.
16489. *Q.* Yes, that is a reasonable assumption; but how is it to be reconciled with the analysis of the supposed coked coal-dust? *A.* I cannot reconcile it.
16490. *Q.* It is quite clear that the dust which we supposed to be coked is simply agglomerated, stuck together in a pastey manner; probably raised to a temperature sufficient to form it into a pastey mass, but not to expel the volatile hydro-carbons? *A.* I should have thought that heat sufficient to burn the canvas would have been sufficient to expel some hydro carbons from the coal.
16491. *Q.* Well, we have Mr. Hamlet's analysis? *A.* Quite so. It is a difficult matter which I cannot explain.
16492. *His Honor.*] *Q.* Have you gone in much for the chemistry of the matter, Mr. Atkinson, or only for the general mineralogy and management of mines; are you an expert in chemistry? *A.* No.
16493. *Mr. Robertson.*] *Q.* Still it does not require any great knowledge of chemistry to see that you cannot have a dust explosion without changing the chemical composition of the dust? *A.* No, I suppose not.
16494. *His Honor.*] Yes; but there might be a question whether the finer particles of dust might not be completely transformed, in fact; whilst the larger particles of dust were only partially coked.
16495. *Mr. Robertson.*] You mean, Your Honor, that the solid carbon in the very finer particles of dust might have been actually consumed?
16496. *His Honor.*] Yes, those in a very fine state of division; whilst the larger particles might show partial signs of coking, but not have their volatile hydro-carbons driven off, or the larger portion of them.
16197. *Mr. Robertson.*] *Q.* It seems evident, Mr. Atkinson, that in a coal-dust explosion, no matter what quantity of dust may be present, only a very small proportion actually plays a part in the explosion? *A.* Yes, I think that has been shown.

16498. *Q.* And it may be, as His Honor suggests, that the very fine and impalpable dust has vanished entirely; I mean to say that the solid carbon has been consumed in a gaseous form, and that the coarser particles have been stuck together by the heat of the explosion? *A.* Yes.
16499. *Q.* That seems the only explanation of this apparently irreconcilable analysis? *Q.* Yes, it is very difficult to understand.
16500. *Q.* Coming to those tests at Woolwich, of coal-dusts from New South Wales, were not the explosions all brought about by a gunpowder shot? *A.* Yes.
16501. *Q.* If a permitted explosive had been used, do you think there is any probability that any of those dusts would have been ignited? *A.* No, I think not; and I think that is the experience of the testing at the same station at home.
16502. *Q.* So that, if the experiments had been made with permitted explosives, the report would have come back practically a clean sheet? *A.* Yes.
16503. *Q.* With reference to certificates of service, when the English Act of 1872 was passed, I think there was a similar provision giving certificates of service to Managers who already held that position? Yes.
16504. *Q.* Have you ever heard it suggested in Britain that the holders of certificates of service should be deprived of them, or that their certificates should be cancelled because of their want of scientific knowledge? *A.* No, not for that reason. Certificates have been questioned, and inquiries made, in some few cases. They have the same provision there as in the Act here, in this State, in order to make inquiries where representations have been made as to incompetency.
16505. *Q* Where there is some specific charge? *A.* Yes.
16506. *Q.* As the result, probably, of some accident? *A.* Generally speaking, as the result of some accident.
16507. *Mr. Ritchie.*] *Q.* Have you ever known any inquiries to be made into the fitness of any person holding a certificate who has not been mixed up with a disaster or accident of some kind? *A.* I think the Newcastle Company's case was one.
16508. *Q.* Was not that a disaster? *A.* There was no disaster.
16509. *Q.* What was it? *A.* There was a case of a man having been burnt, and its not having been reported.
16510. *Q.* I suppose you regarded that as an accident? *A.* Yes; it should have been reported; but it is not a disaster.
16511. *Q.* I think I said "disaster or accident"; I suppose you regarded that as an accident? *A.* Yes.
16512. *Mr. Robertson.*] *Q.* I take it that a holder of a certificate of service may, by reason of his practical experience and sound judgment, be a perfectly competent man to manage a mine, even if he should lack a knowledge of the chemistry of mine gases? *A.* Yes; I know a number of very capable men who know very little about the chemistry of gases.
16513. *Q.* I suppose there are numbers of men with scientific knowledge who would probably be quite unfit for the position of manager? *A.* Doubtless there are.
16514. *Mr. Ritchie.*] *Q.* Do you mean by that that some of those who have passed the examination for their certificate of competency are unfit? *A.* No, I do not suggest that.
16515. *Mr. Bruce Smith*] You mean it is possible for a man to pass the examination and yet not be practically fit.
16516. *Mr. Robertson.*] *Q.* Although a Manager has all the necessary scientific knowledge, he may fail, I presume, through lack of judgment or through being short of a good fund of common-sense? *A.* Yes; I suppose there may be such cases.
16517. *Q.* With reference to waste workings, I suppose you are aware that the report of the Stockton Inquiry placed a considerable importance upon the inspection of the waste workings and the circulation of air? *A.* Yes.
16518. *Q.* Is it not a fact that the proposals or suggestions were, if I am not mistaken, received with some indifference in the Department? *A.* I am not aware of that: it was before my time.
16519. *Q.* You have read the report, I suppose? *A.* Yes.
16519½. *Q.* My impression is that it did not receive the attention that it should have received in the Department. I think that was just a year or so prior to your taking your present position? *A.* Yes.
16520. *Q.* Can you say whether this suggestion has been given effect to at any mines in the State? *A.* With reference to the inspection of old workings?
16521. *Q.* Yes, and the circulation of air? *A.* Yes, the old workings are inspected at all the collieries.
16522. *Q.* At all events you find a special rule at some collieries requiring them to inspect? *A.* Yes.
16523. *Q.* Do you know whether such a rule was in force at Dudley prior to the explosion? *A.* No, I do not think that there was, as far as I can remember.

[At 1 p.m. the Commission adjourned until 2 p.m.]

AFTERNOON.

(On resuming at 2 p.m., Mr. W. R. Pratt attended to take shorthand notes of the evidence and proceedings.)

ALFRED ASHLEY ATKINSON, previously sworn, was further examined as under:—

16524. *Mr. Robertson.*] *Q.* Can you give me the number of Inspectors, and assistants—that is the Imperial Inspectors—employed in Great Britain? *A.* There are twelve Chief Inspectors and twenty-four Inspectors' Assistants.
16525. *Q.* That is thirty six? *A.* That is thirty-six.
16526. *Q.* Can you tell me roughly what is the annual output in Great Britain? *A.* Over 200,000,000 tons?
16527. *Q.* That is 6,000,000 to each Inspector? *A.* Yes.
16528. *Q.* What is the number of Inspectors here? *A.* Four, including myself.
16529. *Q.* What is the annual output? *A.* 6,000,000 tons.
16530. *Q.* That is nearly one Inspector for every 1,500,000 tons? *A.* Yes.
16531. *Q.* So that we have two Inspectors to each one in Great Britain according to the output. *A.* We have a great many more. We have four times as many on the basis of the output.
16532. *Q.* Coming to this matter of the leakage of air, and the measurement of the air near to the face. Is it good practice to attempt to force the whole of the ventilation, or the whole of the ventilation of a district, round the working faces? *A.* No, a certain quantity which escapes through the stoppings and the doors into the old workings and the return airways, does useful work. 16533.

16533. *Q.* Are not certain other parts of the mine to be ventilated as well as the working faces? *A.* Yes.
16534. *Q.* Then if the working faces are adequately ventilated, is not that all that is required? *A.* I think so.
16535. *Q.* If 500 feet of air are sufficient to keep the working places properly ventilated, there is no good reason why 5,000 feet should be forced into them? No, I think it would be unnecessary.
16536. *Q.* Would not the fact of attempting to force an undue proportion of air around the working places reduce the total volume of air in the mine? *A.* Yes, it would put unnecessary friction upon the air.
16537. *Q.* Then if the air was measured as suggested in the working places, you could form no idea as to whether the other portions of the mine received their proper quota? *A.* I do not follow you
16538. *Q.* If the air, as suggested, was measured at the working places, you could form no idea whether other parts of the mine, which it is equally important to have properly ventilated, were so ventilated? *A.* You could only judge by the ventilation in those particular other parts.
16539. *Q.* In the same way as when you measure the air at the intake of the split, you judge of the condition of the working places by visiting them? *A.* Yes.
16540. *Q.* If you measure the air at the intake of the split, you ascertain by inspection afterwards that the air is well distributed. Is not that in accordance with common-sense. *A.* Yes.
16541. *Q.* And good mining practice? *A.* Yes.
16542. *Q.* Some stress has been laid on the fact that pillars were left in the 35-acre goaf? Yes.
16543. *Q.* If there was a belief, rightly or wrongly, in the first working of the place that no gas had been made, and that no gas had been made when working the pillars, it would not be a reflection on the management if they took no notice of a small pillar left in the workings? *A.* I think it is not good management to leave pillars in that way.
16544. *Q.* Still pillars are left, from one cause or another, occasionally? *A.* Occasionally.
16545. *Q.* But the fact of leaving a pillar or so in this 35 acre goaf, when they were supposed to be free from gas, could have no particular significance in connection with this explosion? *A.* The fact of a pillar being left in a goaf in that way causes the roof to ride upon it as a lever instead of allowing it to settle down gradually, and in that way it may cause cavities.
16546. *Q.* Yes, but if an area of 35 acres has been worked out, I take it that you will agree with me, that the place has been consolidated to such an extent that there are no cavities at all? *A.* Excepting round the edges.
16547. *Q.* I am speaking of the heart of the goaf? *A.* It would become consolidated if 35 acres had been worked.
16548. *Q.* Perfectly consolidated—tight? *A.* I think so.
16549. *Q.* So that there could be no space in this goaf excepting these 2 chains known to be upstanding? *A.* Excepting round the edges.
16550. *Mr. Bruce Smith.*] *Q.* The pillars were pretty near the edges? *A.* We have no evidence as to where they were.
16551. *Mr. Robertson.*] Do you not know Mr. Ronaldson, Mr. Rogers' predecessor? *A.* Yes.
16552. *Q.* Was he a gentlemen of education, thoroughly qualified and up to date? *A.* Yes, I think so.
16553. *Q.* Do you know whether the methods of working adopted in Mr. Rogers' time differ very materially to those which obtained during the time that Mr. Ronaldson was Manager? *A.* I was not in the State when Mr. Ronaldson was Manager.
16554. *Q.* Do you see any reason why the certificates of competency issued under the Imperial Act should not be recognised here? *A.* I do not.
16554½. *Q.* Will it not tend to restrict the influx of educated and first-class mining men, if such certificates are not recognised? *A.* Yes. I think that mining men in the old country have far more opportunities of becoming acquainted with mining matters, in all stages of difficulty, than we have here, and, therefore, they should be equally as competent as the men who are here.
16555. *Q.* These men ought not to be considered as being undesirable people to admit to the colonies? *A.* No, I think, on the contrary, that they should be allowed to come here, and I think it would have a good effect if they did come.
16556. *Q.* The experience to be gained in the coal-fields of Great Britain, and the general conditions of the fields there, are more varied than here? *A.* Yes.
16557. *Q.* And you think that we ought to have the advantage of the men who have been trained under these varying conditions in the British coal-fields? *A.* Yes, I think so.

Examined by Mr. Ritchie:—

16558. *Q.* Is there any legal obligation on the part of the mine proprietors to force the ventilation to places other than the working faces, the travelling roads, and the haulage roads? *A.* I think there is under the special rules.
16559. *Q.* Are there special rules in all collieries referring to this matter of ventilation? *A.* Yes.
16560. *Q.* You mean that a certain quantity of air has to be provided for each man, boy, and horse? *A.* Yes.
16561. *Q.* Is there any legal obligation to provide any given quantity of air for the standing workings, apart from the air supply for each man, boy, and horse? *A.* No.
16562. *Q.* So that if a sufficient quantity of air goes round to the working faces no outlying parts receive attention? *A.* That would be sufficient to comply with the law.
16563. *Q.* Do you think that there should be a given quantity of air going into the waste workings, or standing places, apart from that provided for in the Act of Parliament? *A.* I think it would be a difficult matter to arrange for a definite quantity of air to be taken into all waste places.
16564. *Q.* Would you not make provision for it by providing that an adequate quantity of air should be sent into these places? [*No answer.*]
16565. *Q.* I think there is no provision at the present time compelling any given quantity of air to be sent into the waste places? *A.* Quite so; but as a matter of fact you cannot prevent the air travelling by the return airways. The air that goes in must come out. Of course the Act of Parliament does not direct that the air shall be forced into each and every waste place in certain quantities.
16566. *Q.* You know, in practice, large areas in a mine are abandoned for the time being? *A.* Yes.

16567. *Q.* Is there any obligation to compel proprietors to keep those abandoned areas free from accumulations of gas? *A.* No, there is nothing in the law.
16568. *Q.* Do you think it necessary some provision should be made for this? *A.* I think it would be well if some provision were made with a view of these old workings being kept clear from the accumulation of noxious gases.
16569. *Q.* As Chief Inspector is there nothing you can suggest? *A.* I think it would be a difficult matter to arrange for a definite quantity of air to be sent to those places. At present I can think of nothing definite. It would require some little time to deal with the matter.
16570. *Q.* I understand that you are coming up for examination later on. Perhaps you will think over the matter and let me know then? *A.* Yes.
16571. *Q.* You see the importance of it and you think it is necessary? *A.* Yes.
16572. *Q. Mr. Robertson.*] *Q.* You say that it is desirable that there should be some provision requiring waste workings to be ventilated? *A.* Yes.
16573. *Q.* And as far as practicable kept free from noxious gases? *A.* Yes.
16574. *Q.* But I understand you to say that it is a difficult matter to carry into practice? *A.* Yes, I recognise that.
16575. *Mr. Ritchie.*] *Q.* Did I understand you to say in the early part of your examination that you believed in watering being carried out as far as practicable, and that such watering was a partial preventative of explosions? *A.* Yes.
16576. *Q.* Do you favour watering in every part of the haulage and travelling roads? *A.* If practicable, yes.
16577. *Q.* What are the obstacles in the way which cause you to say if practicable? *A.* The effect that water has on the roof and on the floor, and the fact that in some mines there is not a sufficient quantity of water to do the work.
16578. *Q.* In a dusty mine, assuming that the whole of the roads were properly watered, would that have any effect in preventing an explosion? *A.* Provided it was practicable to do it.
16579. *Q.* It would localise the disaster? *A.* Yes.
16580. *Q.* To what extent would it prevent disasters? You gave us some percentages as to minimising the risks. What percentage of risk would watering take away, in your opinion? *A.* Are we supposing a mine which is dry and thoroughly watered, and in which only safety-lamps are used?
16581. *Q.* I am leaving the question of safety-lamps out of the question for the present. Take Mount Kembla as it was prior to the disaster. If that mine had been thoroughly watered before the disaster, would it, in your opinion, have prevented the disaster? *A.* I think, anyhow, that it could not possibly have been so widespread.
16582. *Q.* If the mine had been thoroughly watered, do you think it would have prevented the explosion? *A.* If the mixture which came out of No. 4 Right was of such a composition as to be inflammable, without any coal-dust, there would doubtless have been an explosion; but it would have been local.
16583. *Q.* The effect would not have been so great? *A.* No.
16584. *Q.* To what extent do you think that coal-dust played a part in the disaster;—do you think that it was a more important factor than the gas itself, or was the gas more important? *A.* I think the dust was the more important factor in spreading the explosion.
16585. *Mr. Robertson.*] *Q.* Do you think if there had been no water used, but that safety-lamps had been used, this explosion would have occurred? *A.* I think not.
16586. *Mr. Ritchie.*] *Q.* At all events, with regard to watering, I take it that where it can be carried out you regard that as a safeguard which would largely prevent, or, at all events, localise, an explosion? *A.* Yes.
16587. *Q.* Dealing with the Mount Kembla Colliery disaster, if that mine had been thoroughly watered, and taking it for granted that what you suppose occurred—a quantity of inflammable mixture came out of the 4th Right—it would have caused an explosion, but it would not have gone beyond the 4th Right? *A.* I think the explosion would have been purely local.
16588. *Q.* In that case, with your knowledge of the number of men in the vicinity of where the gas came from, would the number of deaths have been so serious? *A.* The number of lives lost would have been greatly reduced.
16589. *Q.* You gave a percentage with regard to the reduction of risk where safety-lamps are used. I think you said the reduction was 75 per cent. Do you know of any collieries where explosions have taken place where safety-lamps are used exclusively? *A.* Oh, yes, several.
16590. *Q.* Can you name them? *A.* There is the Seaham Colliery, the Usworth Colliery, and the Trimdon Grange Colliery, along with several others.
16591. *Q.* The Seaham disaster was a serious one? *A.* There were 164 deaths.
16592. *Q.* Were they using safety-lamps in that mine? *A.* Yes, with the exception of a small length of the intake airway.
16593. *Q.* Did this small exception have any connection with the explosion? *A.* The Seaham disaster was initiated by a blast from a shot on the haulage road about 200 yards from the downcast pit bottom.
16594. *Q.* Are all explosions attributable to blasting where safety-lamps are used? *A.* The Seaham disaster was. As to the Trimdon Grange, some say that that was due to blasting, and some thought that it was an ignition of fire-damp where pumping out of water had taken place.
16595. *His Honor.*] *Q.* What light would be reached? *A.* A naked light.
16596. *Mr. Ritchie.*] *Q.* I thought there were no naked lights used? *A.* This was a naked light in the intake airway.
16597. *Q.* You said in answer to Mr. Robertson that if safety-lamps were used in a mine it would reduce the risk of explosion 75 per cent.? *A.* Yes.
16598. *Q.* Do I understand that you advocate the use of safety-lamps in the intake airways as well as in other parts of the mine? *A.* I would only use naked lights a small distance from the downcast shaft or from the tunnel mouth.
16599. *Q.* Then you do not mean that every lamp in the pit should be a safety one? *A.* I think that within certain limits naked lights could be used near the pit bottom or for a short distance from the tunnel mouth.
16600. *Q.* Within what limits do you think they could be used? *Q.* I think it is desirable that naked lights should not be used for more than 200 yards from the tunnel mouth or from the pit bottom. 16601.

16601. *Q.* You have made yourself fully acquainted with the number of openings into the 4th Right waste? *A.* I have.
16602. *Q.* How many openings were there from all sides? *A.* I could not tell without looking at the plan. [*After looking at the plan.*] I see there are two openings on the west side; seven on the north side; six on the east side, and no openings on the south side.
16603. *Q.* That is, fifteen openings altogether? *A.* Yes.
16604. *Q.* Would it be possible for the air to go through these openings into that part of the goaf where the falls took place? *A.* I do not think so.
16605. *Q.* Why? *Q.* Because the area of the goaf is 35 acres, and it would be consolidated except at the edges.
16606. *Q.* How many openings would there be that the air compressed by this fall would come through? *A.* I do not quite understand what you mean.
16607. *Q.* There were 2 chains of a fall which took place in the 4th Right. How many openings were there for the air to get through, in any direction you like. Was there only the 4th Right, or was there any other place? *A.* Only the 4th Right, I think.
16608. *Q.* Then, in your opinion, the whole of the air expelled by the fall went in the direction of the 4th Right opening? *A.* I think so.
16609. *Q.* It is said that the first fall was one of 2 feet 6 inches in thickness, and that the height of the opening altogether was 6 feet or 6 feet 6 inches? *A.* I forget whether it was 5 feet 6 inches or 6 feet 6 inches.
16610. *Q.* I think it was about 6 feet or 6 feet 6 inches? *A.* It was somewhere about 6 feet.
16611. *Q.* Have you made any calculation as to the volume of air that would be expelled through that opening? *A.* No.
16612. *Q.* After the fall, there would be left an opening of about 4 feet, would there not? *A.* Yes.
16613. *Q.* Can you work out a calculation? *A.* Taking the height at 6 feet, there would be 3,872 cubic yards.
16614. *Q.* That would be the volume of air that would be expelled if that 2 feet 6 inches of roof came down suddenly, as we are told it came? *A.* Yes.
16615. *Mr. Robertson.*] After a fall, the debris usually occupies a greater space than before, does it not? *A.* Yes, it does.
16616. *Q.* Then the 2 feet 6 inches of roof falling might fill up all the space? *A.* I do not think so.
16617. *Mr. Ritchie.*] *Q.* If they were pretty large blocks which fell there would not be such a large space filled up. [*No answer.*]
16618. *Mr. Bruce Smith.*] I think that 4 feet would be a fair average as to the amount of space which would be filled.
16619. *Mr. Ritchie.*]. *Q.* I will take it at that. Having had a fall of 2 feet 6 inches to begin with, you said afterwards that there were a series of falls. The roof did not come down in one solid block, but there were a series of falls, probably extending over an hour? *A.* I said that I thought it was a large fall, and, in answer to Mr. Lysaght, who wished to have some idea as to the probable duration of the fall, I said that I thought it would be within an hour; but, whilst I said that, it may have been very much within the hour. It is impossible to say.
16620. *Q.* Would the next fall, having a narrower opening, be likely to dislodge a greater quantity of air than the first fall? *A.* Well, provided that the 2 feet 6 inches came down as a solid block I think that the first fall would expel the greater quantity of air.
16621. *Q.* Have you heard, or seen, any evidence which would lead you to believe that the first fall dislodged a greater quantity ef air through that opening than the other fall. *A.* No.
16622. *Q.* Have you heard anyone state that any damage at all was done by the first fall? *A.* No.
16623. *Q.* Does it not appear to your strange that the first fall, which would dislodge the greater quantity of air, did no damage; and that the second fall, which had no dust to operate upon, did do the damage? *A.* I think it strange if the 2 feet 6 inches came down, as suggested, in a solid block.
16624. *Q.* Even if it came down in the same way as the second fall did, does it not strike you as remarkable that the first fall, which had all the foul air and dust to operate upon, should have done no damage whatever; and that the second fall, which had not the dust, should have done so very much damage? *A.* I admit that I cannot account for it.
16625. *Q.* In view of this fact, does it not seem almost ridiculous to think that the second fall did all the damage, and that the first fall did no damage at all? *A.* No; we can only be guided by what, in our opinion, are the results of what did happen.
16626. *Q.* Of course, your theory is that the second fall liberated the gas, and at the zame time forced it out? *A.* I think so.
16627. *Q.* You have no personal knowledge of anything of that kind having occurred in the south previously. You say that you have no knowledge of any strata in the south containing gas? *A.* That is so.
16628. *Q.* Then it is mere conjecture on your part? *A.* No. After all, there is a certain amount of conjecture; but we must be guided by the results, by the evidences of force, and by the general possibilities.
16629. *Q.* Supposing the second fall did take place and dislodged a quantity of gas which was liberated. By the way, do I understand that the second fall liberated the gas, or the first fall? *A.* I think I have suggested that there might have been a small accumulation of gas as the result of the first fall; but I think that the second fall liberated the gas.
16630. *Q.* You still adhere to the decision that the second fall liberated the gas whilst it was falling? *A.* That is my opinion.
16631. *Q.* If the first part of the fall was more heavy, and caused a considerable volume of air to travel along, how do you account for the fact that Morrison's light lit the gas You have already told us that there was no radiation of force from the spot where Morrison's body was found? *A.* I have not said that there was no radiation of force. I said there was force along the 4th Left; also towards the north, and also to the east. The force from the 4th Right to the 4th Left, what little there is, is inbye.
16632. *Q.* But was not Morrison's body found on the inbye side of the 4th Left? *A.* Yes, it has been so reported.
16633. *Q.* And the indications of force on the 4th Left were coming from outbye direction, making inwards *A.* Yes.

16634. *Q.* That is not the radiation of force because of contact with Morrison's light? *A.* The position in which Morrison's body was found is no indication that that was the exact spot where the gas was ignited.
16635. *Q.* You think that the place where Morrison lit the gas was not the place where he was found? *A.* I do not think so. It would be impossible to define it. After gas has been lighted a body may be found some distance away from that place.
16636. *Q.* Was not the body found where Morrison's duties compelled him to be? *A.* His duties compelled him to be 12 or 14 yards on the outbye side of where the roads join, so as to detach the tubs as they came in. His duties compelled him to be within 12 or 14 yards of the junction of the two roads, one of which went to the 4th Left and the other straight up.
16637. *Q.* You are sure it was not the 5th Right road? *A.* I undertsood that he was there for the purpose of detaching the tubs on the 4th Left and sending them to the places straight up and to Morris.
16638. *Q.* How do you account for the clear and distinct radiation of force, in all directions, opposite the 4th Right? *A.* There is a difficulty in connection with the 4th Right and the 4th Left, but on that piece of road there was very little to indicate force, but what little force there was appeared to be inbye.
16639. *Q.* That is from the 4th Left? *A.* That is from the 4th Left.
16640. *Q.* Then you admit that the greater evidence of force was from the 4th Right? *A.* No. From the 4th Right to the 4th Left there was very little to indicate force, but what little force there was appeared to be inbye.
16641. *Mr. Robertson.*] *Q.* There were few obstacles such as props about? *A.* Yes.
16642. *Q.* They were not there to be knocked about? *A.* They were not there to be knocked about.
16643. *Mr. Ritchie*] *Q.* How do you account for the lad Morrison still having his light there to light the gas? *A.* Do you mean having his light on the engine road.
16644. *Q.* I mean, how do you account for his being able to keep a naked light in face of the current which would be caused by the fall? *A.* That difficulty has presented itself to me. I think that when the force of air came out of the 4th Right, it would be reduced by coming across the travelling road, which would act as a safety-valve, and the same would apply to it when it got to No. 1 main level.
16645. *Mr. Robertson*] *Q.* You think that the energy of the blast would be dissipated to a large extent? *A.* I think it would to a large extent. I think that his light must have been left to light the gas.
16646. *Q.* If the blast was so slight as to die away before it reached Morrison, do you not think that the air in the return airway was sufficiently strong to take off any foul matter and pass it off outbye, and not let it come inbye at all? [*No answer.*]
16647. *Q.* What I mean is that if the cushion of air in front of the blast died away so suddenly, that it had not sufficient energy left to put young Morrison's light out, do you not think that the energy of the air in the return airway would be sufficient to take it outbye, instead of letting it come inbye? *A.* It evidently has not been so. That is the only way I can explain it.
16648. *Q.* I think that your evidence is clear enough, that you still think there was gas in that back heading, although you do not now regard that as the origin of the first explosion? *A.* I think there may have been a small percentage of gas there.
16649. *Q.* And there is evidence of coked dust—you have formed your opinion in regard to that; and the other evidences of force in that direction? *A.* Yes.
16650. *Q.* Would it be at all possible or feasible that the gas which was in that back heading, was ignited by either Morris or his son, which caused the first explosion and so shook the strata as to cause a fall to take place in the 4th Right and expel the foul air which caused the disaster? *A.* I do not think that was possible.
16651. *Q.* That was your first idea? *A.* I was in doubt as to whether the explosion originated at that point or at the 4th Right.
16652. *Q.* Do you not think it is just as likely that Morris lit the gas in the back heading, as that Morrison lit the foul matter that came out of the 4th Right? *A.* Having regard to the forces I have observed, and being able to more thoroughly understand the plan, I do not think that that is possible.
16653. *Q.* There was no other light than Morrison's which would be likely to light this gas coming out of the 4th Right? *A.* Well, that was the nearest light, and it was the light in the direction in which the air-current went past No. 4 Right.
16654. *Q.* Would it be possible that the gas was so thick when it met Morrison's light that it burnt there and exploded afterwards? *A.* Do you mean back from the 4th Left?
16655. *Q.* Was the air so heavily charged with gas that it was really beyond the explosive point, and that it burnt until it got sufficiently mixed with air to make it explosive. Would that be possible? *A.* I do not think it would.
16656. *Q.* You think that the gas coming from the 4th Right was at explosive point all the time, and that it was sufficiently mixed with atmospheric air. Would it not send a cushion of air in front of it? *A.* There was a current of air passing the 4th Right.
16657. *Q.* I take it that the gas went in both directions? *A.* Yes.
16658. *Q.* A volume of gas would be forced out, and it would take some time to get sufficiently mixed with the air. Would it not burn then instead of exploding? *A.* I do not know of any similar case which has happened. I think it is unlikely.
16659. *Q.* In your opinion it was at explosive point all the time? *A.* After reaching No. 1 main level, it was.
16660. *Q.* Is there any evidence of force, outbye, from where Morrison was found? *A.* Not between the 4th Left and the 4th Right.
16661. *Q.* There is no evidence of force between the 4th Right and the 4th Left? *A.* No, not much.
16662. *Q.* Do you not think it strange that if the initial explosion took place off Morrison's light, there should be no indications of force outbye? *A.* It is difficult to find indications of force on all such occasions, especially where coal-dust is the agent.
16663. *Q.* Do you think that the gas was lit by Morrison and that you could find no indications of force on the outbye side of the 4th Left where you say it radiated from? *A.* You find all the indications of force on the outbye side of the 4th Right.
16664. *Q.* But none between the 4th Right and the 4th Left? *A.* No.
16665. *Q.* Although you say that that is where the initial explosion took place? *A.* In my opinion it did.

16666. *Q.* Is that consistent? *A.* I think it is. You cannot make all the forces which you observe in an explosion consistent with a theory.
16667. *Q.* The part between the 4th Right and the 4th Left—is there not a part there which is damp? *A.* Yes, there is a little water there, about 3 chains below the 4th Right.
16668. *Q.* On the outbye side? *A.* On the inbye side.
16669. *Q.* Was that sufficient to prevent the dust being exploded? *A.* Not on the sides. It was only damp a little on the floor.
16670. *Q.* If you had been Manager of the Mount Kembla Colliery prior to the disaster, and knew that you had a large area of roof likely to fall at any moment, what steps would you have taken to prevent any possible danger arising from the fall? *A.* The first precaution would be to remove the workmen from the vicinity.
16671. *Q.* What else? *A.* Are you supposing that there might be danger of gas?
16672. *Q.* I am supposing that you are Manager and that you do not know what danger there is ahead, but that you have 2 chains square likely to fall at any moment? *A.* If I had expected gas to be given off, I would have had safety-lamps used.
16673. *Q.* With the knowledge which you had of the colliery what would you have done? *A.* Seeing, so far as I know, that some 260 acres of goaf has been formed in the colliery without giving off any large quantity of fire-damp resulting in any accident, I do not know that I would have done anything beyond removing the workmen.
16674. *Q.* Have you ever heard of any gas being seen at all in that colliery, or have you had any evidence of force from any fall previously? *A.* I heard of Gallagher being burnt.
16675. *Q.* I mean through a fall in the waste such as this? *A.* In connection with Kembla?
16676. *Q.* Yes? *A.* Not that I am aware of.
16677. *Q.* You heard Morrison say that he had had as big falls as that before but that he never took any notice of them? *A.* I forget his evidence.
16678. *Mr. Robertson.*] I think Morrison denied that. I charged him with having said that to me but he denied having said it. My belief is that he said it to me.
16679. *Mr. Ritchie.*] *Q.* The only reason that you have got for supposing that gas came out of that waste when the fall took place, is that the disaster happened? *A.* Yes—and also having regard to all the circumstances of force that I have observed since the disaster.
16680. *Q.* The goaf was open when you went there first? *A.* Yes.
16681. *Q.* You tested for gas? *A.* Yes.
16682. *Q.* And you found none? *A.* No.
16683. *Q.* Is that consistent with your theory? *A.* You are frequently unable to find gas at a place after an explosion.
16684. *Q.* Although you could not find gas there where you think it came from, you find it elsewhere? *A.* Yes.
16685. *Q.* In several places? *A.* Yes.
16686. *Q.* I think you also told us that you rarely have any case in which gas is given off above the coal in the Southern district? *A.* I have not—but I have read of it in other places.
16687. *Mr. Bruce Smith.*] The history of the Southern coal district is limited.
16688. *Mr. Robertson.*] It extends over fifty years.
16689. *Mr. Ritchie.*] *Q.* That is sufficiently long to have an accumulation of gas if any is given off. Do you not think it more likely that the gas was there before the fall took place, in view of the fact that you found gas being given off in the coal which you have there, and that you do not know of any case in which it has been given off in the strata? *A.* It is possible, but I think some of that gas would have been found.
16690. *Q.* How could it be found if they come here and tell you they did not look for it? *A.* Men were travelling in that travelling road every day.
16691. *Q.* But if they did not go into that part and examine for gas? *A.* We have it in evidence that they went up to the goaf edge and they would find it then.
16692. *Q.* There may have been many thousands of feet of gas in the goaf, but none to be got at the goaf edge? *A.* That might be so, but gas naturally goes into the highest parts.
16693. *Q.* So far as you know the gas may have been there before the fall? *A.* It may have been.
16694. *Q.* I want to ask you now about the way in which your Inspectors carry out their examinations. Have you any formula written down for their guidance in the examination of collieries? *A.* Mostly the instructions are unwritten instructions. Occasionally decisions come from the Minister and they may have them forwarded to them.
16695. *Q.* Have you anything in writing instructing them to make examinations of the waste workings? *A.* They are supposed to examine the working places.
16696. *Q.* I am speaking now about the waste workings? *A.* Yes, they are supposed to occasionally examine the waste workings.
16697. *Q.* If there is anything written it would be in the form of a minute? *A.* There may have been a minute in relation to it, but I do not know.
16698. *Mr. Bruce Smith.*] *A.* I think there was a minute by Mr. Sydney Smith after the Stockton disaster.
16699. *Mr. Ritchie.*] *Q.* Do not the reports show that they make an examination? *A.* Yes.
16700. *Q.* Did you ever make an examination with your Inspectors? *A.* Frequently. I have also seen from their reports that they have inspected the waste workings.
16701. *Q.* Do you know whether there was any reference to any examination of the waste workings in the Inspectors' reports placed before us? *A.* I do not think there was.
16702. *Mr. Robertson.*] *Q.* Did you think it necessary to instruct your Inspectors with regard to such an ordinary course of duty. Do you not think it would occur to them that it would come within the scope of their duty? *A.* I think they must be allowed a certain amount of discretion.
16703. *Q.* Would they think it necessary to be instructed before inspecting waste workings? *A.* I do not think so.
16704. *Mr. Ritchie.*] *Q.* You know that when written instructions are given to persons they sometimes ignore them? Yes.

16705. *Q.* Does it not occur to you that Inspectors may fail sometimes in carrying out their duties? *A.* Yes, they may fail as well as any other man.
16706. *Q.* Do you not think that it is your duty to impress upon your Inspectors the necessity of carrying out their instructions? *A.* I do frequently.
16707. *Q.* Do you realise the importance of the examination of the waste workings? *A.* I do.
16708. *Mr. Bruce Smith.*] Mr. Atkinson went to the back heading of No. 1 as soon as he visited the mine?
16709. *Mr. Ritchie.*] That was after the disaster.
16710. *Mr. Bruce Smith.*] It shows that he recognised the importance of visiting the place.
16711. *Mr. Ritchie.*] *Q.* A lot of people went there after the disaster, but no one went before. The more important question is what they did before the disaster. Do you know whether any of your Inspectors ever made an examination of the waste workings? *A.* I know that Mr. Rowan has done so.
16712. *Q.* Did he give you a report to that effect? *A.* I do not know anything about a report, but he has mentioned it to me.
16713. *Q.* He has gone to the waste workings to examine them? *A.* Yes.
16714. *Q.* Do you know how long the Inspectors take on their examinations? *A.* Do you mean how many hours?
16715. *Q.* Yes? *A.* From three to six hours.
16716. *Q.* And is not the greater portion of their time taken up in going round the working places? *A.* The greater portion of their time is probably.
16717. *Q.* You are not prepared to say that their time is wholly taken up in going round the working places? *A.* No.
16718. *Q.* Do you know whether Mr. Bates ever made any examination of these waste workings? *A.* I do not know whether he did or not.
16719. *Q.* He never made any report to you about them? *A.* No.
16720. *Q.* Is the practice, generally, for your Inspectors to make reports without mentioning the waste workings at all? *A.* There are no definite instructions that they must mention the waste workings; but they generally do.
16721. *Q.* Do you consider it necessary to lay down as part of their duty that they shall make periodical examinations of the waste workings? *A.* I think that they would do so on their own discretion, and having regard to their sense of duty.
16722. *Q.* You would leave it to their own judgment? *A.* With verbal instructions from myself.
16723. *Q.* Do you not think it necessary that Government Inspectors should have some check placed upon them to see whether they do their work or not. I suppose you admit that Mining Inspectors may fail to do their duty. Do you not think that there should be some method of checking any portion of their work which it may be thought desirable to check? *A.* I think that when you start to lay down hard and fast rules officers become more like machines, and do not use their brains to the extent that they otherwise would.
16724. *Q.* I suppose it is better to have hard and fast rules that officers will obey, than to have no rules at all. However, you would prefer that the Inspectors should be left with a free hand? *A.* I say that they should be allowed a certain amount of discretion.
16725. *Q.* You admit that it is possible for a mine to have first-rate air in all the working places, whilst at the same time danger may be lurking in the waste workings? *A.* Yes.
16726. *Q.* And an Inspector might report that he found the working places all right, and he might have a certificate to that effect and yet you might have, on the following day, a disastrous explosion? *A.* Yes.
16727. *Q.* In view of all the possibilities do you not think it necessary that some rigid instructions should be given to have all the waste workings examined, not only by the colliery officials, but by the Inspectors? *A.* I think it is necessary that they should inspect them from time to time; but I do not think it necessary to give rigid written instructions.
16728. *Q.* Supposing we put all the Inspectors into the witness-box, and they admitted that they had not made an examination of the waste workings—would you think it necessary then? *A.* Yes.
16729. *Q.* If they admitted that they had only made an inspection once in twelve months, would you regard that as being sufficient? *A.* No.
16730. *Q.* Do you not regard an examination of the waste workings as of more importance than an examination of the working faces? *A.* No, I cannot say that I do.
16731. *Q.* If the ventilation is travelling round the working places there is little likelihood of noxious gases being found there? *A.* Provided the ventilation is all right.
16732. *Q.* With that fact staring you in the face, you still think it more necessary to examine the working places where there is a good current, than to examine the waste working where there is no current at all? I did not say that it was unnecessary to examine the waste workings.
16733. *Q.* I ask you whether you do not regard an examination of the waste workings as being of more importance than an examination of the working places? *A.* I regard an examination of the waste workings as being of equal importance to an examination of the working places.
16734. *Q.* Now, do you think that your Inspectors pay equal regard to an examination of the waste workings as to the examination of the working faces? *A.* I think they do.
16735. *Q.* Do you think that they devote as much time to an examination of the waste workings as they do to an examination of the working places? *A.* I think they devote more time to an inspection of the working places.
16736. *Q.* I mean comparatively speaking, of course, because there are more working places? *A.* Yes.
16737. *Q.* Do you think that your Inspectors have done their duty, when it is provided that an inspection of the waste workings should be made weekly, and the report book shows that the inspection has been made only once a month? *A.* I think they have not.
16738. *Q.* Have you any objection to your Inspectors' reports being open for the inspection of the workmen? *A.* Yes, I do not think that it is desirable.
16739. *Q.* What objection can you have in the public interest? *A.* There are several objections, but they do not strike me at the present moment.

16740. *Q.* Have you any reason, beyond that of the public interest generally, why they should not be open for the inspection of the workmen? *A.* Yes, I think that an Inspector may observe something which although not imminently dangerous would foretell danger, and by making that known to the workmen they might become unnecessarily scared.
16741. *Q.* Have you any report in your possession which would be likely to scare miners working in New South Wales? *A.* Well, I have an instance in my mind. I do not think it is desirable to explain it here, but I will explain it to the Commission.
16742. *Q.* Is there anything in those reports which you have laid before the Commission which you think ought not to be disclosed to the workmen? *A.* No, not in those reports.
16743. *Q.* Do you not think it desirable that the workmen should see the certificate of a public servant who has been appointed to examine the mine in their interests. Do you not think that they should know what the purport of the certificate is? *A.* I think the matter should be left in the hands of the Minister.
16744. *Q.* You do not mean to say that the great body of the workmen should be unable to see the reports? *A.* I do not think that the reports should be made public.
16745. *Q.* Do you not know that the Minister himself promised that these reports should be made public to the miners? *A.* I remember that a deputation waited on the Minister with reference to the matter, but I forget just now what the nature of the promise was that was made to the deputation.
16746. *Q.* You know that any reports which the miners themselves may have made have to be open for the inspection of the mine officials, and for the whole of the workmen? *A.* Yes.
16747. *Q.* You know that the reports of the deputies are open to the inspection of the workmen? *A.* Yes.
16748. *Q.* Is there anything further that you can advance, other than that the miners would be scared if they saw some of the reports, why those reports should not be made public to the miners? *A.* There is nothing that strikes me at the moment, but I know that there are other reasons.
16749. *Q.* You think the reports would scare the miners? *A.* They might.
16750. *Q.* In view of the fact that the miners want these reports to be open reports, do you know of any report which the miners have seen which has scared them? *A.* No.
16751. *Q.* You are merely guessing that it might scare them? *A.* Well, I suppose it must be so.
16752. *Q.* I mean that it was merely a matter of opinion? *A.* It is a matter of opinion.
16753. *Mr. Bruce Smith.*] A great many of the miners have made statements here to the effect that the evidence given as to gas in mines has made them less inclined to go into a mine.
16754. *Mr. Ritchie.*] *Q.* If the Inspectors found gas, but stated that with the ventilation travelling there would be no danger, that would not be likely to scare the miners. They hear of small quantities of gas every day. But you say that you do not think it is worthy of a trial to let them see these reports and to let them know what the Government officials have to say on these matters? *A.* I do not think it is desirable that they should read these reports.
16755. *Q.* That is the only reason which you advance—you think they may be scared? *A.* Yes.
16756. *Mr. Bruce Smith.*] *Q.* Has ever such a thing been done in Great Britain as to allow the miners to have access to the official reports? *A.* No.
16757. *Mr. Ritchie.*] *Q.* I think you said that miners have given evidence to the effect that they had a knowledge of gas being present at Kembla. You said that they were legally bound to report that, and that in not reporting it they may have been contributors to the disaster? *A.* I believe that some of the officials and some of the miners knew of the existence of gas.
16758. *Q.* You heard the evidence that the miners reported to the officials? *A.* Yes.
16759. *Q.* Who would be to blame in that case? *A.* The officials.
16760. *Q.* And not the miners? *A.* No.
16761. *Q.* When a miner has reported to an official he has done his duty? *A.* Yes.
16762. *Q.* And if the gas has not been reported by the official, the workman is exonerated, and the official is to blame? *A.* Yes.
16763. *Q.* You say that you think that General Rule 12 should be revised? *A.* Yes.
16764. *Q.* What amendment do you suggest to that rule in regard to the use of explosives? *A.* I have nothing in my mind, it is rather a large undertaking. In its present form the rule is so involved as to its meaning that I think it should be made more simple.
16765. *Q.* You mean that the effect of the rule should be left as it is, but that it should be simplified? *A.* Yes.
16766. *Q.* With regard to Rule 39, dealing with periodical visits on behalf of the workmen, do you think that that rule should be altered in any way, it is to the effect that the persons employed may appoint any two of their number, or any two persons not being mining engineers to inspect the mine at their own cost. Why should the miners be prevented from appointing mining engineers to inspect a mine, if they think fit to do so? *A.* I think the appointment of mining engineers would be undesirable.
16767. *Q.* What reasons do you advance? *A.* I think that if a mining engineer were appointed to make an inspection on behalf of the workmen, he might obtain information in respect of collieries which might be prejudicial to neighbouring collieries, and he might make use of such information in his ordinary business.
16768. *Q.* Could you not prevent that by saying that such a thing must not be done?
16769. *Mr. Bruce Smith.*] How could you trace it?
16770. *His Honor.*] Surely Mr. Atkinson may answer the question
16771. *Mr. Ritchie.*] That kind of thing is done now in the Arbitration Court.
16772. *Mr. Robertson.*] Mr. Atkinson seems to think that a mining engineer appointed by the miners to inspect the mine might act in the interests of an adjoining mine.
16773. *Mr. Ritchie.*] *Q.* My idea is that qualified persons should go on behalf of the workmen to see whether the mine is safe or not? *A.* Yes, I see your object.
16774. *Q.* In face of the responsibility which attaches to such an inspection, why should the miners be limited in their choice to the selection of people who may not be competent? *A.* I think that for the reasons given it would be undesirable to allow mining engineers to make the inspection.
16775. *Q.* You think so as Chief Inspector? *A.* Yes.
16776. *Q.* You think that the miners should be limited in the choice of persons to inspect the mine? *A.* Yes, for the reasons I have given.

Witness—A. A. Atkinson, 16 February, 1903.

16777. *Q.* You think that mining engineers may disclose some portion of the working of a mine to the proprietors of a neighbouring mine. *A.* Yes.
16778. *Q.* Does not that reason rest rather with the proprietors than with the mine Inspector. We have had no complaint about that so far? [*No answer.*]
16779. *Mr. Robertson.*] We have had objections raised at former Royal Commissions.
16780. *Mr. Ritchie.*] *Q.* I take your answer to be that mining engineers may disclose something which may be to the interest of other parties. In other words, the person whom the miners appoint to make the inspection on their behalf must not be competent? *A.* I did not say that at all.
16781. *Q.* Is not that the effect of your answer? *A.* I do not say so.
16782. *Q.* You know that persons who have passed with first class certificates are working as coal-miners? *A.* Yes.
16783. *Q.* Do you not think it is possible for a number of mining engineers to be working on coal? *A.* It is possible.
16784. *Q.* Do you think that they ought not to be appointed to make inspections on behalf of the men for fear of possible contingencies which may arise? *A.* If a man had been a mining engineer, but was working on coal, I do not see how there could be any objection to his appointment. He would be a practical working miner.
16785. *Q.* He would be a mining engineer also? *A.* I do not think you could preclude him from making an inspection.
16786. *His Honor.*] *Q.* Do you think that the wording of the Act might be altered so as to include any mining engineer in actual practice. Do you suggest that it is the probability of a mining engineer being able to disclose the workings of a mine that should disqualify him from acting on behalf of the miners, or is it the fact that he is a practical mining engineer which should disqualify him? *A.* The fact that he is practising as a mining engineer.
16787. *Mr. Ritchie*] *Q.* Do you not think that a man who has qualified as a mining engineer, but who has, unfortunately, got to hew coal for a living, would be as competent to take notes of what he saw in a mine as a person who is practising as a mining engineer? *A.* I suppose that he might.
16788. *Q.* Do you not think that such a person would be as likely to take all the notes about a mine which he possibly could? *A.* I do not think so—not if he was not practising as a mining engineer.
16789. *Q.* Do you mean to cast suspicion upon persons who are practising as mining engineers? [*No answer.*]
16790. *Mr. Bruce Smith.*] Is it fair to talk about casting suspicion upon anybody?
16791. *Mr. Ritchie.*] *Q.* Do you not think that a mining engineer, who is hewing coal, would be more likely to get hold of mining secrets, and to sell them, than a man who is occupying a good position? *A.* Well, I do not differentiate as to the degree between the two persons.
16792. *Q.* You say that a man who is actually working as a miner should be allowed to make the inspection, and that a man who is not working as a miner should not be allowed? *A.* Yes.
16793. *Q.* And you say that the one is just as likely to take notes of things, which he ought not to take notes of, as the other—that is the effect of your answer? *A.* Yes.
16794. *Q.* What reason can you see for choosing one person rather than the other? *A.* I do not think I am able to give you any further explanation with reference to it.
16795. *Q.* You say that one would be just as likely to gather information as the other—is not that the effect of your answer? *A.* They might both have equal powers of observation when going round a mine, but the working miner would not be so likely to disseminate information among neighbouring collieries as a mining engineer in actual practice would.
16796. *Q.* Although the one might be a dead beat and the other a man in good position? *A.* Yes.
16797. *Q.* You would regard a mining engineer as pretty low down on his uppers if he was actually getting coal? *A.* He would be.
16798. *Mr. Robertson.*] *Q.* Have you ever heard of such men getting coal? *A.* There might be some.
16799. *Mr. Ritchie.*] Mr. Robertson has some men with first-class certificates working in his colliery now.
16800. *Mr. Robertson.*] I do not think I am employing anyone who is a mining engineer.
16801. *Mr. Ritchie.*] *Q.* Is it not possible that a person who has gained a first-class certificate may qualify for a mining engineer? *A.* Yes.
16802. *Q.* Can you see any difficulty in such a man passing as a mining engineer? *A.* No.
16803. *Q.* You know that there are persons with first-class certificates working on coal? *A.* Yes.
16804. *Q.* Would persons working with first class certificates be competent to take notes of a mine, such as mining engineers might take? *A.* They might not be able to understand the interests of colliery proprietors in the same way that mining engineers would, although they may have passed through an examination.
16805. *Q.* You know that evidence has been submitted by the miners that they have great difficulty in getting qualified persons to do the work of check-inspection? *A.* I have heard so.
16806. *Q.* Do you not think that these barriers against the employment of qualified persons should be removed, and that the miners should be given a free hand in the selection of persons whom they regard as being competent? *A.* I think that they should get miners who have passed examinations and would be quite competent to do the work.
16807. *Q.* There may be miners who have gained first-class certificates, whom the workmen cannot get on with. It does not necessarily follow that the man who has gained a first-class certificate is the one who is the most likely to give a true and faithful report of what he sees in the mine? *A.* I understand that.
16808. *Q.* There is a further limitation. The Act mentions persons who are "working" miners. You know that this is a barrier? *A.* I see no objection to the removal of the word "working."
16809. *Q.* I suppose you know that it is a fact that men have had to go to Newcastle and work in a mine there in order to qualify themselves to come under the Act? *A.* Yes.
16810. *Q.* And you think that the word "working" should be removed? *A.* Yes.

[The Commission at 4 o'clock adjourned until 10 o'clock the following morning.]

TUESDAY,

TUESDAY, 17 *FEBRUARY*, 1903.

[*The Commission met at the Land Appeal Court, Darlinghurst.*]

Present:

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq., Commissioner. | D. RITCHIE, Esq, Commissioner.

Mr. Bruce Smith, Barrister-at Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf of the Crown.

Mr. A. A. Lyseght, Solicitor, appeared on behalf of—

(*a*) the representatives of deceased miners, wheelers, &c. (victims of the explosion);
(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.); and
(*c*) the Illawarra Colliery Employees' Association (the Southern Miners' Union).

Mr. G. J. Barry, Solicitor, appeared on behalf of the Mount Kembla Coal and Oil Company (Proprietors of the Mount Kembla Mine).

Mr. A. A. Atkinson, Chief Inspector of Coal-mines, was also present.

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings.)

Mr. J. W. BAILEY was sworn, and examined as under:—

[This witness was called at his own request; and the Commission asked Mr. Bruce Smith, as a matter of convenience, to conduct his examination-in chief.]

Examination-in-chief by Mr. Bruce Smith:—

16811. *Q.* What is your name? *A.* John William Bailey.
16812. *Q.* You live at Newcastle? *A.* Yes.
16813. *Q.* How many years' experience have you had in connection with coal-mining? *A.* Nearly twenty-eight.
16814. *Q.* And, of those twenty-eight years, how many did you spend as a miner getting coal? *A.* Approximately three-fourths of the time.
16815. *Q.* That would be twenty-one years; what were you during the rest of the time? *A.* On the surface, and working in and about the mines.
16816. *Q.* Have you ever held any official position, as deputy, or fireman? *A.* Yes.
16817. *Q.* In what mine? *A.* I held the position of fireman deputy in the Newcastle Coal Company's Mine, situated at Merewether.
16818. *Q.* For how long? *A.* Somewhere about twelve months.
16819. *Q.* And with regard to your twenty-one years' getting coal, was that all done at Newcastle? *A.* No.
16820. *Q.* Where? *A.* England.
16821. *Q.* What part of England? *A.* North Staffordshire.
16822. *Q.* How much of the twenty-one years did you spend there? *A.* Eight or nine years.
16823. *Q.* And the rest in Newcastle? *A.* Yes; and New Zealand and Queensland.
16824. *Q.* You wish to give the Commission the benefit of your knowledge on a number of subjects? *A.* Yes.
16825. *Q.* You understand that the old question of your dismissal from the Newcastle Company's Mine cannot be gone into? *A.* Not by this Court.
16826. *Q.* That is what I mean. You leave that for another occasion. You have stated that you wish to give some evidence on the causes of explosions? *A.* Yes.
16827. *Q.* Would you be good enough to tell the Commission what you desire to inform them on this subject of the causes of explosions? *A.* Do you wish me to make a statement?
16828. *Q.* Yes, I think so; because I do not know the nature of your opinions, and I cannot put a number of questions to you? *A.* On the causes of explosions?
16829. *Q.* Yes, what you wish to say to the Commission? *A.* In my opinion the causes of colonial explosions may be attributed to the concealment of gas in the mine on the part of the management, and the non-reporting of such gas by order of the management.
16830. *Q.* The non-reporting of such gas by order of the management? *A.* Yes.
16831. *Q.* Then you attribute the greater number of the explosions to gas? *A.* Yes.
16832. *Q.* In mines in which no safety-lamps are used, is that it? *A.* Yes.
16833. *Q.* Will you tell the Commission what has been your experience of gas in Australian mines: where have you seen it? *A.* I have seen gas in the Newcastle Coal Company's Mine. I think that is about all in the Colonies.
16834. *Q.* Were safety-lamps used there? *A.* No, not when first discovered.
16835. *Q.* In what quantity did you discover it? *A.* The quantities were varying. I have seen it 3 inches from the roof, and some 4 or 5 feet from the face of the heading.
16836. *Q.* Have you ever ascertained the percentage of gas on any of these occasions? *A.* Not at the time, only by sheer reckoning.
16837. *Q.* What do you call "sheer reckoning"—that is a sailor's term? *A.* Yes.
16838. *Q.* You do not mean latitude or longitude, do you? *A.* No. I mean taking the height, 3 inches from the roof, and multiplying that by the width of the heading and by the depth.
16839. *Q.* Getting the cubic measurement? *A.* Exactly.
16840. *Q.* That is not what I asked you. I asked you if you had ever ascertained what percentage of gas there was mixed with the air? *A.* In those cases I have referred to, it would be almost pure, because it was away from the air.
16841. *Q.* Are they the occasions you speak of on which you discovered gas? *A.* How many times?

16842. *Q.* How many times? *A.* Approximately I would find gas between forty and fifty times.
16843. *Q.* In your examination? *A.* In my examination.
16844. *Q.* And you know nothing about any other mines by personal experience? *A.* Not of gas.
16845. *Q.* Can you speak of any other causes of explosion? *A.* Yes; I believe that coal-dust is an agent, too, in the cause of explosions.
16846. *Q.* Have you had any personal experience of that; or are you speaking merely from your book knowledge? *A.* Of coal dust in the mines causing explosions?
16847. *Q.* Yes? *A.* No.
16848. *Q.* You speak then merely from your book knowledge? *A.* Just so.
16849. *Q.* The book knowledge is open to the Commission? *A.* Yes.
16850. *Q.* Then do I understand from you that it is the combination of gas and open lights to which you attribute most of the explosions in Australia? *A.* Yes.
16851. *Q.* You have mentioned another subject, the prevention of accumulations of gas? *A.* Yes.
16852. *Q.* What do you wish to say about that; how do you think the accumulation of gas could best be prevented? *A.* I wish to say that accumulations of gas can be prevented by concentrated, continuous, and adequate ventilation.
16853. *Q.* Do you wish to speak of cases in which the ventilation has not been continuous and adequate? *A.* I do.
16854. *Q.* In what mines? *A.* In the Newcastle Coal Company's Mine.
16855. *Q.* Is that the only one you mention that you have had personal experience of? *A.* Yes, that is the only one.
16856. *Q.* In what respect, as far as your own observations go, was the ventilation inadequate? *A.* Because of the leakage of air into old workings, and the practice of diverting the air to bring the quantities up to the requirements when Inspectors were in the mine measuring.
16857. *Q.* Do you approve of ventilating the old working? *A.* No, I think the old workings are better down, on the floor.
16858. *Q.* Suppose they will not go down, what would you do then? *A.* Make them come down.
16859. *Q.* How? *A.* By extracting the pillars.
16860. *Q.* And supposing the pillars are extracted, and still there are cavities left in the goaf, what would you do then? Would you ventilate them? *A.* If the pillars are extracted, the roof will naturally fall.
16861. *Q.* And if it is unnatural, and does not fall, what would you do? *A.* I cannot conceive of such a thing.
16862. *Q.* You have not seen such a thing? *A.* No.
16863. *Q.* Then I may take it as your opinion that, when once all the pillars are out, you would not bother about it any more? *A.* No, I do not wish you to infer that.
16864. *Q.* What would you do—I want to know? *A.* If the coal is worked properly in sections, the pillars extracted, and a barrier of the last bords holed kept intact, with good stoppings, and a portion of the intake air going past these, it will be adequately ventilated.
16865. *Q.* Do I understand that it is the practice to divert the air from the workings in order to deceive Inspectors? *A.* Yes.
16866. *Q.* In what mine do you know that to have happened? *A.* The Newcastle Coal Company's Mine.
16867. *Q.* That is the old story that you have told years ago? *A.* It is both old and new to me, who have suffered so much from it.
16868. *Q.* We will not go into the pathology of the thing—I want to know from you how long is it ago since you had personal experience of this being done? *A.* My personal experience was in 1895.
16869. *Q.* And you gave evidence of your personal experience before Mr. Wade as Commissioner? *A.* Yes.
16870. *His Honor.*] I understand that this is what Mr. May spoke of as the brattice trick.
16871. *Mr. Bruce Smith.*] Yes; and it was fully gone into by Mr. Wade.
16872. *Q.* Have you had any experience, since you were in the Newcastle Company's Mine, of what is called the brattice trick? *A.* No; simply because I was dismissed for complying with the Mines Act.
16873. *Q.* Then you have had no experience since that you can offer the Commission? *A.* No.
16874. *Q.* I mean with regard to the diversion of the air? *A.* No, an ordinary miner cannot have that privilege.
16875. *Q.* I see you mention ventilation as one of the subjects on which you wish to give evidence. Have you any opinions to offer the Commission on ventilation, with regard to the present method, or any suggestions to make with regard to an improved method? *A.* Yes, it all lies in those two words that I have already used, "concentration and continuity."
16876. *Q.* And can you suggest any better method than that adopted at the present time, provided it is carried out properly? *A.* Yes, fan ventilation is mostly preferable to any other.
16877. *Q.* You might say why you think it is preferable? *A.* In shallow mines, furnace ventilation cannot have much motive power, because of the shallow depth.
16878. *Q.* What do you call a shallow mine? *A.* I would call it a shallow mine even to 300 feet deep.
16879. *Q.* And you think that ventilation by furnace cannot be effectual? *A.* No, I do not think it is effective, nowadays.
16880. *Q.* I suppose you would think it fair proof of its being effectual if mines have been worked with some hundreds of men for a quarter of a century? *A.* No, I should not think it was effectual then.
16881. *Q.* You would not think that a proof of its being effectual? *A.* No
16882. *Q.* Do you wish to say anything further with regard to the advantages of fans over furnaces? *A.* Yes; the advantage of a fan is that it produces, to my mind, at a less cost, almost double the quantity of air that the furnace would.
16883. *Q.* Then it is on the ground of economy and effectiveness. *A.* Yes.
16884. *Q.* You have included in the list of subjects "Treatment of coal-dust": I understand you have had no personal experience of coal-dust explosions? *A.* Not of the explosion of coal-dust.
16885. *Q.* And you have not had any experience of any mine in which coal-dust has exploded? *A.* I have had experience of a mine where, if the theory that coal-dust, by the aid of a fall, and in the presence of a naked light, would cause an explosion is right, it should have occurred on this occasion.
16886. *Q.* What mine was that? *A.* The A.A. Company's Hamilton Pit Mine.
16887. *Q.* The Hamilton mine is at Newcastle, part of the A.A. Company's property? Yes.

16888. *Q.* Were you in that mine when a large fall took place? *A.* No, I was banksman on the surface.
16889. *Q.* You know of the fall? *A.* Yes.
16890. *Q.* Do you know the extent of the fall? *A.* I know that it was a very large fall.
16891. *Q.* But that is rather vague—what area did it cover? *A.* I never heard the area.
16892. *Q.* An acre or 10 acres? *A.* Ten acres or more.
16893. *Q.* Did you see it before it had fallen? *A.* Yes.
16894. *Q.* What height was the ceiling from the floor before the fall? *A.* It varied from 5 to 6 or 7 feet, even.
16895. *Q.* Did you see it after the fall? *A.* Yes.
16896. *Q.* Soon after? *A.* No; it must have been three months afterwards, I think.
16897. *Q.* Had it all fallen? *A.* Yes.
16898. *Q.* Could you get in? *A.* Yes, I went in with the late Senior Inspector of Mines.
16899. *Q.* Mr. John Dixon? *A.* Yes.
16900. *Q.* How many outlets were there for any great rush of air to get away from that fall by? *A.* There would be two or three, at least.
16901. *Q.* Was there any loss of life on that occasion? *A.* Yes.
16902. *Q.* How many? *A.* Eleven.
16903. *Mr. Robertson.*] *Q.* Was that a fall or a crush? *A.* Well, some attributed it to a thrust, others to a fall.
16904. *Mr. Bruce Smith.*] *Q.* How were the eleven men injured? *A.* One or two were killed by the falling material.
16905. *Q.* Falling on their bodies? *A.* Yes; the remainder were supposed to have starved for want of food.
16906. *Q.* They were really entombed? *A.* Entombed.
16907. *Q.* But were there any deaths or injuries on that occasion from the rush of air out of either or both of those openings? *A.* Not to my knowledge.
16908. *Q.* Was there any notable rush of air from that fall? *A.* Yes.
16909. *Q.* Of course you only know this from hearsay? *A.* No; I saw the rush.
16910. *Q.* I thought you said you were not there? *A.* I said I was banksman on the top.
16911. *Q.* Tell us what you saw as the result of that fall? *A.* I saw the coal-dust come up that shaft so thick that you could almost stick a shovel into it.
16912. *Q.* How many men were there in the mine at the time this fall took place? *A.* The back shift would be in—say 160.
16913. *Q.* I think you have told me that none of the 160 were injured by the rush of wind: they were not driven up against the ribs or up against the skips, or anything of that sort? *A.* There were none injured, according to ——[*interrupted*].
16914. *Q.* I am talking of those apart from the eleven who were either killed by the fall of the stone or entombed in the waste—were those who were entombed found afterwards? *A.* Yes.
16915. *Q.* Were any of the other people who were outside the area of the fall injured or killed? *A.* Not to my knowledge.
16916. *Q.* Did you ever hear of any of them suffering in any way from it? *A.* Yes, I heard of one case, a man named Sullivan, who suffered somewhat from—I do not know whether you could attribute it to shock, or rush of air, or what.
16917. *Q.* How did he suffer: I mean what senses were affected, his sight, or hearing, or his lungs? *A.* His sight seemed to be affected.
16918. *Q.* Were his ears affected, his hearing? *A.* Slightly, I think.
16919. *Q.* Did he tell you this himself? *A.* No, it was well known just about where I lived.
16920. *Q.* That is the only instance in which you heard of anybody being injured by that fall? *A.* Yes.
16921. *Q.* Did you go to the inquest on the deaths of those people? *A.* No.
16922. *Q.* Why was that? *A.* I do not know.
16923. *Q.* What year was that in? *A.* It was on the 22nd of June, 1889.
16924. *Q.* Do you remember who was the Coroner at the time? *A.* No.
16925. *Q.* You have no newspaper account of it with you? *A.* No, not of that one.
16926. *Q.* Do you remember what the finding of the Coroner's Jury was? *A.* No.
16927. *Q.* You told us that the dust came up out of that mine so thickly that you could cut it with a spade, as you say? *A.* Yes.
16928. *Q.* What was the height of the shaft from the mine? *A.* About 250 to 300 feet, say.
16929. *Q.* Was it ventilated by fan? *A.* Yes.
16930. *Q.* Did the rush of air from the mine do any injury to anything, to the fan? *A.* No.
16931. *Q.* That was out of the way? *A.* Yes.
16932. *Q.* Were open lights used in that mine? *A.* Yes.
16933. *Q.* Can you tell me how the lights were placed with regard to the rush of air? *A.* Yes, they were put out.
16934. *Q.* You wish to say something on the use of explosives? *A.* Yes, only this: that I think that, if we have experienced shot-firers to fire the ordinary powder shots, and they are placed with judgment, with good ventilation, and all dangers of the mine reported, there will be no danger in firing the ordinary powder shots.
16935. *Q.* Then you approve of firing with the ordinary gunpowder? *A.* Under those conditions.
16936. *Q.* But do not you know that the shot from gunpowder is considered one of the most dangerous causes in relation to explosions? *A.* One of the causes, yes.
16937. *Q.* And yet you advocate the further use of powder in preference to other explosives? *A.* Yes.
16938. *Q.* Do you regard it as a dangerous element? *A.* Not when the precautions are taken that I have mentioned.
16939. *Q.* Have you had any experience of other explosives but powder? *A.* Yes, I have used dynamite.
16940. *Q.* Where? *A.* In Western Australia?
16941. *Q.* Have you used any others? *A.* I have seen gelignite, but not used it on the coal.
16942. *Q.* What do you wish to say about the use of safety-lamps? *A.* The use of safety-lamps may well be left to the discretion of the Mine Manager, when he is made to understand his responsibility by the proper administration of the "Mines Act."

16943. *Q.* Do you approve of the proposal to allow an Inspector to order safety-lamps into a mine? *A.* No.
16944. *Q.* Why? *A.* Because the Manager is the responsible person, and it should be left to his discretion or judgment as to when he should use them.
16945. *Q.* Then you do not believe in shifting the responsibility from the Manager on to the Inspector? *A.* No.
16946. *Q.* Do you think that the interest of the Manager in carrying on the mine successfully and safely is the best incentive to his exercising judgment with regard to that matter? *A.* Yes, if he feels his responsibility, and if section 10 of the Coal Mines Act is enforced.
16947. *Q.* Have you anything to say about the particular kind of safety-lamps to be used? *A.* The Evan Thomas is a good lamp, and the Howarth Deflector.
16948. *Q.* I am speaking now of your experience, because, if your opinions are based on book knowledge, of course it is as open to the Commission as to you: what is your personal experience? *A.* My personal experience is that the bonneted Marsaut is as good as any other lamp used.
16949. *Q.* Have you had any experience of the hydrogen lamp? *A.* No, only I have seen them, of course.
16950. *Q.* Generally, as to the working of coal-mines, have you anything to say on that, anything you think would be of value to the Commission? *A.* Yes; if the workings of coal-mines were judiciously carried out, and the present Coal Mines Act complied with in all instances, and that Act administered properly by the Mines Department, we should not have the trouble and the loss of life that are occurring amongst us to day.
16951. *Q.* Then I understand you to think that the Mines Act, as it stands, wants no alteration, if it is only properly administered? *A.* There are a few amendments, amendments of details I would call them.
16952. *Q.* Have you tabulated those at all? *A.* Yes.
16953. *Q.* You might let us have your suggestions? *A.* The first and most important is that independent inspection districts shall be established, and each Inspector made responsible for the administration of the Act in his own district.
16954. *Q.* What do you mean by "independent districts"? *A.* I believe in the abolition of the Chief Inspector's position, and each Inspector to be responsible directly to the Minister for Mines.
16955. *Q.* Are they not responsible now? *A.* No, I do not think so.
16956. *Q.* You know, I suppose, that each Inspector has a district now: you know he has a certain group of mines placed under him? *A.* Yes.
16957. *Q.* And that he has the exclusive power of inspecting those mines? *A.* Yes.
16958. *Q.* So that that is a district, really; if you take a map and separate his group of mines from the rest, it really amounts to a district? *A.* Yes, but there is not the responsibility.
16959. *Q.* We will come to that afterwards: we are talking now of the district: I want to find out where your suggestion differs from the practice—that is a separate district, is it not? *A.* Yes.
16960. *Q.* In what respect would you alter that? *A.* I would alter that so that the Inspector of that district should be responsible for the administration of the Act, in his own district, directly to the Minister.
16961. *Q.* And you would abolish the position of Chief Inspector? *A.* Yes.
16962. *Q.* You would not have any Chief Inspector to supervise these Inspectors at all? *A.* No.
16963. *Q.* In what respect would you suggest that the Inspectors should be made responsible, where they are not responsible now? *A.* The Minister for Mines could hold these men directly responsible for the administration of the Act in their own districts; and, if they were made to feel the responsibility of administering that Act, they could be punished if it were broken to their knowledge.
16964. *Q.* Cannot the Minister hold them responsible now under the Act. *A.* He could if he used it.
16965. *Q.* Then it is the Minister you find fault with? *A.* The Minister and the Chief Inspector.
16966. *Q.* Now we are getting down to bed-rock? *A.* Yes.
16967. *Q.* First of all you would abolish the Chief Inspector—what would you do with the Minister to make him sensible of his responsibilities? *A.* I expect our Parliament should do that.
16968. *Q.* We cannot help that here; you have no suggestions to make about that institution to this Commission? *A.* No.
16969. *Q.* You are of opinion, then, that, by abolishing the Chief Inspector, and by making each Inspector directly responsible to the Minister, and by having a Minister who is thoroughly sensible of his responsibilities, there would be less disasters than there are now? *A.* Yes.
16970. *Q.* Is that your own idea, or have you heard it from anybody else? *A.* It is an idea that I have had for a number of years.
16971. *Q.* Have you told it to anybody? *A.* Yes; I have mentioned it to many.
16972. *Q.* Did you mention it to Mr. May? *A.* Yes; I have talked with Mr. May.
16973. *Q.* You told him of it? *A.* Yes.
16974. *Q.* Do you know he is advocating the same thing that you told him? *A.* Yes; he is of the same opinion as myself.
16975. *Q.* I have gone through your little list—is there anything more you would like to say to the Commission? *A.* Yes. I think that under the 23rd section of the Coal Mines Act there should be an amendment.
15976. *Q.* That is with regard to the holding of an investigation? *A.* Yes.
16977. *Q.* How would you amend that? *A.* I would amend it so that practical experienced men would constitute a competent Court to look into and try to discover the causes of the various disasters in mines.
16978. *Q.* But does not the Act provide for competent men? I will read you what the Act says, and then you can state in what respect you think it ought to be altered: "The Minister may appoint a competent person"—you do not find fault with that? *A.* No.
16979. *Q.* "To hold the investigation, and may appoint any person or persons possessing legal or special knowledge to act as assessor or assessors in holding the investigation"—then it is the appointment of assessors that you object to; they ought to be men with a practical knowledge of mining? *A.* No. I think that clause should be amended to read something like this: That a competent person may be appointed with a practical experienced man accustomed to mining principles and practices.
16980. *His Honor.*] I do not know that it has always been a question, but I know that it became a question once for the deliberation of the Department what the word "competent" meant. It is that, perhaps, that Mr. Bailey is alluding to indirectly.
16981. *Mr. Bruce Smith.*] *Q.* Do you object to lawyers on these boards of inquiry? *A.* Yes; certainly.
16982. *Q.* You would banish them altogether from these boards? *A.* Yes. 16983.

16983. *His Honor.*] I may say, Mr. Bruce Smith, that it was I myself who pointed out that it was very doubtful whether a lawyer or a District Court judge would be called a competent person, if he had not got a knowledge of mining.
16984. *Mr. Bruce Smith.*] With the help of two competent mining men, he may be a very competent machine for balancing evidence.
16985. *His Honor.*] Undoubtedly.
16986. *Mr. Bruce Smith.*] *Q.* That is your opinion; in the first place, you would have no lawyer upon the board of inquiry. What sort of man would you have for presiding over these competent men? *A.* A Supreme Court judge.
16987. *Q.* He is supposed to be a lawyer, even a Supreme Court judge? *A.* Well, it might be a coroner.
16988. *Q.* I want to get out what you want; I do not want to beat about the bush; you say you would have a Supreme Court judge; but he is a lawyer, is he not? *A.* Yes; but the lay mind forgets these things.
16989. *Q.* Did you forget that a judge was a lawyer? *A.* I forgot that. I do not know the steps up in the legal profession.
16990. *His Honor.*] Mr. Bailey may have had some experience of courts that caused him to forget.
16991. *Mr. Bruce Smith.*] *Q.* I would like to know what type of men you think most competent to preside over a board of this kind, and why? *A.* Any person accustomed to the technicalities of taking evidence would do.
16992. *Q.* Then what class of men do you want to help him? *A.* The proprietary interest could be represented, and the Mines Department and the workmen could be represented.
16993. *Q.* Tell me any other section that you would suggest an amendment of? *A.* I think that General Rule 4 should be so amended that the Mines Department should protect the officer that complies with that rule.
16994. *Q.* That rule has reference to the inspection of the mine before the men commence work—you mean to say that, if the deputy reports having found gas—he should be encouraged to report it, if it is there? *A.* Yes.
16995. *Q.* That would be very difficult to put into the Act, or into a rule? *A.* It could be put into the Act; the Act could be amended for that purpose.
16996. *Q.* At all events, in administering the Act, you think every encouragement should be given by the management to a deputy to report? *A.* Yes.
16997. *Q.* You might name any other suggestion? *A.* That an exact copy of the examining deputy's report should be placed upon the board; that is, that, when he has made it in the book for the purpose, an exact copy should be placed upon the danger-board into each district of the mine.
16998. *Q.* The men now are allowed to see the book? *A.* Yes, but what is on is not the same as is in the book; what is written on the board is not exactly what is written in the report-book.
16999. *Q.* Is there any difficulty in the men opening the cover of the book and looking at the book themselves as they go in? *A.* Yes, a difficulty is made.
17000. *Q.* By whom? *A.* By the managemant.
17001. *Q.* But is it not provided in the Act that they should see the book if they wish? *A.* Yes, but —— [*Interrupted.*]
17002. *Q.* You mean it is not done in practice? *A.* I mean to say that the men dare not go to that extent for fear that they would be dismissed and boycotted.
17003. *Q.* Is not it open to men who find that they are not allowed to do what the Act entitles them to do to complain to their lodge, and get a representation from the lodge that the book is not exposed for the men? *A.* Somehow or another when complaints are made to lodges, the men are, to a certain extent, black-listed by their wages being reduced in an indirect manner.
17005. *Q.* If the Act provides that every miner is entitled to see the book, and if they find that they cannot see it, is it not a very easy matter for them to bring the question up in their lodge, and get the lodge to represent to the management that the men as a whole, not specifying any particular one, are complaining that they do not see the book? *A.* It is easy, but it sometimes would be very costly; for the simple reason that the name of the man who made that suggestion in the lodge would appear in the next day's paper, and the Manager would read it at his dinner table.
17006. *Q.* But that is an infirmity in the administration of the lodge? *A.* But, when all men are afraid, what can be done?
17007. *Q.* But, if the lodge manages its work in that way, that has nothing to do with the Act or with the department. You see we look to you for practical suggestions; you can take a horse to the water, but you cannot make him drink; and, if the book is open, under the Act, to the men, what more can the Act do? *A.* It can avoid a man having to go into an overman's cabin and turn over the leaves of the book; and, if the same report were placed on the danger-board, he could see it as he passed to his work.
17008. *Q.* Well, that is your suggestion: The Commission can consider that. What else do you suggest in regard to the Act? *A.* I would have an amendment included in the Coal Mines Act that the examining deputy of the mine should be the leading deputy of that mine, and that he should have authority to instruct the day deputies what to do in his absence.
17009. *Q.* You would not have them of equal power? *A.* No.
17010. *Q.* One should be over the others? *A.* Yes.
17011. *Mr. Robertson.*] But the day deputy has equally important duties?
17012. *Mr. Bruce Smith.*] *Q.* Mr. Robertson says the day deputies have equally important duties to the night deputy? *A.* No.
17013. *Q.* In what respect are they inferior? *A.* Inferior in this way, that the examining deputy sees the mine under different conditions from the day deputy, and when he leaves that mine he should have authority to instruct the day deputy, who is the last man to leave it, that the ventilation for certain places, say, for instance, giving off gas, should be properly attended to, and that they should be properly ventilated the last thing after the miner has done his work; so that when the examining deputy goes round in the morning he can find those places clear of any accumulation of gas.
17014. *Q.* But suppose that both the day deputy and the night deputy direct their attention with equal care to the ventilation of the mine, will you not get the same result? *A.* No.

17015. *Q.* Do you mean to say that the day deputy will do his work better when he is ordered, than when he is left to do it of his own authority? *A.* I mean to say that the examining deputy's position may be in danger by the negligence of the day deputy.
17016. *Q.* Is he in any worse danger when the day deputy is working by virtue of an order from him, the examining deputy? *A.* The responsibility would be placed upon his shoulders.
17017. *Q.* But, according to you, you would take the responsibilities off the day deputy's shoulders? *A.* No; if he were instructed by the examining deputy to leave a certain place in a certain condition, and that were not done, and that place were found with gas by the examining deputy the next morning, certainly the day deputy would be to blame.
17018. *Q.* Let me put an illustration to you; suppose yourself occupying the position of day deputy, in which case would you feel more responsibility, where you were looked to as equal to the night deputy in importance to attend to your duties, or where you were looked upon as his subordinate, and responsible to him—which would give you the greater sense of responsibility? *A.* If I were the day deputy, and were ordered by an examining deputy who was authorised to order me to do those things, I would certainly do them.
17019. *Q.* Would you not do them if it were left to your discretion, you being equal in power to the night deputy? *A.* At the last moment in a day deputy's work he may be called away to a different part of a district to assist in some other trouble, and that would be left undone.
17020. *Mr. Bruce Smith*] I cannot understand it; but perhaps the Commission can.
17021. *His Honor.*] Perhaps it might be suggested that one word would explain the action of Mr. Bailey's mind; that is the idea of a more effective continuity of action. He may be right, or he may be wrong; but that is evidently his idea.
17022. *Mr. Bruce Smith.*] There may be differences of opinion, but, when I am told that a man has a greater sense of responsibility when he is acting upon an order than when he is acting upon his own responsibility, I cannot grasp it.
17023. *Q.* You think really that a day deputy would do his work more conscientiously where he is subject to the night deputy than where he is of equal power? *A.* Yes; I will give you an illustration, if you will allow me: You see, in the first instance, the examining deputy is responsible, under the Mines Act, for the report: well now, in my own case, had I had authority over the day deputy, I should never have found, from the instructions that I gave, gas in the Glebe Mine.
17024. *Q.* But, suppose the day deputy that you had under you was a better man than yourself, what would you have found then? *A.* If he were a better man than myself the gas would be removed all the same.
17025. *Q.* Suppose he was as good a man as yourself, would you have been in any danger then? *A.* No; not if he did his duty.
17026. *Q.* Then you are really talking of cases in which the day deputy is not a man of the same ability as the night deputy? *A.* No; I am not alluding to his ability at all; it is a matter of authority.
17027. *Q.* I think the Commission understand what Mr. Bailey means. I need not dwell upon it any longer. Tell me any other direction in which you would propose to amend the Act? *A.* With regard to section 10 of the Coal Mines Act, while it may not be necessary to amend it, I think it is necessary to enforce it, so that the Managers could feel their responsibilities.
17028. *Q.* To enforce which part of it, do you mean? *A.* Section 10, cancellation of certificates.
17029. *Q.* In what respect do you mean? *A.* In this respect—that, when a Manager or Managers are found guilty of gross negligence or incompetence, their certificates are returned; and it gives a feeling amongst the mining community that their safety is not properly looked after.
17030. *Q.* When once a man's certificate is cancelled you would not allow him to have another? *A.* Yes, by examination.
17031. *Q.* You would? *A.* Yes.
17032. *Q.* You mean to say that, if a man's certificate is cancelled by reason of his incompetence, you would allow him to go up for the same examination over again and get a fresh certificate? *A.* I would leave that to the judgment of the examining board, certainly.
17033. *Q.* But, supposing he would pass the old examination as easily as he had passed it before, would you allow him to have another certificate at once? *A.* If he passes the prescribed examination, certainly.
17034. *Q.* But, if he has proved himself practically incompetent by his actions, would you still allow him to go up, and give him a certificate because he passes a theoretical examination? *A.* The man may, in the meantime, become competent.
17035. *Q.* Would you consider him practically competent because he passed a theoretical examination? *A.* All Managers, to a certain extent, have a practical knowledge of a mine.
17036. *Q.* I understand you to say that, if a Manager lost his certificate for neglect, you would allow him to pass his examination again and become a Manager again? *A.* Yes; I do not believe in keeping a man down when is down. I would let him have a chance.
17037. *Q.* If he could pass the examination, you would let him up immediately? *A.* Well, a board of gentlemen certainly can understand human nature, and see when a man is, by his verbal examination and his examination proper, competent or not.
17038. *Q.* But, after a man's conduct has been investigated and his certificate has been cancelled, you do not propose that the people to whom he submits himself for examination again should go into that question again? *A.* No.
17039. *Q.* Then all they have to do is to see whether he is theoretically fit for the position of Manager? *A.* They must know, through various sources, of his practical —— [*Interrupted.*]
17040. *Q.* And would you let him become a Manager again if he could pass—that is really what it amounts to? *A.* Yes.
17041. *Q.* Is that opinion widely entertained? *A.* The opinion is widely entertained amongst the miners.
17042. *Q.* And you think the miners would have confidence in a man because he passes an examination, although he had been condemned for want of care? The Commission understand what you mean, I am quite sure. Now, is there any other direction in which you suggest an alteration of the Act. *A.* No.
17043. Is there anything more you would like to say to the Commission in pursuance of the letter which you have addressed to them? *A.* Yes, I would like to say something further upon the black-listing and boycotting of men.

17044. *Q.* The general practice—you are not going to refer to your own case? *A.* Yes, I wish to tell the Commission —— [*Interrupted.*]
17045. *Mr. Bruce Smith.*] I understood, Your Honor, from this letter, that the Commission would not go into that.
17046. *His Honor.*] We do not know yet what Mr. Bailey is going to say.
17047. *Mr. Bruce Smith.*] *Q.* What do you want to say? *A.* I wish to say that I am boycotted at the present time for complying with the Mines Act; and for three years my wife and children have suffered through this principle of boycotting.
17048. *Q.* Do you know of your own knowledge that you are boycotted? *A.* Yes.
17049. *Q.* How do you know it? *A.* Because I cannot get work at various mines in the district.
17050. *Q.* But there are other men who cannot get work? *A.* Yes.
17051. *Q.* Are they boycotted, all of them? *A.* No.
17052. *Q.* Then the mere fact that you cannot get work is not, of itself, conclusive proof that you are boycotted? *A.* To my mind it is.
17053. *Q.* Then, would it prove the same result with all other men who are out of work? *A.* No.
17054. *Q.* Then you must have other reasons for thinking so? *A.* Yes.
17055 *Q.* What are the other reasons? *A.* The other reasons are for making known the existence of gas in a mine contrary to a Manager's orders.
17056. *Q.* I asked you what were the other reasons for your believing that you are being boycotted. The mere fact that you are out of work does not prove it. Do you know, of your own knowledge, any other reason? *A.* Yes—where men are immediately put on to work at mines where I have immediately before, applied for work.
17057. *Q.* You mean that they are preferred to you? *A.* It seemed like it.
17058. *Q.* It is possible that they may be considered better workmen than you? *A.* How would a Manager know that if they were strangers?
17059. *Q.* He may be a physiognomist, for one thing, do you see; you did not count upon that, I suppose. Well, that is the conclusion you come to at all events, that you are being boycotted? *A.* Yes.

Cross-examination by Mr. Lysaght:—

17060. *Q.* Do you hold a certificate? *A.* Yes.
17061. *Q.* What certificate? *A.* Second-class certificate of competency.
17062. *Q.* Did you pass in this State? *A.* Yes.
17063. *Q.* Regarding your answer that, if a Manager's certificate were cancelled for negligence, you would approve of his getting a fresh certificate by a fresh examination, do you mean to say that is a general opinion amongst the miners, in a case where a Manager has lost it through negligence, not through incompetency? *A.* No, a general opinion this way, that Managers should be competent. That is only my own personal opinion.
17064. *Q.* I am putting to you the case where a Manager loses his certificate for negligence; you mean to say that he ought to get a fresh certificate if he merely passes an examination?
17065. *His Honor.*] Perhaps, Mr. Lysaght, it is hardly worth while to go into that question. The matter is dealt with very much in the way that the Court of Marine Inquiry deals with officers of vessels. There is generally no question of knowledge, theoretical knowledge; it is merely a question of want of moral judgment.
17066. *Mr. Lysaght.*] *Q.* As a matter of fact you merely expressed your own opinion? *A.* Yes.
17067. *Q.* Did you report the presence of gas in this mine, from which you were dismissed, to the Chief Inspector? *A.* Afterwards, yes.
17068. *Q.* How long afterwards? *A.* I reported this gas on the 28th March, 1899, and saw the Minister for Mines.
17069. (At this stage Mr. Lysaght desired to ask the witness a number of questions respecting the finding of gas in the Newcastle Company's Coal Mine, whether the discovery of that gas was reported to the Chief Inspector of Coal Mines or not, and whether, if so reported, there was any neglect of duty on the part of the Chief Inspector.)
17070. Mr. Bruce Smith objected to these questions being allowed, pointing out that two inquiries into this very matter had alread been held, one by Mr. Wade, as a Royal Commissioner, and the other an inquiry held by Judge Fitzhardinge under the provisions of the Coal Mines Regulation Act.
17071. His Honor said that the matter which Mr. Lysaght was desired to go into was one on which the Commission had already decided that they would not go into; it was really *res judicata*; it had all been investigated before. Mr. Lysaght said that he was attempting to elicit this evidence because he proposed to show, later on, that where gas was reported at Mount Pleasant, no steps were taken by the Inspectors, though there were manifestly dangerous conditions there.
17072. Mr. Bruce Smith said that he had no objection to evidence being given about Mount Pleasant; but he did object to this Commission going into a matter which had been already twice inquired into and reported upon. He would have no objection to the reports of the two previous inquiries going in.
17073. His Honor said that this Commission could not be a Court of Appeal from the decisions come to at other inquiries. If it were to become a sort of general Court of Cassation it would never stop.
17074. Mr. Bruce Smith asked His Honor to see the reports of the previous two inquiries for himself. His Honor would there see that the question proposed to be raised by Mr. Lysaght had been gone into.
17075. *Mr Lysaght.*] I will not pursue that.
17076. *Q.* Mr. Bailey, do you know if it is a practice in your district to fail to report gas? *A.* Yes.
17077. *Mr. Barry.*] In the one mine only, Your Honor.
17078. *Mr. Lysaght.*] *Q.* I am speaking of throughout your district, the district where you reside, leaving out your own particular case for further consideration—do you know that it is a practice to fail to report gas? *A.* I have this knowledge, that witnesses have on their oath, stated that gas was found, but not reported, many times in that district.
17079. *Q.* Have you any other knowledge besides that? *A.* Only personally.
17080. *Q.* Are you working in a coal-mine now? *A.* Yes.

17081. *Q.* Do the men there constantly report gas if they find it? *A.* I have not the means of knowing that without I see the report book.
17082. *Q.* What are you doing now, cutting coal? *A.* Yes.
17083. *Q.* Are safety-lamps used in that mine? *Q.* No.
17084. *Q.* Do you know whether gas has been discovered in that mine? *A.* Yes, I believe so.
17085. *Q.* Have you ever discovered it? *A.* No.
17086. *Q.* Do you know that the men are afraid to report gas for fear of ulterior consequences?
17087. *Mr. Barry.*] I object to that: that is a general question.
17088. *His Honor.*] He says he has never discovered gas in the mine where he is working, in point of fact; and I can hardly see how he can say that other men are afraid to report it, unless he has seen the operation of the fear in relation to the facts.
17089. *Mr. Lysaght.*] *Q.* Do you know of any men who have discovered gas and have not reported it, in your mine? *A.* I cannot ascertain from the report book, because I dare not go to look at it.
17090. *Q.* But do you know of men having discovered gas and not reported it? *A.* No, not that I know of.
17091. *His Honor.*] Mr. Bailey informed us just now that he could not get work, as he was boycotted; but he is at work. We are all very glad to hear that he is at work, but we cannot understand that.
17092. *Mr. Lysaght.*] *Q.* You said that you were being boycotted? *A.* Yes.
17093. *Q.* Do you know of any letters having been sent by any managers or officials to prevent you getting work?
17094. *Mr. Barry.*] I object to that question.
17095. *His Honor.*] I wanted you, Mr. Lysaght, to ask him about his being now in the position of a working miner, when he says he is boycotted.
17096. *Mr. Lysaght.*] *Q.* If you have got work, cutting coal, how do you explain your statement that you were prevented from getting work cutting coal? *A.* For the simple reason that the General Manager of the Company that I am at present working for—and I do not wish this statement to in any way reflect upon that gentleman—said, when a deputation interviewed him, that if Bailey took any office in the Lodge he would have to go, as he (the General Manager) was the only one that would give him (Bailey) work in the district.
17097. *Q.* What is the name of that General Manager? *A.* Mr. Alexander Brown.
17098. *Q.* Then, is a statement of Mr. Alexander Brown's, that he is the only man in the district who would employ you, the only evidence you have got that you were boycotted? *A.* No; I wrote to Mr. D. A. W. Robertson for work; and, at the very time that he would have my letter asking for it, his Manager was giving evidence of the discharge of six men, in the Arbitration Court, trying to show that he could not keep up the output of coal because of the shortness of hands.
17099. *Mr. Robertson.*] *Q.* What do you say about that? *A.* The Manager of the Helensburgh Colliery was giving evidence as to the discharge of six men through not attending to their work, at the time that they would receive my application by post for work. I concluded that he would be six men short, and that my application might be received favourably, seeing that he would be short of six men to man his colliery.
17100. *Q.* And therefore he ought to have employed you, because he had discharged six men? *A.* No, I do not say he ought to; but I think he should give me a chance.
17101. *Mr. Lysaght.*] *Q.* Did you get any reply to your application? *A.* Yes.
17102. *Q.* What was the reason given? *A.* This is the reply [*reading from a paper*]:—"In reply to your application for employment on the 14th instant, I regret that at present we have no vacancy at the Metropolitan Colliery."
17103. *Q.* There is nothing mentioned there about boycotting? *A.* No.
17104. *Q.* You have no reason to think that they had a vacancy for you there? *A.* Only by what appeared in the press.
17105. *Q.* In addition to what Mr. Brown stated, which you have told us, do you know of anything in writing to prevent your getting employment? *A.* No, I am not aware of it.
17106. *Q.* Do you know that your name was put upon the black-list? *A.* No, not for certain.
17107. *Q.* Do you know whether there is a black-list in your mining district? *A.* Well, I believe it to be so.
17108. *Q.* You said you did not know for certain whether your name was put down; have you reason to believe that your name was put down on the black-list? *A.* Yes.
17109. *Q.* What reason have you for believing that? *A.* Because of taking certain action against the Colliery Manager.
17110. *Q.* But what reason have you to believe that your name was put on a black-list: we know why it would be put there; but what makes you think it was put there; or do you know it was put there? *A.* What makes me think it is there is because I cannot get work elsewhere.
17111. *Q.* Has any Manager given you, as a reason for not employing you, that you had reported gas as a deputy? *A.* No.
17112. *Q.* They have never given that reason? *A.* No.
17113. *Mr. Robertson.*] I may just as well say that my objection to Mr. Bailey is due to the fact that he did not report gas. If Mr. Bailey had reported gas, he would have been likely to meet with more favour in my eyes; but he failed to report it. As far as I could see by the evidence, it took him some six or seven months' earnest prayer before he could make a true report. That was my objection to him.
17114. *Mr. Lysaght.*] *Q.* You hear that? *A.* No.
17115. *Q.* Mr. Robertson says his objection to you was, not that you reported gas, but that you did not report it for six or seven months? *A.* I reported it verbally, according to the instructions received from the Manager, who is responsible under the Act.
17116. *Mr. Robertson.*] *Q.* Did you or did you not, in your evidence, say that you were six or seven months earnestly praying before you signed a report of gas having been found? *A.* The gist of all my evidence was that I reported gas from the outset, according to the instructions I received from the management.
17117. *Q.* Did you take seven months, or so many months' earnest prayer before you would make a written report? *A.* Yes.
17118. *Mr. Robertson.*] Well, that is my objection to you, Mr. Bailey.
17119. *Mr. Ritchie.*] Perhaps you might ask him, Mr. Lysaght, what those instructions were which he says he received from the management.

17120. *Mr. Lysaght.*] *Q.* You knew that the rules required you to report it in a book, did not you? *A.* Yes, I knew that General Rule 4 of the Coal Mines Act required me to so report gas; but——[*Interrupted.*]
17121. *Q.* What was it the Manager told you that made you not so report it?
17122. *Mr. Barry.*] I object. There is no evidence at all about that.
17123. *Mr. Lysaght.*] He says the Manager gave him certain verbal instructions.
17124. *Q.* I want to know what was it that the Manager told you that made you not so report it in the book? *A.* He told me that I would be doing my duty to the Company by reporting verbally to him.
17125. *Mr. Barry.*] I submit, Your Honor, this has all come out in the other inquiry. We are drifting back into it.
17126. *His Honor.*] That is so.
17127. *Mr. Lysaght.*] As far as I am personally concerned, I was anxious that Mr. Bailey should know that, as far as I was concerned, representing the Miners' Union, I gave him every opportunity here that I could. I would not like Mr. Bailey to report in the Newcastle district that I did not get for him every opportunity that I could get for him.
17128. *Q.* In addition to what the Manager told you, that you would be doing your duty to the management by reporting verbally, did he tell you anything else? *A.* Yes.
17129. *His Honor.*] I think we had better stop here.
17130. *Mr. Lysaght.*] *Q.* You might tell me what you term efficient ventilation for a working place? *A.* I would consider it efficient ventilation when 100 cubic feet is being received at the faces by every workman per minute when it is concentrated into the working place in that quantity.
17131. *Q.* Do you know that that is not being done now in many places? *A.* Yes, I have reason to believe that the 100 cubic feet are not passing according to the Act.
17132. *Mr. Ritchie.*] You might follow that a little further, Mr. Lysaght, and ask him what his reasons are for believing this.
17133. *Mr. Lysaght.*] Certainly.
17134. *Q.* What reasons have you for stating that the 100 feet of air is not forced into the working places? *A.* I have this reason: that, while it may be passing in the heading, it is not passing at the face of the bords where the men are working.
17135. *Mr. Barry.*] That is not a reason.
17136. *Mr. Lysaght.*] *Q.* Do you know of cases where that has happened? *A.* Yes.
17137. *Q.* Recently? *A.* No, not recently.
17138. *Q.* In what collieries? *A.* It was not passing at a certain time in the Newcastle Coal Company's Colliery.
17139. *Q.* At the time that you were a deputy, was that so? *A.* Yes.
17140. *Q.* Since that time, do you know of any mine where the 100 cubic feet of air per minute have not been forced to the working places? *A.* I do not think that it is passing in the mine that I am at present working in.
17141. *Mr. Barry.*] He is asked does he know, and he says that he does not think.
17142. *His Honor.*] A man may, Mr. Barry, giving evidence, say, "I know," or "I think," or "I believe so-and-so." If he says, "I believe," he can be cross-examined as to the ground of his belief.
17143. *Mr. Lysaght.*] *Q.* You say that, in your own mine, you think it is not passing; do you mean that your place is hot from time to time? *A.* At times it is hot.
17144. *Q.* Have you complained of the want of ventilation in your own mine? *A.* No.
17145. *Q.* If you are of the opinion that 100 cubic feet of air are not passing to you, why do you not complain? *A.* I dare not; I should be totally out of work then.
17146. *Q.* Is not the colliery that you are at present working in the only colliery that you have been able to get a start in since your dismissal as a deputy? *A.* Yes.
17147. *Q.* And about how many collieries have you tried to get work at since your dismissal, and failed? *A.* About a dozen, some of them twice.
17148. *Q.* What do you mean by saying that the ventilation of the mine should be continuous? *A.* I mean that, when the ventilation of a mine depends on a single door, it cannot be continuous in certain districts.
17149. *Q.* Why? *A.* Because it obeys a natural law, and finds its way to the power by a nearer way.
17150. *Q.* Then, summed up, you are of opinion that a system of ventilating mines with single doors is a dangerous system? *A.* Certainly.
17151. *Q.* In what respect do you consider the ventilation of mines is inadequate? *A.* It is to my mind inadequate because it is incorrectly measured—the quantity is incorrectly measured. I do not think the quantities will work out according to the measurements.
17152. *Q.* In what respect is it incorrectly measured? *A.* When an anemometer is only used in the centre of an airway, say 6 x 7, it is obvious that there is more velocity in the centre of that airway than there is at the sides, bottom, and top; and there is no reduction made.
17153. *Q.* Then, in your opinion, the register of the air should be taken, not only in the centre, but at the sides, and the bottom, and the top, to get a true record? *A.* Yes.
17154. *Q.* I think you suggested that the system of inspection was not as it should be? *A.* Yes.
17155. *Q.* Do you mean the Government inspection or the deputy's inspection, or what? *A.* I mean that the Government inspection is not efficient.
17156. *Q.* In what respect is it inefficient? *A.* For all the time that the bad ventilation was proved to exist in the collieries where I worked, and the gas was proved to exist, the Inspectors would say the Act was complied with, while I proved otherwise.
17157. *Q.* Have you anything else to say why the Government inspection is inefficient? *A.* No.
17158. *Q.* That is the only reason you give. What system of inspection would insure greater safety in your opinion? *A.* The independent inspection districts.
17159. *Q.* With the exception of your own case, do you know, of your own knowledge, of any other person being boycotted for having reported things? *A.* No.
17160. *Q.* You spoke about a copy of the examining deputy's report being placed on the board, do you know of any occasion when a report has been made by an examining deputy, and a different report put on the board? *A.* Yes.

17161. *Q.* Was that a case where the examining deputy reported a danger? *A.* Did you say besides my own case?
17162. *Q.* Yes, leaving out your own case? *A.* No, I do not know of any.
17163. *Mr Robertson.*] *Q.* What does he mean by "putting a report on the board?" I am not aware of any practice of reporting otherwise than in a book. Ask him to explain it.
17164. *Mr. Lysaght.*] *Q.* In the southern district, as far as I know, nothing is put on a board regarding the examining deputy's report. Is it the practice in the northern district to have a board on which the examining deputy's report is summarised? *A.* The practice in the Newcastle District is for a board to be put up at the entrance of the mine, and the entrance to each district. It will have the date, and the word "safe" or "secure," on it, and the examining deputy's signature.
17165. *Q.* That is something in addition to what is required by the Act; do you suggest that, throughout the whole State, a board should be kept outside each district, and that, on that board, there should be written the whole of the examining deputy's report? *A.* Yes.
17166. *Q.* Do not you see, Mr. Bailey, that his report might run into about thirty or forty lines? *A.* No; for the simple reason that there is not that space left in the report book.
17167. *Q.* Do I understand that you only suggest a report on the board where the deputy discovers something dangerous? *A.* No, I still stick to my original idea.
17168. *Q.* That the whole report should be there? *A.* Yes.
17169. *Q.* That is a suggestion for the introduction of a new provision in the Coal Mines Act? *A.* Yes.
17170. *Mr. Ritchie.*] Before he leaves that, Mr. Lysaght, you might ask him whether he knows of any case where these words "safe" or "secure" were not substantiated in the reports.
17171. *Mr. Lysaght.*] *Q.* Do you know of any case where the board report was not in accordance with the report in the book? *A.* I do not know of any cases; but this is sufficient to guide me, that year after year in the working of a mine you will see the word "safe" put in; and year after year something must occur during that period of time to make it unsafe.
17172. *Q.* But then the word "safe" is also put in the book? *A.* Yes.
17173. *Q.* So that the mere fact of having it repeated on the board does not make any difference? *A.* No.
17174. *Q.* So that your objection is that they do not report, even in the book, things that must be there on account of the number of accidents that do occur? *A.* Yes.
17175. *Mr. Robertson.*] He did not say "on account of the number of accidents that do occur." He said there must, in the course of years, be something to make it unsafe.
17176. *Mr. Lysaght.*] Yes, whatever it may be.
17177. *Q.* But the fact of its being reported safe in the book, if you have your suggestion in force, would only result in its being reported safe on the board; so that you would not get over the failure to report properly? *A.* No; but if this were done it would be an additional means of safety to workmen. For instance, the latrines are situated in the old workings, bords, and men go into the old working bords; whereas if these dangers were reported on the board they would not do such a thing.
17178. *Q.* You anticipate that dangers may exist which men would avoid if they had notice of it every morning? *A.* Yes.
17179. *Q.* And you say, further, that the men either do not avail themselves of the right to inspect the book, or are afraid to avail themselves of that right? *A.* Yes, I say that they are afraid.
17180. *Q.* But if it were inscribed publicly on the board it would be apparent to them, without their taking any chances at all? *A.* Yes.
17181. *Q.* Mr. Bruce Smith spoke to you about men being able to enforce their right to see these books—do you know of any case where the management have refused the right of a man to see the book, or have placed obstacles in his way? *A.* No; but recently a miner said he was prepared to do so-and-so; but, to show the latent fear that men have in their minds of dismissal, I challenged him to go and look at the report book, and he dare not do it.
17182. *Q.* You cite a case where you challenged a man to go and look at the report book, and he was afraid to do so? *A.* Yes.
17183. *Q.* But you do not know of any individual case where the management refused to let a man see the book? *A.* No.
17184. *Q.* Or where the management put an obstacle in the way of preventing a man from seeing the book; because, if you do know of such a case, I will be glad to be told of it? *A.* I think that, when the books are put in an out-of-the-way place, hidden as it were, it is an obstacle in the way.
17185. *Q.* Tell me what out-of-the-way place the books are put in? *A.* In a cavity cut out of the coal, with a brick wall in front of it with a sliding door—the report book is in that place.
17186. *Q.* What is that called? *A.* That is inside the overseer's cabin.
17187. *Q.* You are speaking now of the mine you are working in? *A.* No, I was referring then to the Newcastle Coal Company's Mine.
17188. *Q.* That is where you yourself kept the book? *A.* Yes.
17189. *Q.* Did you put the book out of the way, so that the workmen could not see it? *A.* It was the custom to place the book in that place.
17190. *Q.* Was that a convenient place to keep it? *A.* Not convenient for the workmen.
17191. *Mr. Ritchie.*] Was the door of the cabin locked, or the door which shut this book in?
17192. *Mr. Lysaght.*] *Q.* Was the place where the book was kept locked? *A.* No, it was not locked.
17193. *Q.* Would men have to get any permission to go and get that book to look at? *A.* No; but they would have to have great courage.
17194. *Q.* To ask? *A.* Yes.
17195. *Mr. Barry.*] How many years ago is this?
17196. *Mr. Lysaght.*] *Q.* How many years is it since you were at this colliery where you were dismissed from? *A.* 1899.
17197. *Q.* Where is the book kept in the colliery you are at present working in? *A.* In a desk inside the overman's cabin.
17198. *Q.* Is that desk kept locked? *A.* I cannot say.
17199. *Mr. Barry.*] What is the name of this colliery?
17200. *Mr. Lysaght.*] *Q.* What is the name of the colliery where you work? *A.* New Lambton.

17201. *Q.* Do you suggest that the deputy's report book should be kept at any particular place in the mine, so that the workmen can see it conveniently? *A.* If my suggestion is carried out there is no necessity for that.
17202. *Q.* Leaving that out for the present—on the assumption that that suggestion, perhaps, may not be carried out by the legislature, would you then suggest any particular place where the deputy's report book should be kept? *A.* Yes; I would suggest outside the deputy's cabin altogether, hanging up by the roadside, where all men must pass.
17203. *Q.* Then, when Mr. Bruce Smith suggested that a Lodge could enforce a man's right, is it a fact that the deliberations of all these Lodges very easily leak out? *A.* Yes.
17204. *Q.* You know that to be a fact? *A.* Yes.
17205. *Q.* And you say that men, even in a Lodge, might hesitate to bring it up, because they would be identified easily enough afterwards? *A.* Yes.
17206. *Mr. Robertson.*] I can say that leakages never come my way.
17207. *Mr. Lysaght.*] I can quite appreciate that they would not venture to bring them to you personally.
17208. *Mr. Robertson.*] Personally, I think their deliberations are very secret—the Star Chamber is nothing to it. I have never found out anything yet.
17209. *Mr. Ritchie.*] Perhaps there is more necessity for secrecy on the south than on the north.
17210. *Mr. Barry.*] Does not Your Honor think this is introducing an element into this matter that had better be excluded?
17211. *His Honor.*] We have not gone much into it.
17212. At this stage Mr. Bruce Smith drew the attention of the Commission to the fact that, although he had been asked by the Commission, and had undertaken, to examine this witness-in-chief, Mr. Lysaght, to whom the witness had handed some paper, seemed to be fully informed of the nature of the evidence the witness was to give, and the examination-in-chief would, more appropriately, have been conducted by him. In future, if he found that proofs of the evidence of witnesses called by the Commission had been supplied to Mr. Lysaght, he would decline to examine them in chief.
17213. Mr. Lysaght said that the witness had merely handed to him in open Court, before the eyes of the Commission, a paper, which was apparently merely a copy of the letter addressed to the Commission, upon which Mr. Bruce Smith had based his examination-in-chief. He, Mr. Lysaght, had no other information as to the evidence to be given by the witness; and was merely using the paper given to him for the purpose of his cross-examination.
17214. *Mr. Lysaght.*] *Q.* You suggest that the examining deputy should be superior to the day deputy? *A.* Yes.
17215. *Q.* Did you mean to suggest that he might have an opinion concerning a danger which might differ from the opinion of the day deputy; and that, therefore, he should have the right to enforce that opinion! *A.* Yes, he certainly would have.
17216. *Q.* He might see conditions dangerous which the day deputy might not regard as dangerous? *A.* Certainly.
17217. *Q.* And, therefore, he should have the right to enforce the removal of those conditions? *A.* Yes.
17218. *Q.* Is that all you want to suggest on that? *A.* Yes.
17219. *Q.* Do you know whether, in your colliery, where you are working, places not being worked are ventilated? *A.* Not directly ventilated—no, I do not think that they are ventilated, only by what may go in by gravity, say, from the main body.
17220. *Q.* Do I understand then that the practice has grown up of not ventilating the places that are not actually working? *A.* They are not ventilated.
17221. *Q.* Do you know whether the openings on to goafs in your mine are securely blocked up with stoppings, or are they left open as a practice? *A.* In the mine where I am working at present there are no goafs.
17222. *Q.* In the mines where you have worked, was it the practice to block up the entrances into the goafs with stoppages? *A.* No.
17223. *Q.* Then, do you suggest that an intake airway should be allowed to pass a goaf, and thereby perhaps carry on foul matter to the men? *A.* Oh, dear, no.
17224. *Q.* I understood you to suggest that the waste should be ventilated by an intake airway passing it? *A.* A split of the intake, solely for that purpose.
17225. *His Honor.*] You mean that that area should be taken into consideration in relation to the whole supply.
17226. *Mr. Ritchie.*] Just the same as a working split.
17227. *Mr. Lysaght.*] *Q.* You were asked by one of the Commissioners whether this serious accident at Hamilton Pit was a creep or not? *A.* Yes.
17228. *Q.* Do you know the size of the pillars that were there when this fall took place? *A.* They were supposed to be 8 yards; but in that case they were robbed, and the coal filled and sent to the surface; so that the pillars were weak in places.
17229. *Q.* Were they 8 yards square? *A.* Eight yards by 35.
17230. *Q.* Cut throughs every 35 yards? *A.* Yes.
17231. *Q.* What do you mean by saying that the pillars were robbed, and thereby weakened? *A.* It was the custom at that time for the shift-men to fill the fallen coal that fell from the sides of these pillars, and to make a few shillings extra; and so the pillars were weakened.
17232. *Q.* That is to say, the shift-men filled as much as they could, and thereby weakened the pillars; is that what you mean? *A.* Yes.
17233. *Q.* In your opinion, should the cut-throughs be every 35 yards? *A.* Yes.
17234. *Q.* And not farther? *A.* Not farther.
17235. *Q.* And, in your opinion, would the having of the cut throughs every 30 yards at all endanger the security of the roof, or tend to bring on a creep? *A.* Not in the least.
17236. *Q.* You spoke about making the Manager sensible of his responsibilities, and not giving the Inspector power to order in safety-lamps—do you know that in some of the collieries in the Newcastle district there is a General Manager over three or four other Managers, who are called the Managers of the mines? *A.* I do not know of any case where there is a General Manager over three or four; but usually there is a General Manager over one Manager; and that Manager may have two collieries under him.

17237. *Q.* Do you know that, in some colleries, the person who is called the Manager, and who, under the Act, has the responsibility, has not, in many cases, the power to carry out what he himself may think necessary; but has to refer to a superior? *A.* Yes.
17238. *Q.* Then, do you not see that it is no good making that Manager sensible of his responsibllity, if he has to refer to somebody above him before he can act on his sense of responsibility?
17239. *Mr. Bruce Smith.*] Is not this rather a monologue in the evidence of Bailey? Mr. Lysaght asks him "so-and-so"; and he says, "Yes."
17240. *His Honor.*] It certainly is leading the witness.
17241. *Mr. Bruce Smith.*] It is very much like Socrates and Glaucon; and Glaucon says. "Just so."
17242. *Mr. Lysaght.*] *Q.* When you say you would not give the Inspector power to order in safety-lamps, you assume that the Manager himself has the power to forthwith put the safety-lamps in? *A.* Yes.
17243. *Q.* Do not you see, in the case I put to you, that he might have to refer to a higher authority? *A.* Yes, certainly that places the Manager between two courses; but the Act could be amended so that the General Managers should put their instructions to the Managers into writing.
17244. *Q.* But that would not get the safety-lamps into the mine? *A.* No, but still the Managers in the old country would not tolerate a General Manager ——[*Interrupted*].
17245. *Mr. Lysaght.*] But this is not the old country.

Cross-examination by Mr. Barry:—

17246. *Q.* I think you stated, in answer to Mr. Lysaght, that you heard some witnesses swear that they were afraid to report gas, or rather that they did not report it: will you kindly mention to the Commission the names of the witnesses, and where you heard them swear that, and the name of the mine they were in at the time? *A.* It was to Mr. Thompson, the solicitor.
17247. *His Honor.*] That is rather going into the matter which we have decided not to go into.
17248. *Mr. Barry.*] *Q.* Is that in respect to the mine that you were dismissed from, the Newcastle Mine? *A.* Yes.
17249. *Mr. Barry.*] That is all I want to know. I thought it was some other mine outside the one that he had the particular grievance against.

Examination by Mr. Robertson:—

17250. *Q.* You have suggested that the reports might be put on a board? *A.* Yes.
17251. *Q.* Where would you put that board? *A.* The main one should be at the entrance to the mine.
17252. *Q.* What do you mean by the main one? *A.* You are referring to the boards?
17253. *Q.* I am referring to the deputy's reports of different districts; where would you put the boards? *A.* I would put the boards, one to the main entrance of the mine, and one to each entrance to the separate districts.
17254. *Q.* That would be at the deputy's cabin, would it not? *A.* Not necessarily so.
17255. *Q.* The deputies' cabins are usually at the entrances—must necessarily be at the entrances—to the districts? *A.* No; you have a main intake road and districts from this main intake; men are going to right and to left; and the board is placed at the point intersecting with the main road.
17256. *Q.* But the workmen must meet the deputy at the entrance to the district? *A.* No, the workmen do not always meet the deputy or see the deputy.
17257. *Q.* Do you mean to say that the workmen go into the mine without seeing the deputy? *A.* Yes.
17258. *Q.* That is rather an extraordinary statement. Do not you think that is rather an extraordinary statement, that men go into the mine without seeing the deputy? *A.* I would certainly be able to get to my place without seeing the deputy. I would see the result of his examination, without seeing the deputy.
17259. *Q.* I do not doubt it; but have you not to meet the deputy before you enter the mine? [*Witness did not answer.*]
17260. *Q.* Well, any way, is not the deputy's cabin where the workmen usually meet the deputy? *A.* Yes.
17261. *Q.* Would you have the board there, at the deputy's cabin? *A.* No, not in all cases.
17262. *Q.* Wherever the board would be placed, I presume there would be nothing to prevent officials observing the men looking at the board? *A.* No.
17263. *Q.* Then can you tell me the difference between looking at the board under those circumstances and looking at the book? *A.* Yes; the difference is that the man sees it with his eye as he passes, and can read it without stopping; but if it is in a cabin he will have to stop to turn over the leaves of the book, and see it; and therefore the deputy or Manager sees his intention.
17264. *Q.* A man can see the board with his eye, and he can also see the book with his eye; but he could not read either of them without stopping? *A.* He could read the board without stopping.
17265. *Q.* He could? *A.* That is my opinion.
17266. *Q.* Perhaps so; but personally I cannot see the difference—you say that the men are afraid to look at the book because they would be observed by an official? *A.* Yes.
17267. *Q.* And, I take it, victimised? *A.* Yes.
17268. *Q.* Could they not be observed reading a board? *A.* No, not to the same degree, by far.
17269. *Q.* But there is nothing to hinder the officials from watching a man reading a board? *A.* I do not see the necessity for two or three officials to ——[*Interrupted*].
17270. *Q.* I did not say there was any necessity at all—but is it not possible that an official could observe a man's reading a report on a board just the same as they could observe his reading a report in a book? *A.* No, it would be customary—the men would fall into that groove, and the deputy too.
17271. *Q.* It could also become equally customary for men to read a book, and to fall into that groove? *A.* No.
17272. *Q.* I think you said that, after being refused work at a number of collieries, you were generously offered work by Mr. Alexander Brown? *A.* Yes.
17273. *Q.* And then you come here and you charge Mr. Brown with intimidation? *A.* I have not charged Mr. Brown with intimidation.
17274. *Q.* Pardon me, in your evidence you said—I do not know whether he said he told you direct; but you repeated some conversation you heard that Mr. Brown had said that if you joined the Union you would have to clear?
17275. *Mr. Bruce Smith.*] I understood him to say that Mr. Brown had told him.

17276. *Mr. Robertson.*] *Q.* Did Mr. Brown tell you direct? *A.* It was stated openly in the Lodge that the men wished to make me, on one occasion, chairman, and, on another occasion, check-inspector; and on both occasions the Secretary of the Miners' Lodge rose and informed the Lodge publicly of the statement Mr. Brown had made; and that was where I first heard it; and consequently I had to decline the offices that they wished to put me in, because of Mr. Brown's statement.

17277. *Q.* At all events the man who offered you employment after you had been refused elsewhere is the man that you make a charge against? You make a charge against the gentleman who was generous enough to give you employment when you could not obtain employment elsewhere? *A.* Certainly, I sincerely thank Mr. Brown for the offer and the chance of work, when others would not give it to me; but still I do not think, as a British subject, my liberty outside the mine should be affected.

17278. *Q.* I do not say it should. Now, you said you were afraid to read the report books? *A.* Yes.

17279. *Q.* And other men were afraid? *A.* Yes.

17280. *Q.* You are not afraid to come here, though, and say that the condition of that mine was not as it ought to be? *A.* Which mine?

17281. *Q.* The mine you are working in? *A.* I have said nothing disparagingly of the mine, with the exception that, in some cases, the air might be somewhat hot.

17282. *Q.* But, still, you say that; and you are not afraid apparently? *A.* No. I am speaking the truth when I say that.

17283. *Q.* Well, then, is there any truth in the statement you make that you are afraid to read the report book? *A.* Yes.

17284. *Q.* How are these two statements consistent? You come here, and apparently you are not afraid—you say you are not afraid? *A.* I am afraid this far, that it may even influence Mr. Brown's mind not to let me resume work; but certainly I think my coming here is a step in the direction of my ultimately obtaining justice in my own case, and getting this boycott removed, so that I can at least take up the study of mining which I have neglected three years.

17285. *Q.* The two statements seem to me utterly inconsistent. I should think that any statement you make here must carry very much more weight, and be a matter of very much greater importance to Mr. Brown, than the mere perusal of a book at the mine, that you are entitled to look at? *A.* I do not see that.

17286. *Q.* Do not you think that Mr. Brown would attach a great deal more importance to what you say here? *A.* Then Mr. Brown must be seized with the same facts as I am, that I am boycotted throughout the district.

17287. *Q.* Coming to the matter of safety-lamps, you would leave the question of using safety-lamps in a mine to the discretion of the Manager? *A.* Yes.

17288. *Q.* When made to understand his responsibilities? *A.* Yes.

17289. *Q.* But, supposing the Manager does not feel his responsibilities, what would happen then? *A.* Well, accidents or disasters are liable to happen when a man does not feel his responsibilities and enforce the Act.

17290. *Q.* I quite agree with you; but then to prevent those accidents, what would you do if the Manager was not seized with his responsibilities? *A.* So long as he complied with the Act he would be safe.

17291. *Q.* But do not you take it that it is not complying with the Act, if safety-lamps should be used and are not used? [*Witness did not answer.*]

17292. *Q.* Is it complying with the Act if safety-lamps should be used, and they are not used because a Manager does not fully realise his responsibilities? *A.* A Manager, when he sees or examines personally the mine, will become acquainted with it, and he will then know when to introduce safety-lamps into that mine.

17293. *Q.* But supposing he knows, and does not do it? *A.* If he knows the fact that dangers exist, and he does not take sufficient precaution, a disaster is likely to happen that he may be punished for.

17294. *Q.* Yes; but that is locking the door after the steed is stolen? *A.* I cannot understand a Manager not feeling his responsibility.

17295. *Q.* I put it to you now, if lamps should be used in the opinion, we will say, of the Inspector; and the Manager, either because he does not know, or does not feel, his responsibility, refuses to put in safety-lamps? *A.* Then he takes the consequences.

17296. *Q.* Yes; but other people have to take the consequences too—if you were working in that mine you might be blown up? *A.* Well, if I saw that dangers existed, and the Manager did not endeavour to comply with a certain amount of safety, I should certainly try to obtain work elsewhere.

17297. *Q.* Do not you think there ought to be some appeal in a case such as that, where a Manager does not see the necessity for safety-lamps? *A.* A practical, straightforward, honest Manager, who feels his responsibility, is the best judge as to when safety-lamps should be used in a mine.

17298. *Q.* No doubt; but, supposing he is not practical, and not honest, and not straightforward, and does not feel his responsibilities, should there not be some appeal from his judgment? *A.* Well, we expect a Manager to be reasonably competent, and, if the service certificates are dispensed with, we ought to have competent Managers who will take the responsibility.

Examination by Mr. Ritchie:—

17299. *Q.* Do you believe that all the persons who are acting as Managers at the present time fully realise their responsibilities, and are honest and straightforward? *A.* No; I do not think so.

17300. *Q.* Then, holding the opinion that they are not so, do you think that they ought to be vested with the sole power of determining whether lamps should go in or not? *A.* I think that the Managers who hold service certificates should have their certificates cancelled. I believe that a competent Manager, by examination, feels and knows his responsibility with regard to the safety of his men.

17301. *Q.* You have got greater confidence in the persons who hold certificates of competency? *A.* Yes.

17302. *Q.* But do you hold the opinion that, because they have got certificates of competency, they would fully realise their responsibility, and be more straightforward and honest than other Managers? *A.* Certainly; because we know they possess the knowledge to pass an examination; and we know, probably, that they are practical men too—well, the examination will depend upon that.

17303. *Q.* I suppose you will admit, though, that, even with all these qualifications, they might err in their judgment? *A.* Yes.

17304. *Q.* I suppose you know, also, that there is a certain amount of expenditure incurred in the introduction of safety-lamps—expenditure by the mine-owners? *A.* Yes.
17305. *Q.* Probably you also know that Managers are somewhat diffident about incurring any fresh expenditure if they can avoid it? *A.* Just so.
17306. *Q.* And that, although the Manager may inwardly believe that safety-lamps may be necessary, even a Manager who holds a certificate of competency may be afraid to put them in, for fear of increasing the cost of working the colliery? *A.* Yes; that certainly will have something to say regarding the introduction of safety-lamps.
17307. *Q.* Having a knowledge of these facts, do not you think that the Inspector of Collieries should be a person equally competent with the Manager to determine whether safety-lamps are necessary or not? *A.* Well, they have not done so, looking at it in the light of the Kembla explosion.
17308. *Q.* But I am just putting it to you now; do you not think that think they ought to be equally as competent as the Manager? *A.* Yes, equally competent.
17309. *Q.* And do you not think that, after all, it would be unwise to leave the whole and sole control of this important matter in the hands of one single man, and that the Manager? *A.* I do not think that it is for the Government to say when safety-lamps shall be used, but rather the Manager.
17310. *Q.* Supposing the miners of a colliery were to say that, from their knowledge of a mine, in their opinion safety-lamps ought to be used, would you then leave it to the Manager to say whether they shall or shall not be used? *A.* Well, if the Inspector for the district is called upon for a report, and he advises the use of safety-lamps, that would go a great way toward the introduction of them into that mine, even against the the Manager's opposition.
17311. *Q.* But then, under your proposal, supposing the Manager was face to face with a dozen reports, he would still have the right to say "No, they shall not go in"? *A.* Yes.
17312. *Q.* Do you know of any colliery where the workmen themselves have asked for the lamps to be placed in for their own safety, but where the Manager has refused to put them in? *A.* I know of a colliery where the miners have asked for the safety-lamps to be taken out of the mine and the Manager has refused.
17313. *Q.* What I was asking about was where the workmen desired that the Manager should put the safety-lamps in for their own safety? *A.* Yes, I believe that there are some mines down South where that has happened.
17314. *Q.* Have you any knowledge of that yourself? *A.* No.
17315. *Q.* Do you regard the miners as competent to judge when safety-lamps should go into a mine? *A.* Yes.
17316. *Q.* Would you, then, give them credit for sufficient knowledge to know when safety-lamps ought to be used? *A.* Yes.
17317. *Q.* If you were aware of the fact that the miners had requested the use of safety-lamps in a colliery, and the Manager had refused, would you still hold that opinion, that the Manager ought to be the sole person to determine that matter? *A.* Seeing that he is the responsible person, yes.
17318. *Q.* Do not you think that the miners have a great responsibility, when they go into a mine with naked lights, when they believe that safety-lamps ought to be used? *A.* The Manager has the most responsibility.
17319. *Q.* Do you believe that the miners, when they go into a mine, should place their lives in the hands of a person who, perhaps, may, for the reasons which I have stated, refuse to safeguard their lives? *A.* That is left to their own judgment, as to the danger or safety of that particular mine.
17320. *Q.* But you do not want to leave it to their judgment, unless you want them to do what you had to do, to walk about looking for work elsewhere? You do not mean that surely? *A.* I certainly should not continue to work at a place that I thought was too dangerous.
17321. *Q.* Would not you think, as a practical man, with a knowledge of the danger, that your voice ought to be heard? *A.* Oh, yes, attention ought to be paid to all complaints from practical men.
17322. *Q.* How long have you acted altogether as a deputy at any colliery? *A.* About twelve months.
17323. *Q.* During that period was it part of your duty to examine the waste workings? *A.* No.
17324. *Q.* That was not part of your duty? *A.* No.
17325. *Q.* Were there separate persons at the colliery where you were deputy who had that duty to perform? *A.* Not to my knowledge.
17326. *Q.* Do I understand you to say that there was no person whose duty it was to examine waste workings at the colliery where you were a deputy? *A.* Not to my knowledge.
17327. *Q.* Were they ever examined to your knowledge? *A.* Not specially. If they were examined, it was, perhaps, casually; because, perhaps, it was convenient to go that way to reach a certain place; and a deputy might just cast his eyes round—if you would term that an examination that might be done.
17328. *Q.* So that, so far as you know, the only examination that was made of the waste workings whilst you were a deputy was in taking a short cut to reach some other section of the mine? *A.* Yes.
17329. *Q.* And the deputy casting his eye round about him as he travelled? *A.* Yes.
17330. *Q.* Would you regard that as an examination? *A.* No.
17331. *Q.* That was at the A.A. pit? *A.* No, Newcastle Coal Company's.
17332. *Q.* Do you know if there is any examination of the waste workings where you are working now? *A.* No, I do not know of any; still I believe that they would be passed there occasionally.
17333. *Q.* You do not know of any examination being made; but you believe that somebody may travel through occasionally—not for the purpose of examining, I take it? *A.* No.
17334. *Q.* Is that the general practice in the North, where you have worked? *A.* It is the general practice in the mines that I have worked in.
17335. *Q.* Did you never regard it as part of the necessary work to be done while you were a deputy—the examination of the waste workings? *A.* Yes, it should be done if the man had time to do it; but he had not time to do that.
17336. *Q.* I suppose, with your practical and theoretical knowledge, you do regard this, the examination of the waste workings, as a very necessary part of the examination of the colliery? *A.* The waste workings should be examined, if left open; but I certainly object to any waste workings—[*interrupted.*]
17337. *Q.* I might alter the term: I suppose you know that there are sections of the mine which are abandoned for a time, but may not properly be regarded as waste workings? *A.* Yes.
17338. *Q.* Was that class of workings examined while you were a deputy? *A.* They could not be examined.

17339. *Q.* Why? *A.* In those old workings a heading might be fallen, or an entrance to an old bord might be fallen, and no fireman or deputy could get on the other side: consequently, what was in the old bord could not be told by examination.
17340. *Q.* But I suppose there are times when there are parts of the works abandoned which have not fallen at all? *A.* Yes.
17341. *Q.* While you were deputy, were such workings as those examined by you? *A.* No.
17342. *Q.* Were they examined by anyone else? *A.* Not to my knowledge.
17343. *Q.* Would you regard the examining part of the work as sufficiently effective and satisfactory from a safety point of view, with those workings left unexamined? *A.* No.
17344. *Q.* So far as you know, is that the general practice? *A.* So far as I know.
17345. *Q.* Do you know if there was anything in your Special Rules providing for weekly or monthly examinations of waste workings? *A.* I do not know that there is anything. I have a copy of the Special Rules here.
17346. *Q.* I take it I am quite clear upon the point that you say that, at no period, neither weekly nor monthly, were examinations made of waste workings? *A.* Just so.
17347. *Q.* I have got that quite clearly? *A.* Yes.
17348. *Q.* I think you have said something about the Managers in regard to the lamp question, that if they made a personal examination of the colliery they would be the most competent persons to know whether safety-lamps should be used or not. Now, what is the practice, so far as you know, of Managers making personal examinations of the underground workings? *A.* The practice varies at the collieries that I have worked in: sometimes a month, or two months, may elapse before the Manager is seen: in other cases he may be down every week.
17349. *Q.* A month or two might elapse between one visit and another from a Manager at some collieries; and in other cases the Manager might be down once a week? *A.* Yes.
17350. *Q.* And, with the knowledge which you have gained by observing the practice, do you think that a person who goes down so frequently would be competent to know when safety-lamps were required? *A.* No; I think the Manager, when he knows his responsibility, will go down once a day.
17351. *Q.* Then the practices which you have mentioned to me are the practices of persons who do not realise their responsibilities! *A.* Yes.
17352. *Q.* And that appears to be the general practice? *A.* Yes.
17353. *Q.* So that, generally, the Managers do not appear to realise their responsibility? *A.* At present.
17354. *Mr. Robertson.*] That is a conclusion arrived at from his experience at one mine.
17355. *Mr. Bruce Smith.*] It is a conclusion, rather, of the Commissioner than of the witness: because it is put to him; and he nods his head.
17356. *Mr. Ritchie.*] No it is his own. He nodded his assent to what he had previously said. He said he thought they should go down once a day.
17357. *Mr. Bruce Smith.*] I quite admit that they are a series of deductions of one thing from another, with a good deal of logic about them; but I say they are not the witness'. I do not think he would have framed those deductions in his own mind.
17358. *Mr Ritchie.*] The witness is a practical man with twenty-eight years' experience; he has a certain knowledge of theory; and he has a second-class certificate of competency; and we cannot think that a man with such experience as that will nod his head to something which he does not think or know.
17359. *Q.* How often do the Inspectors usually visit the collieries at which you have been working, so far as you know? *A.* It may be once in three months, and on occasion it may be longer than that.
17360. *Q.* Whilst you were a deputy, I suppose you came in contact with them frequently? *A.* No, I was situated in a peculiar circumstance; generally, when Inspectors were expected, work for me was found in an out-of-the-way place.
17361. *Q.* When the Inspectors were coming they found work for you in an out-of-the-way place? *A.* Exactly.
17362. *Q.* Did you ever know the Inspectors to go into the waste workings? *A.* No.
17363. *Q.* Did you ever hear of the Inspectors going into the waste workings while you were there? *A.* No.
17364. *Q.* Do you think the Inspectors' reports ought to be open to the workmen—the Government Inspectors' reports? *A.* Yes, I do not see any reason why they should not be.
17365. *Q.* Do you know of any reason why they should not be pasted on this board as well as the other reports? Do you know of any reason why they should not be made as public as the deputy's reports? *A.* No.

Examination by Mr. Robertson:—

17366. *Q.* How many collieries have you worked at in these colonies? *A.* I have worked at four.
17367. *Q.* What collieries were they? *A.* I have worked at the A. and A. Company, and the Burwood Company.
17368. *Q.* How many years at the A. A. Company? *A.* Somewhere about two, I think.
17369. *Q.* How many years at Burwood? *A.* About eighteen months or two years. Then I think the total amount at the Newcastle Company's collieries would be about eight years.
17370. *Q.* Do you say that a month or two might elapse before the Managers of those collieries went down into the mine—that the Manager only went down once a month or once in two months? *A.* Yes.
17371. *Q.* Do you positively assert that? *A.* Yes, at the time that I worked at these mines.
17372. *Q.* How can you positively state that—you, I suppose, were working in the mine, and the Manager might go underground without your knowledge? *A.* Yes; but it soon gets known generally, in the mine, when the Manager is down.
17373. *Q.* Then you say that you are in a position to know that the Managers of these mines, A. A. Company, Burwood Company, and Newcastle, only descended once in a month or two months? *A.* Well, on occasions it may be less. I am speaking approximately.
17374. *Q.* You have put it down in your evidence positively? *A.* Yes, but of course you know a Manager may have occasion to go down to look into some trivial accident that has occurred—that would break the month. In other times a month would elapse, and more than that.
17375. *Q.* I should think he would have many occasions to go underground in that time Then you do not wish to qualify this statement in any way? *A.* Only to that extent, that in case of a break-down or anything like that ——[*Interrupted.*]

17376. *Q.* Then, according to you, it is only a sort of accidental circumstance altogether that takes a Manager into the mine? *A.* No, I do not imply that.
17377. *Q.* Well, I infer that. If it is only once in a month or two, it must be only some accidental circumstance that takes him down. I think at the beginning of your evidence you made some sweeping assertions that gas was not reported at the mines in this State? *A.* Was not reported in mines in this State.
17378. *Q.* Do you refer to any one particular mine, or has this a general application? *A.* Well, it is general amongst men; but Mr. Neilsen, a mining Manager, said he would not swear that many instances of burning, even, occurred in the Newcastle district; and Mr. Thompson said ----[*Interrupted.*]
17379. *Q.* Stop a minute. You come here and give evidence of what you know; now, I ask you, do you know that gas is not reported in the mines generally, or is it one particular mine that you refer to? *A.* No; a man, a workman, cannot obtain the knowledge if he sees not the report book.
17380. *Q.* Then this sweeping and general assertion that you made, that gas is not reported at mines in the Colony, is, do not you think, both unjust and ungenerous? *A.* I was simply repeating the words of Mr. Thompson to Judge Fitzhardinge.
17381. *Q.* I am asking you of your own knowledge: you come here to say what you know about matters affecting mines; and you state that you know that gas is not reported at mines in the Colony. Now, I ask you, do you know that yourself? *A.* Yes, in my own case.
17382. *Q.* Do you narrow your knowledge down to your own case? *A.* I know of no other outside my own case.
17383. *Q.* Why do you say that gas is not reported at other collieries? *A.* I do not think I have said that.
17384. *Q.* You have said so: you made a very sweeping assertion that you knew that gas was not reported? *A.* Yes; well, that has been proved, to my mind, both in the Mount Kembla and Dudley disasters, that this gas was not reported.
17385. *Q.* But you made a general assertion; and one gathers, from what you say, that that is the practice in mines generally? *A.* If you take two instances where disasters have brought these things to light, you infer that it is not done at the other collieries.
17386. *Q.* Two instances are sufficient to your mind to prove that the officials at all other collieries are negligent? *A.* Not all others.
17387. *Q.* You have said so now? *A.* Some of them.
17388. *Q.* If the gas is not reported, they must be negligent, must they not? *A.* Well, you see what evidence has been brought out here that men have reported gas; and we have no knowledge of it in the report books; and the Inspectors do not know of it.
17389. *Q.* Yes, we have knowledge that men knew of gas and did not report it? *A.* Yes.
17390. *Mr Ritchie.*] I think the knowledge is that they did report it to the deputies.
17391. *Mr. Robertson.*] I am not defending anyone. That is so; but we have knowledge also that men knew of gas and did not report it.
17392. *Mr. Bruce Smith.*] We have an enormous amount of evidence in this Commission from men who say that they knew of gas and did not report it.
17393. *Mr. Ritchie.*] And there is evidence that reports were made.
17394. *Mr. Robertson.*] I do not deny that; but I say there has been abundant evidence before this inquiry that men have known of the existence of gas and have not reported it. Of course, some other men say they have mentioned the finding of gas to the Manager, undoubtedly; but we have not heard his evidence yet.
17395. *Mr. Lysaght.*] There is a considerable amount of evidence that men working at Kembla reported fire damp to three or four different deputies and to the Manager.
17396. *Mr. Robertson.*] I do not wish it to be thought for a moment that I am defending any official; on the contrary, I think any official who knows of the presence of gas, and does not report it, is guilty of negligence, and ought to be severely punished.

Re-examination by Mr. Bruce Smith:—

17397. *Q.* You made a general statement a few moments ago to the effect that the Managers in the northern district did not go into the mine in many cases, as often as once a month? *A.* No, some of the mines.
17398. *Q.* Now, you narrow it down to some; will you name any one mine in regard to which you are prepared to swear that the Manager did not go in more often than once a month? *A.* Yes, New Lambton.
17399. *Q.* Is that the one you are in? *A.* Yes.
17400. *Q.* Who is the Manager there? *A.* Mr. James Thomas.
17401. *Q.* Is there any other that you will name at present where you are prepared to swear that the Manager does not go in as often as once a month? *A.* No, I cannot swear unless I work there.
17402. *Q.* Do you swear of your own knowledge that the Manager of that mine has not been in once a month? *A.* Of my own knowledge I have not seen him in the mine.
17403. *Q.* Is that what your evidence amounts to—that you have not seen him? *A.* Certainly.
17404. *Q.* Will you swear he has not been in? *A.* He may have been in when I have not been there; but I am speaking of the working days of the colliery.
17405. *Q.* Will you swear that he has not been in more than once a month, on the working days of the colliery, without you seeing him? *A.* I will swear that he has not been in my working place.
17406. *Q.* Is that all you will swear? *A.* Yes.
17407. *Mr. Lysaght.*] I heard Mr. Bailey make a statement that certain witnesses had given evidence before Judge Fitzhardinge as to certain facts. Perhaps the Commission might think it advisable to have before them the reports that were made by the Judge or by the various Commissions that were held. There may be a considerable mass of evidence in those inquiries that might support some of the recommendations from the Union; and I respectfully submit that the Commission could consider it to a certain extent as though that evidence had been given before them on oath. I do not mean to adopt the evidence in the same way as the Coroner's depositions have been adopted, but still to consider it.
17408. *His Honor.*] We will leave that an open question, as to whether we do or do not make use of those reports at present. We do not want to overload the Commission.

[At 1 p.m. the Commission adjourned until 2 p.m.]

AFTERNOON.

AFTERNOON.

(On resuming at 2 p.m. Mr. W. R. Pratt attended to take shorthand notes of the evidence and proceedings.)

THOMAS COULSON was sworn and examined as under :—

[This witness was called at his own request, and the Commission asked Mr. Bruce Smith, as a matter of convenience, to conduct his examination-in-chief.]

Examination-in-chief by Mr. Bruce Smith :—

17410. *Q.* What is your name? *A.* Thomas Coulson.
17411. *Q.* You wish to give some evidence before this Commission with regard to coal-mining; and you were asked to state the nature of the evidence which you wish to give? *A.* Yes.
17412. *Q.* And then you wrote a letter stating that you were rather surprised you should be asked to state the nature of your evidence; and you have not stated it? *A.* I stated that it was on the black-list question.
17413. *Q.* You have supplied some notes to Mr. Lysaght on the evidence which you wish to give with regard to the twenty recommendations which have been made by the miner's lodges? *A.* No, sir.
17414. *Q.* You have been with Mr. Lysaght since the Court adjourned? *A.* I have seen him.
17415. *Q.* You have spoken to him about the evidence? *A.* No, nothing at all in connection with my evidence.
17416. *Q.* Have you not told him of the opinions which you have formed with regard to the twenty recommendations we were speaking about—have you written no notes as to your evidence? *A.* No; we never spoke about the recommendations; and I have written no notes upon my evidence.
17417. *His Honor.*] If Mr. Lysaght has any idea as to what evidence Mr. Coulson is about to give, he might begin his examination.
17418. *Mr. Lysaght.*] I protest against Mr. Bruce Smith making any suggestion that I know anything of the evidence which Mr. Coulson is likely to give.
17419. *Mr. Bruce Smith.*] You said so this morning.
17420. *Mr. Lysaght.*] I said that Mr. Coulson had asked me for a copy of the Union Recommendations, and that I sent him a copy; beyond that I said I knew nothing about the witness, and was not prepared to undertake his examination.
17421. *Mr. Bruce Smith.*] *Q.* You have had these twenty recommendations sent to you; and you have probably thought them out and are prepared to give evidence with regard to them? *A.* Yes.
17422. *His Honor.*] *Q.* You have formed opinions on them? *A.* Yes.
17423. *Mr. Bruce Smith.*] *Q.* Apart from those recommendations, will you state what other evidence you can give to the Commission? *A.* Yes. The first thing which I wish to mention to you is about the black-list; that is the principal thing. Gentlemen of the Royal Commission, and gentlemen. The evidence I came here to give is in connection with the black-list. I have heard it said that there is no such thing as a black-list in the district. Unfortunately for me, I have had to suffer from it, but not severely.
17424. *Q.* Tell us the circumstances connected with it? *A.* At the end of the 1891 strike, I was then President of the Miners' Association in the southern district; and after the strike was declared off I tried to get work.
17425. *Q.* Which strike? *A.* The 1891 strike—the maritime strike. I tried to get work at all the collieries excepting Kembla. Then I came to Helensburgh; and I happened to have a particular friend of mine there; and I got work.
17426. *Q.* What position was your friend in? *A.* He was underground manager—Mr. Cooper. There came a time when I wished to better my position by going with a mate to look for gold. We got leave from the underground-manager to go down to the head Manager, Mr. D. W. Robertson; but he was not at home. We went away, and we were away three weeks. When I came back I saw the Manager, and he refused to give me work; but he gave the other man work. I suppose I had said something in some way; but I do not know what I had said.
17427. *Q.* You do not know why you were not taken on again? *A.* I heard that I had said something at a Sydney meeting.
17428. *Q.* Have you any reason for supposing that the refusal to put you on was the result of something which you said in Sydney. I understand that you left your work and went away for three weeks? *A.* I had permission to go away.
17429. *Q.* Had you permission to return to your work? *A.* Yes.
17430. *Q.* You would have permission to come back? *A.* Yes.
17431. *Q.* The other man got back? *A.* Yes.
17432. *Q.* What did you do after that? *A.* I can mention other people's cases. There is the case of a man named Dryden, who got work at the Metropolitan Colliery. He was at Bulli making arrangements to shift his family out, and he received a telegram saying that they could not employ him, and that he need not shift.
17433. *Q.* What did the telegram say? *A.* "Cannot employ you; do not remove." I am not sure of it.
17434. *Q.* How long was Dryden working in the mine? *A.* He was not working at all. He never got work.
17435. *Q.* In which mine was this? *A.* In the Metropolitan Colliery.
17436. *Q.* Have you any reason for saying that that was in consequence of anything he had done? *A.* I never knew him to do anything. I cannot say what he did.
17437. *Q.* You cannot assign the occurrence to any action on his part. You know that people often intend to employ others in business, and find it difficult to do so. It often happens in the complexity of commerce? *A.* Sometimes it does.
17438. *Q.* Does it not occur often in business? *A.* This is not a case of that kind.
17439. *Q.* Have you any reason to say that the man had said anything to cause him to be refused? *A.* I do not know what he said.
17440. *Q.* You do not know that he said anything to incur the displeasure of anyone? *A.* He said a lot of things.
17441. *Q.* Did he say these things before he was promised work? *A.* Before he was promised work; if he did say them.
17442. *Q.* Is there any other case you can mention, that is within your own knowledge, in which a black-list has been kept? *A.* That is all I know of my own knowledge; but I have heard rumours of other cases.

Witness—T. Coulson, 17 February, 1903.

17443. *Q.* Dryden's case and your own case are matters of which you know yourself? *A.* Yes.
17444. *Q.* Apart from the twenty recommendations, is there anything else which you wish to say anything about? *A.* Yes, about the inspection of mines.
17445. *Q.* What about that? *A.* I hold that the inspection of a mine would be better done, if once in every six months there was one man appointed from the miners and one man representing the Company.
17446. *Q.* In what capacity? *A.* The Company's representative—say the underground-manager and the Government Inspector.
17447. *Q.* You say the underground-manager, the Government Inspector, and the check-inspector—they should do what? *A.* Inspect the mine; and the report should be published.
17448. *Q.* Should they inspect it together or separately? *A.* Together.
17449. *Q.* And the joint report should be published? *A.* Yes; once in six months.
17450. *Q.* That is instead of having separate reports, not published? *A.* Yes; so that the men can see what the report is, and the public as well.
17451. *Q.* Is there anything more you can say with regard to inspection? *A.* There is one matter which I have not noticed in the present Mining Act. We will suppose that a man is working singly at night, and he met with some sort of an accident, there is no way of ascertaining whether that man is in the pit or out of it. I have known men to be an hour late in coming out. If anything happened to a man, he might lie there for hours; and it might be the means of causing his death.
17452. *Q.* It has been suggested, I may tell you, that a number should be given to each man; that he should take the number in with him, and that he should hang it on a peg when he comes out, so that, by looking at the board, the mining officials will know what numbers are not out of the mine? *A.* It would not be reliable.
17453. *Q.* What would you suggest? *A.* I would suggest that some colliery official should see that all the men are out.
17454. *Q.* How would you do that? *A.* They do it in the Old country.
17455. *Q.* How do they ascertain which men are out of the mine? *A.* The official in a particular district knows every man who comes out.
17456. *Q.* Who does? *A.* The man in charge.
17457. *Q.* You disapprove of the men having a number, a token? *A.* They would be too careless with them.
17458. *Q.* Who, the men? *A.* Yes.
17458½. *Q.* Have you no faith in the men giving assistance in the matter? *A.* The men have got faith enough.
17459. *Q.* I am asking you if you have faith in the men. Could you rely on their hanging those tokens on the pegs? *A.* You cannot judge men much. You must lay down the best rules you can to prevent loss of property and of life.
17460. *Q.* Do you not think that if a man were given a token, and he was required to hang it on a peg, that he would do it, and that it would be a guide to the officials of the mine as to what men were out of the mine, and what men it might be necessary to look for? *A.* I thought you meant that they must hang up the token at the pit top.
17461. *Q.* I mean at some office as they come out of the mine? *A.* Oh yes, that is right enough; to bring them out of the stations.
17462. *Q.* Have you anything else. You have stated what you know about a black-list. You see you have given me no information; and I cannot ask you questions? *A.* There is another matter in connection with the means of escape from a mine. I think it would be a good idea ——[*Interrupted.*]
17463. *Q.* That is one of the recommendations upon which you will be examined directly. Have you any more suggestions to make with regard to the amendment of the mining laws? *A.* Not that I know of.

Cross-examined by Mr. Lysaght:—

17464. *Q.* You said that the man Dryden, whom you mentioned, had taken a prominent part in union affairs? *A.* Yes, he had been a prominent union man ever since he came to the district.
17465. *Q.* You have taken a prominent part in union affairs yourself? *A.* Yes.
17466. *Q.* Had you any doubt as to why you were refused employment ——
17467. *Mr. Bruce Smith.*] The question is, what evidence has he.
17468. *His Honor.*] I think it is hardly legitimate for Mr. Lysaght to lead the witness.
17469. *Mr. Bruce Smith.*] The fact that a man has no doubt is no evidence. He may form an opinion on the most flimsy evidence.
17470. *Mr. Lysaght.*] *Q.* Well, whom did you see? *A.* The Manager.
17471. *Q.* What did he say? *A.* We went to his house; and I said, "We did not succeed, Mr. Robertson; and we have come back to work." He said, "Well, Coulson, I think it had better stop as it is." That was leaving me without work. I said, "Do not refuse the other man on account of my sins, if I have got any." He said, "He can go to work."
17472. *Q.* Was any reason given to you? *A.* I never asked for any reason.
17473. *Q.* In the case of Dryden, do you know why he was not employed? *A.* No.
17474. *Q.* Do you know if a provision in the Coal Mines Act, forbidding the keeping of a black-list, and forbidding the improper prevention of men getting employment at other colleries, would have a tendency to make men report anything which they saw in a colliery. Do you think that the men would regard such a provision as a safeguard if they did report defects in the management? *A.* It would make them more secure. They would not expect to be black-listed then, if they reported anything.
17475. *Q.* You said that you had stated something at a meeting in Sydney? *A.* That is what I said.
17476. *Q.* What did you state? *A.* I spoke about the many accidents that had happened at the colliery.
17477. *Q.* At a particular colliery? *A.* Yes.
17478. *Mr. Bruce Smith.*] *Q.* At the particular one at which you were engaged? *A.* Yes.
17479. *Mr Lysaght.*] *Q.* At the Metropolitan? *A.* Yes.
17480. *Q.* Did you speak adversely about the management? *A.* It was not the fault of the management. It was the fault of the coal, and of having new men at the work. It was a question of the coal falling on the men and breaking their legs.
17481. *Q.* And you think, therefore, that, because of your statements, the Manager refused to employ you? *A.* I do not blame the Manager—he said it was the Company. He wrote —— 17482.

17482. *Q.* What did he write? *A.* He wrote a letter to the Secretary, and said that it was not he who wished to get rid of me, but the Company.
17483. *Q.* Did you see the letter? *A.* I saw the Secretary of the Miners' Union; and I also saw the letter.
17484. *Mr. Barry.*] *Q.* Did you read it? *A.* Yes.
17485. *Mr. Lysaght.*] *Q.* That letter was sent by Mr. Robertson? *A.* I would not swear that now. It is nine years ago. It came from the office. I would not swear that Mr. Robertson sent the letter.
17486. *Q.* When you were refused employment, did you bring the matter before the Miners' Union with a view of getting that letter sent? *A.* No.
17487. *Q.* Do you know why it was written? *A.* The Secretary personally interviewed the Manager. It was not done officially by the miners. I told them not to bother about me; and I went away.
17488. *Q.* You say that, in consequence of a personal interview by the Secretary, a letter was sent stating that it was not the Manager who objected to you, but the proprietors. Therefore, you are led to believe that you were victimised ——
17489. *Mr. Barry.*] He did not say that.
17490. *Mr. Lysaght.*] *Q.* Do you say that you were victimised?
17491. *Mr. Bruce Smith.*] I object to that. He has never resorted to any such sensational thing.
17492. *Mr. Lysaght.*] *Q.* It is not sensational. Did you think that it was your part in union affairs that prevented your getting employment? *A.* Yes.
17493. *Mr. Ritchie.*] *Q.* What do you say about the black-list? *A.* That is what I take as being victimised.
17494. *Mr. Lysaght.*] *Q.* In the case of Dryden, do you know that he was for some years unable to get employment? *A.* Yes, I know that he was for a long time unable to obtain employment.
17495. *Q.* Do you know he tried at various collieries? *A.* Yes.
17496. *Q.* Now, speaking of these recommendations. I furnished you with a copy of them; but, before dealing with this matter, you might tell us what practical experience you have had of mining—how many years? *A.* I have had about twenty years in this Colony. I was 24 years of age when I came here; and I was brought up in the mines.
17497. *Q.* Taking the whole of the twenty recommendations together, without going into details for the present, do you, as a practical miner, approve of them, or do you take exception to any of them? *A.* I take exception to the recommendation dealing with the inspection of the mines.
17498. *Q.* You have explained that to Mr. Bruce Smith. Do you approve of the others? *A.* I do not approve of the sealing-off of old workings. I think these places should be open, and should be ventilated as far as practicable. They should not be sealed up and left like that, because, when a big fall comes, any stoppings which would be put in would be blown out. If the place is ventilated as far as practicable, and is examined at different times, I think that is the only thing wanted.
17499. *Q.* With that exception, do you approve of the twenty recommendations? *A.* With regard to the use of safety-lamps in mines, I think that the three persons who I have suggested should go round and inspect the mine once in every six months, should have the absolute power of saying whether safety-lamps should be introduced into a mine or not.
17500. *Q.* You would entrust the power of the ordering of safety-lamps to the three persons you have mentioned—the Government Inspector, the underground-manager, and the check-inspector? *A.* Yes.
17501. *Q.* Then, with this exception, do you approve of those twenty recommendations? [*No answer*].
17502. *His Honor.*] *Q.* Would you say that any two out of those three gentlemen should have the power of making such an order in the case of one disagreeing? *A.* Yes, any two of them, of course.
17503. *Mr. Lysaght.*] *Q.* I was asking, do you agree generally with these recommendations? *A.* What I wish to explain is this: I consider that the report ought to be made public. That is a vital point to the mining community. The men should be able to see the report of the Inspector published from time to time, instead of its being put away in the office or somewhere else where you cannot see it. If a report about the mine is published every six months, the men and everybody else connected with it would know what the place was.
17504. *Q.* You are now referring to the report which you say should be published every six months. Do you also think that the Government Inspector's Report, when he visits the colliery, should be made available to the miners? *A.* I consider that it ought to be.
17505. *Q.* Following on that suggestion of yours, that any decision of two persons out of the three persons you mentioned should be binding as to the introduction of safety-lamps, do you not see that the men and the management might not wish for the introduction of such lamps, but that the Government Inspector might; and then the decision of the representative of the miners and the representative of the management might override that of the Government Inspector; and thus the mine might have to continue working under dangerous conditions? *A.* They would be to blame then.
17506. *Q.* No doubt; but the workmen would be blown up in the meantime? *A.* But the onus would be taken off the Inspector.
17507. *Q.* Would it not be better to vest the power of ordering the lamps in the Government Inspector, rather than take a risk like that? *A.* No, I consider not. I think three heads are better than one.
17508. *His Honor.*] *Q.* In a case of disagreement it would not be three heads. It would be two heads balanced by one. It would come back to one head probably. If two think one way, and one thinks another way, it is a balancing power of one only? *A.* You would be able to get over that if the reports published where the gas had been found, because then the Chief Inspector would have to go to the mine and examine it. He is the man who is supposed to have more brains than all the rest; and he would be able to go over the whole of the mine.
17509. *Mr. Lysaght.*] *Q.* Would you leave it to the Chief Inspector to decide whether or not the lamps should be introduced? *A.* Why not leave it in the hands of the three persons.
17510. *Q.* It is assumed that the District Inspector would refer the matter to the Chief Inspector, and that finally his would be the guiding mind? ——
17511. *Mr. Bruce Smith.*] That is the first reading of the recommendation that I have heard of in that way.
17512. *His Honor.*] It would really come to that. If there was a Chief Inspector, and if the question arose, the District Inspector, if called upon to exercise such authority, would leave it in the hands of the Chief Inspector.

17513. *Mr. Bruce Smith.*] Mr. Atkinson mentioned the Chief Inspector; but Mr. Lysaght never said, "He is the man we mean."
17514. *Mr. Lysaght.*] The words in the recommendation are "the Inspectors."
17515. *His Honor.*] It is a matter of detail. If there is a Chief Inspector, he would have the power of overruling the decision of the Sub-inspector.
17516. *Mr. Bruce Smith.*] I do not think he would, under Mr. Coulson's proposal.
17517. *Mr. Ritchie.*] *Q.* Supposing the local Inspector disagreed with the opinion of the miners' representative and the owners' representative, would you take that opinion as final; or would you have the opinion of the local Inspector, supported by the Chief Inspector? *A.* If the local Inspector satisfied himself that there was danger, he would call the attention of the Chief Inspector to it, and he would go there and see.
17518. *Q.* Would you take the joint opinion of two of these persons against one; or, if the one who dissented was the Inspector, would you refuse to take the opinion of the two? And, if the Chief Inspector supported the local Inspector, would you accept his view? *A.* I think that it is only when the local Inspector would be in the minority that the Chief Inspector would be called in.
17519. *Q.* The Chief Inspector would only be required to express an opinion when the local Inspector differed from the owners' representative and the miners' representative. In the event of that contingency arising, whose opinion would you take as final? *A.* I would take the opinion of the Government Inspector as final.
17520. *Mr. Robertson.*] *Q.* What would happen if a Manager thought that lamps were necessary, and the check-inspector and the Government Inspector thought they were not. Would you override the discretion of the Manager? *A.* It would be just on the same principle as the decision of any other question. There would be two against one.
17521. *Q.* But the Manager is responsible, and the others are irresponsible. I dare say you are aware that in one mine there has been a sort of conspiracy going on between the miners and the Manager to thwart the Government Inspector on the question of the introduction of safety-lamps, and for a time it has succeeded. Now, however, safety lamps are to be used; and this shows the necessity for the safety-lamps which the Government Inspector required to be placed in the mine? *A.* I think that the present Mining Act reads that where gas is found in a mine safety-lamps shall be used.
17522. *Mr. Robertson.*] No.
17523. *Mr. Ritchie.*] It is not compulsory at all.
17524. *Mr. Robertson.*] *Q.* Is it not better that the matter should be referred to arbitration. If there is a dispute—if the Inspector requires the introduction of safety-lamps, and the Manager does not agree, then the matter can be referred to arbitration as provided for in the Act. This is one of the matters that should be settled by arbitration? *A.* I should prefer the matter to be settled by three conscientious men. I think that they should be able to say what ought to be done.
17525. *Q.* But there may be a difference of opinion between conscientious men. That is, unless you define what is a gassy mine. If you define that, the matter is easy; but that has never been defined yet? *A.* Just so.
17526. *Mr. Ritchie.*] *Q.* Are the three persons intended to take the place of the Arbitration Board, and to settle the matter themselves? *A.* That is what it amounts to.
17527. *Mr. Robertson.*] *Q.* What is the use of multiplying boards, when there is provision for all matters of dispute between the Inspectors and the men or the mine-owners to be settled by arbitration? *A.* I might mention that, in the case of Kembla, if there had been an inspection by the men, and by the Government Inspector, and the representative of the mine-owners, and they had gone through the whole of the colliery, they might have come to the conclusion that there was gas there.
17528. *Mr. Robertson.*] That is doubtful.
17529. *Mr. Lysaght.*] *Q.* Upon reflection do you not think that the Inspector ought to be vested with the absolute power of ordering the use of safety-lamps as proposed in this recommendation? *A.* I think I have already answered that question. I think that each party ought to have a say in the matter. If the other two persons are against the Inspector, it is then for the Chief Inspector to be called in, and to go and examine the colliery.
17530. *Q.* Mr. Robertson pointed out a case to you in which the Manager might think it necessary to have lamps, and the Goverment Inspector and the men's representative might think it unnecessary to have safety-lamps. And the Manager has the responsibility resting upon him of the safety of the mine—ought he to be prevented putting in lamps? *A.* The Chief Inspector has the care of the men, and the mine Manager the care of the property.
17531. *Mr. Robertson.*] *Q.* Is not a mine Manager responsible for the lives of the men as well as for the property? *A.* Yes.
17532. *Q.* The Manager of a mine is the man directly responsible for human life? *A.* Yes.
17533. *Mr. Lysaght.*] *Q.* You see the difficulty? *A.* There is a difficulty under the other recommendation too.
17534. *Q.* That Recommendation vests the power in the Inspector? *A.* What about the Manager then.
17535. If the Manager is willing, then the lamps would be put in the mine? [*No answer.*]
17536. *Mr. Ritchie.*] If the Manager wishes the lamps put in, he has the power to put them in.
17537. *Mr. Lysaght.*] Yes.
17538. *Mr. Ritchie.*] And if the Inspector wishes to have them, he should have the power of ordering them?
17539. *Mr. Lysaght.*] Yes.
17540. *Q.* If the Manager is willing to put the lamps in the mine, then there is no need of giving the order; but if the Manager is not willing, then we say that the Inspector should have the power of ordering the lamps. There is therefore no likelihood of the difficulty arising, as under your suggestion. Do you approve of this? *A.* There are difficulties there also. If the Inspector wants to put the lamps in a mine, and the Manager says no, what then?
15541. *Q.* Then the Manager would have to put them in? [*No answer.*]
17542. *His Honor.*] It is a relief of responsibility for the Manager; but the lamps would be a charge on the proprietor.
17543. *Mr Lysaght.*] *Q.* It might be a step which the Manager might not want to take. However, I do not think I can carry the matter any further? *A.* No; I think my idea is as good as that in the Recommendation.

17544. *Q.* With regard to these reports every six months, you do not intend them to be instead of the other reports, as you said in reply to Mr. Smith, but in addition to them? [*No answer.*]
17545. *Mr. Bruce Smith.*] I did not say that.
17546. *Mr. Lysaght.*] Mr. Bruce Smith suggested to the witness that these reports every six months were to be instead of any other report—that there should be only one report every six months.
17547. *Mr. Robertson.*] That is not what I understood.
17548. *Mr. Bruce Smith.*] I did not understand the witness in that way.
17549. *His Honor.*] The witness did not suggest that the Inspectors should not go round and make their reports as usual; but that an inspection should be made every six months by three persons whom he named.
17550. *Mr. Lysaght.*] Mr. Bruce Smith said, "Instead of the other report."
17551. *Mr. Bruce Smith.*] I do not think that the Commissioners understood that I said "instead of the other reports."
17552. *Mr Lysaght.*] *Q.* With regard to these six-monthly inspections which you suggest—would they be in addition to the general inspections which are now made—is it a kind of extra precaution which you require? *A.* Yes.
17553. *Q.* These are not to be the only inspections? *A.* No, they would be outside the regular inspections. That is what the Court understands.
17554. *Mr. Robertson.*] That is what the Court does not understand.
17555. *Mr. Ritchie.*] The witness has made the matter clear now.
17556. *Mr. Lysaght.*] *Q.* Coming to the question of these tokens. Do you know whether the practice is in vogue in any of the southern district collieries? *A.* They have no tokens on the shift.
17557. *Q.* You never heard of it underground? *A.* Not underground.
17558. *Q.* In addition to this precaution of having men take tokens, bring them back again, and hang them on a nail, you suggest that an officer should wait at the end of a district until every man has come out of the pit. What official would you have? *A.* The deputy does it in the old country.
17559. *Q.* Is that practice adopted universally in England? *A.* Yes.
17560. *Q.* Where does the deputy wait for the men? *A.* Every man has to pass where he is waiting on the roadway.
17561. *Q.* The deputy waits at the end of each shift, for each man to pass by him? *A.* Yes, at the finish of the day's work—except the night-shift is on.
17562. *Q.* What is the practice in England if a man does not come out—has the deputy to go and seek him? *A.* The deputy has to seek him.
17563. *Q.* Is it the rules of the mine? *A.* It is the custom.
17564. *Q.* You made a general remark that the token system might not be adequate, because the men are too careless. I do not think the Commission quite comprehended your meaning. *A.* From the manner in which the other gentleman put the question to me, I thought that the tokens would have to be brought out to the top of the mine; but apparently the men would only bring them to the section where the deputies were sitting. If the men gave up the tokens there, I do not think there would be any objection.
17565. *Q.* You do not suggest, in a matter like this, that the men would be careless? *A.* No; but if they had to keep them until they got to the top of the mine there might be some laxity or confusion.
17566. *Q.* Now, with regard to the instructions to the employees on the means of escape—have you any suggestions to make as to how that instruction should be given? *A.* I think that a good plan would be to whitewash the travelling roads at every turn. If a man came to a turn, he would see which side was whitewashed, and would continue along that road. You might think that whitewash would not stand very long; but it would last three months, or more than that.
17567. *Q.* Do I understand you that you want the travelling roads whitewashed, leading out of the mine—that is, at every turn? *A.* Yes.
17568. *Q.* You think that that would answer the purpose? *A.* A stranger could easily find his way out when he knew the system.
17569. *Q.* Is there anything further which you wish to say with regard to these recommendations? *A.* No.

Cross examined by Mr. Barry:—

17570. *Q.* I think you said that you saw the telegram that Dryden received. Can you recall to your mind who sent it? *A.* I cannot swear to the name; but he told me that it came from the Manager.
17571. *Q.* Where was Dryden then? *A.* At Woonona.
17572. *Q.* Where was he working? *A.* He was not working at all.
17573. *Q.* That was nine years ago, you say? *A.* Yes.
17574. *Q.* With reference to the suggestion you make to the Court as to the appointment of three Inspectors. Suppose two Inspectors agree as to a report, and one disagrees. This report is for the benefit of the miners. What would you do with it? *A.* The report would be published.
17575. *Q.* Would you publish each man's views, in the case of a disagreement? *A.* You would have a joint report. And if they found gas they could report on it.
17576. *Q.* Supposing the Inspectors differed what would you do in the matter of the report? Would you publish the report of the two Inspectors, and not of the one Inspector; or would you publish no report at all? *A.* Do you mean on the safety-lamp question?
17577. *Q.* No. Supposing two Inspectors agree upon certain facts, and the third Inspector does not agree upon those facts; the one who might not agree might be the miners' representative; would you have the report of the two Inspectors who have agreed published, and not publish the report of the third Inspector who disagreed? *A.* There could be no disagreement, when all that the Inspectors would have to do would be to go round and take the quantity of air and report on the mine.
17578. *Q.* But supposing they do disagree? Have you anything to suggest to the Court as to whether separate reports should be published for the benefit of the miners? *A.* That is what it would come to.
17579. *Q.* And when the reports are published you think that each miner should have a copy? *A.* They should be published in the local newspaper.
17580. *Q.* At whose expense? At the expense of the Government.
17581. *Q.* You would not suggest that a pamphlet should be published by the Government and supplied to each miner free? *A.* No.
17582. *Q.* You think the report ought to be published in the local papers? *A.* Yes. 17583.

17583. *Q.* Would you have any suggestion to make with regard to those miners who cannot write or read? *A.* I think that most of the miners can read now.
17584. *Q.* With reference to the deputies in the old country, I think you said that it was the practice there to see that all the men were out of the district. Can you name some of the collieries where it is the practice? *A.* Yes.
17585. *Q.* What was the practice? *A.* The deputy would wait at his station until all the men were out of the mine.
17586. *Q.* What are the names of the collieries? *A.* Pagebank, Bishop-Midland, and Shotten.
17587. *Q.* Are those the only three places where you have worked, where you have had experience of the deputies waiting for the men to come out of their districts? *A.* Yes.
17588. *Q.* Did the deputy see the tokens? *A.* They did not have any tokens.
17589. *Q.* Do you propose to dispense with tokens altogether? *A.* I did not know there were any tokens in use.
17590. *Q.* I understood that it was the practice in the southern mines? [*No answer.*]
17591. *Mr. Lysaght.*] Only in a few mines.

Examined by Mr. Robertson:—

17592. *Q.* This is the second Royal Commission, I think, at which you have had your little grievances aired? *A.* Do you say the second Commission?
17593. *Q.* Yes? *A.* This is the first Commission I have ever been before.
17594. *A.* Do you not remember that at Judge Rogers' Commission there was an attempt by Mr. Curley to have your grievance taken up by the Commission? *A.* I do not remember it.
17595. *Q.* You do not know what decision the Commission came to? *A.* I do not know that Mr. Curley mentioned the matter to me.
17596. *Q.* He did bring it before them; but the Commission decided that it was too childish a matter to go into? *A.* I did not know.
17597. *Q.* Now what were you doing at this time? *A.* Working at Clifton.
17598. *Q.* Working? *A.* No.
17599. *Q.* Had you not been on strike for nine or ten months? *A.* Yes.
17600. *Q.* You were a prominent man—one of the leaders—chairman of the district, and so on? *A.* Yes.
17601. *Q.* Are you not aware that there were other prominent men, in connection with the coal strike, who were employed at the mine at that time? *A.* I do not catch that question.
17602. *Q.* You are aware that men who had taken part in the strike were employed by me at the same time? *A.* There were some people employed there, and so was I.
17603. *Q.* Now, when you left to go to this gold claim, I was not there, and you did not have leave of absence from me? *A.* That is right.
17604. *Q.* Or from the Manager? *A.* Yes, I had from the underground-manager.
17605. *Q.* You know the underground-manager has no power to grant leave for an indefinite period? *A.* I do not know that. I thought he was acting Manager when you were away.
17606. *Q.* You know that I was only away for a day? *A.* I do not know how long you were away.
17607. *Q.* You know that the underground-manager has no right to grant leave of absence; and, besides, you exceeded your leave? *A.* So did the other man.
17608. *Q.* At that time was not the work very slack? *A.* It was not very brisk.
17609. *Q.* You take exception to a Manager's exercising his option as to whom he shall employ? *A.* I think that each man should have his share of the work that is going on.
17610. *Q.* Having been granted leave of absence, and having exceeded it, you thought that you had a right to come back whenever you thought fit? *A.* I did not exceed the leave of absence asked for from the under-manager.
17611. *Q.* I can only tell you what he reported to me? *A.* I told him that we did not know how long we should be; we might be three months, or we might be more.
17612. *Q.* Then there was an indefinite leave of absence? You might have remained away permanently? *A.* You said that we overstepped the leave of absence.
17613. *Q.* You might have been away altogether if the gold claim had turned out good? *A.* We would have been there yet if the gold claim had turned out good.
17614. *Q.* You take exception to a Manager's exercising his discretion as to whom he shall employ? *A.* I take exception in a case like that, when you employ one man and let the other go.
17615. *Q.* Then you claim to have a permanent cavil at each colliery at which you are employed? *A.* If you had served both alike it would not have been so bad. It was only because I said something against the colliery.
17616. *Q.* How do you know that? *A.* I surmised it.
17617. *Q.* It is mere suspicion? *A.* Yes.
17618. *Q.* You come here to give evidence under the heading of a black-list? *A.* Yes.
17619. *Q.* I would like you to explain what evidence there is here relating to any black-list? *A.* It all depends. You may think there is no evidence; but I think there is ample evidence.
17620. *Q.* What do you think? *A.* I think it is ample evidence. I say that your under-manager promised me leave of absence, and said that when I came back there would be work for me. But when I came back you refused to employ me.
17621. *Q.* What suggestion do you make? Would it be because of your position as a prominent union man? *A.* It might be my inferior workmanship for all I know.
17622. *Q.* Now, let us confine the charge to a black-list? *A.* It looks like a black-list.
17623. *Q.* What is a black-list? *A.* A man who loses employment because he is doing all that he can to try and help his fellow-workmen.
17624. *Q.* You mean because he is a union official, and because he has been orating at meetings? *A.* That is right.
17625. *Q.* I suppose you know that there have been a great many union officials employed at the Metropolitan Colliery for years? *A.* Yes.
17626. *Q.* Men who have taken a very prominent part in union affairs? *A.* Yes; and there are some of them who wanted to get employment again, and who could not.

17627. *Q.* The fact of your having been employed after having been on strike for ten months, at an adjoining colliery, does not show any ill-feeling on the part of the Manager of the Metropolitan Colliery to union officials? [*No answer.*]
17628. *Q.* Now, that is easy to answer? *A.* That question might be answered in two ways. I did not happen to ask you for work. That might be the answer.
17629. *Q.* But the Manager was supreme? *A.* Of course he is, I know that.
17630. *Q.* Did you ever hear of any union official employed at the Metropolitan Colliery who was not afforded the utmost courtesy and consideration? *A.* I was until that time.
17631. *Q.* And yet you come here and charge me with being privy to a system of black-listing. If you could show me where there is any evidence of black-listing, I should feel obliged? *A.* You must have had a reason for refusing me work, and at the same time giving it to another man.
17632. *Q.* I would not mind stating my reasons. I may say that it is your unfortunate manner, and not on account of any connection which you have with trades-union affairs. I do not mind stating publicly that I never regretted the step I took. I am satisfied that it was in the interests, not only of the owners, but of the miners.
17633. *Q.* Now, supposing there was a provision made by Act of Parliament to prevent black-listing—how do you think it would help you or any prominent union men? How would it help you to get employment? *A.* I do not suppose it would help me very much at present.
17634. *Q.* Do you not think that any Manager would form his own opinions; because no Act of Parliament could prevent a Manager refusing men employment? *A.* You could not make a Manager employ men if he did not wish to employ them.
17635. *Q.* Do you not see that an Act of Parliament would be useless? *A.* I said nothing about an Act of Parliament.
17636. *Q.* There is a provision here, in one of these recommendations, that some regulation should be made in future legislation to protect workmen from the effects of a black list; but at the present moment you have not a tittle of evidence to show that a black-list ever existed. Even on the assumption that it does exist, how can legislation help the workmen in that way. *A.* Legislation can do a great many things, if it is brought properly into action.
17637. *Q.* Would legislation have forced me, or any other Manager, to employ you after the Coalcliff strike? *A.* That was no more than any other strike. Simply because a man takes a leading position in a strike, is he to get no more work?
17638. *Q.* I ask you to show me how legislation can help you to obtain employment if the Manager does not think fit to employ you? *A.* You will have to wait until the Bill is brought in, and see the lines laid down. The meaning is to prevent anything of the kind occurring again.
17639. *Q.* How will it help you more in the future than in the past? *A.* If a man reports anything about a mine now, the officials take some opportunity to get rid of him, and that wants to be stopped.
17640. *Q.* Do you think any man who reports anything at the Metropolitan Colliery would be sent away? *A.* I think so; but I have no evidence to bear it out. What I said in Sydney is what the whole of the disagreement was about.
17641. *Q.* According to your own account, you said nothing in Sydney that reflected on the Manager? *A.* It did not reflect on the Manager. It was the dangerous work at the time that was causing the accidents.
17642. *Q.* What grounds have you for saying that anyone who reports any trouble in the Metropolitan Mine would be punished? *A.* I think that there is good reason for saying that.
17643. *Q.* With regard to this suggestion of yours as to ascertaining whether men have been left in the mine, and whether they might be injured—you have never heard of any such case? *A.* Any such case as what?
17644. *Q.* As to a man's having been left behind in a mine? *A.* Not injured; but it is a safeguard, which ought to be taken with a view of preventing anything of the kind happening. I have known men to be an hour and a half behind their time for coming out. There might be something wrong with them, or not.
17645. *Q.* There are 500,000 or 600,000 men employed in the British coal-fields—not to speak of our own experience here for many years, and such a thing has never happened, as a man having been left behind injured. Do you think it necessary to have special legislation involving some trouble and expense to meet such a remote contingency? *A.* I think it is necessary to see that every man is taken out of the mine. If you lose only one man, that is one man's life gone for the sake of only a few pence.
17646. *Q.* You say that it is customary in the collieries in England for the deputies to wait behind to see the men out of their place? *A.* Yes.
17647. *Q.* What time do the men go into the face in the old country? *A.* Six o'clock.
17648. *Q.* Then the deputies could not wait until the men came out of the mine? *A.* There are two shifts of them.
17649. *Q.* That would require two shifts of deputies? *A.* It would only require one man to see that the whole of the men were out.
17650. *Q.* The deputies would have to be in the mine three hours before the men began work, and remain there until all the men came out of the mine: could they do that? *A.* I do not think it likely.
17651. *Q.* As to the token system—you say yourself that the men would be negligent, and they would pass the board and forget to hang up the token? *A.* They might do it.
17652. *Q.* Is that not human nature—without imputing any design on their part of course? *A.* I think they would hang up the token, if they were required to do so immediately they left the face, say in the first section they came to.
17653. *Q.* Then, if they did not, the officials would become alarmed, and would be sent on a wild goose chase searching for men who might be comfortably at home? *A.* Well, in the old country the deputies see that the men are out of the mine.
17654. *Q.* I do not remember it at all. I have had considerable experience in North Wales and in Scotland; and I never heard of it. In the case of men working with safety-lamps, would not the requirement be met by the men handing in their lamps? *A.* You see it would be 9 or 10 o'clock before the lamp man would find out that he was short.
17655. *Q.* In a mine where the lamps are handed to a responsible official, he would find out in a little time whether any were missing? *A.* He would be a couple of hours, I suppose.

17656. *Q.* Coming to this joint inspection on the part of the Government Inspector, the check-inspector, and the representative of the Company—what have you in your mind? Would they inquire into cases of gas, or any other matters? *A.* They would inquire into everything connected with the mine.
17657. *Q.* Why do you mention the under-manager specially? *A.* It has always been the custom for the under-manager to go round with the Inspector.
17658. *Q.* In an important matter like this, should not the Manager go round? *A.* What I mean is the representative of the Company—the highest official you have.
17659. *Q.* Would you give this trio of inspectors power to decide what method of working should be adopted? *A.* No.
17660. *Q.* Then what is it you want? *A.* The inspection would show to the public and the workmen the condition of the mine, the quantity of air which was circulating, and the general safety of the mine.
17661. *Q.* If the safety of the mine, in the opinion of these three men, depended upon another system of working being adopted, they would decide that. A decision is to be arrived at by two votes out of the three. Suppose the check-inspector and the Government Inspector decided that another system of working ought to be adopted, would you give those two men the right to say how the mine should be worked? *A.* No. What I mean is this: The Government Inspector now generally goes round, accompanied by some official of the mine. Why not let the other section be represented in the inspection, by a representative of the workmen going round also, and the report be made public.
17662. *Q.* What is to come after the report? *A.* If the mine is satisfactory, nothing more is needed.
17663. *Q.* Suppose, in the opinion of the Government Inspector and the Chief Inspector, it is not satisfactory? The Mining Act will provide for the rest—that is, if the mine is not in the condition it should be.
17664. *Q.* Would you have the matter referred to a Board of Arbitration. I may say that according to the present Act there is no power to refer such a matter as that of the safety-lamps to arbitration. The Inspector has not that power. Should this joint report be referred to arbitration at the instance of any one of the persons who inspect the mine, or at the instance of any two out of those three persons? *A.* I hardly think there would be any necessity to refer any matter to arbitration. There would be no necessity, as long as the mine was in working condition—there would be nothing to arbitrate on.
17665. But suppose in the opinion of two out of the three Inspectors the mine was not in a safe condition? *A.* Because of gas.
17666. *Q.* Because of anything. You see there might be a difference of opinion. The safety of a mine is a matter on which there may be a difference of opinion—and there may be honest difference of opinion? *A.* The three representatives inspecting the mine is a step towards arbitration.
17667. *Q.* You would not constitute the three representatives a final Court of Appeal to decide any question as to the management of the mine? *A.* No.
17668. *Q.* I mean as to the working of the mine! *A.* My idea is for the three representatives to inspect the mine, and to have their report on it published. The Mining Act deals with the rest—or the Chief Inspector would deal with it.
17669. *Q.* At present the Mining Act could not follow up a report of that kind, unless there was something in it not specifically provided for in the Act? *A.* You would have to constitute a new board.
17670. *Q.* As to the other matter, the providing of means of escape. You suggest whitewashing at every turn in the travelling road. I may say this, that it is the only sensible plan that has yet been suggested, and the only practical plan, and I entirely agree with it? *A.* Just so.

Examined by Mr. Ritchie:—

17671. *Q.* I understand that the joint inspection you propose should take place every six months? *A.* Yes, I mentioned every six months.
17672. *Q.* Do you not think that it is a bad principle to have any particular time fixed for an inspection? *A.* When I thought of the matter first, I did not mean to name any time. It might be better to leave the date open.
17673. *Q.* Is there not a suspicion that mining managers prepare specially for an inspection, when they know that the Inspector is coming! *A.* Not that I know of.
17674. *Q.* Your idea is that this inspection should be made when the mine is running in its normal state, and not when it has been specially prepared? *A.* Yes.
17675. *Q.* Would it not be better to have the inspection at regular, instead of fixed, periods, and without any notice, excepting to say that the Inspector will be there in two or three days? *A.* That would be better than naming a time.
17676. *Q.* Supposing that the joint inspection was to be arranged so that the Government Inspector could notify the Mining Inspector, the Manager's representative, and the miners' representative, that the inspection would take place in say three days time? *A.* Yes; that would do.
17677. *Q.* Do I understand you to mean that the inspection shall be a complete and thorough one? *A.* A complete inspection of the whole mine.
17678. *Q.* I take it that that would embrace all the waste workings that could possibly be reached? *A.* Yes.
17679. *Q.* And also the abandoned places? *A.* Yes.
17680. *Q.* Every available part of the mine? *A.* Yes.
17681. *Q.* Do you suggest that the most up-to-date appliances should be used on that occasion—such as the hydrogen lamp for testing for gas? *A.* I am not well versed in that particular lamp.
17682. *Q.* Do you suggest that the party making the inspection should be equipped with the best appliances? *A.* They should be equipped with the best appliances that could be got.
17683. *Q.* I want to know something about this black-listing matter you talk of. I understand you to say that you were black-listed and victimised, because of something you said at a meeting? *A.* That is what I have heard since. It is only rumour.
17684. *Q.* Was this meeting, which you addressed in Sydney, a meeting held at the time of the strike? *A.* Yes. The Metropolitan Colliery was out on strike.
17685. *Q.* Will you tell us as nearly as you can what the expressions were you made use of? *A.* I gave the amount of money which we were paying away fortnightly for accidents.

17686. *Q.* You gave information concerning the amount of money you were paying away towards the support of those who had been maimed in the mine—at which mine? *A.* At the Metropolitan Colliery.
17687. *Q.* Is that all you did? *A.* Yes.
17688. *Q.* Subsequent to addressing that meeting, did you work at the Metropolitan Colliery? *A.* Yes.
17689. *Q.* Did the settlement of the strike bring with it the decision that all the men were to go back in a body? *A.* Yes, we all went back.
17690. *Q.* There was no necessity for you to apply personally? *A.* I went to work afterwards.
17691. *Q.* With the body of men? *A.* Yes.
17692. *Q.* How long was it, before you went to the gold claim you spoke of, that you asked for leave to go? *A.* Three or four months.
17693. *Q.* Three or four months before you went? *A.* It was three or four months after the strike that I went away.
17694. *Q.* You applied to the under-manager for extended leave? *A.* Yes.
17695. *Q.* How long before you left? *A.* Only a day or two before I left. The Manager was away at the time.
17696. *Q.* The whole of the time? *A.* Yes.
17697. *Q.* When you made application? *A.* Yes.
17698. *Q.* When you left? *A.* Yes. I think I made application on a Friday and went away on a Monday.
17699. *Q.* Did the under-manager say it would be subject to the approval of the Manager? *A.* No.
17700. *Q.* He made no qualifications? *A.* None whatever.
17701. *Q.* Do you know that other men were being employed apart from your mate; whilst you were refused employment? *A.* There were only the two of us together.
17702. *Q.* When you were refused re-employment? *A.* There were only the two of us together when we went to ask for work.
17703. *Mr. Robertson.*] I have already stated that I would exercise my option as to whom I would employ; and I see no necessity to pursue this matter further.
17704. *Mr. Ritchie.*] I do not wish to offend my friend.
17705. *Mr. Robertson.*] This is the second Commission at which this matter has come up. I have already said that I would exercise my option as to whom I would employ.
17706. *Mr. Ritchie.*] The matter is here before us now; and I want to get at the facts.
17707. *Mr. Robertson.*] I have told Coulson the reason why I did not employ him.
17708. *Mr. Ritchie.*] If you would allow the witness to answer questions, it would be much better. I want to know whether the witness has any reason for knowing whether other men were being employed at the mine whilst he was refused work.
17709. *Q.* Were other men being employed apart from your mate? *A.* Yes.
17710. *Q.* You have given us the reason why you think you were black-listed? *A.* Yes.
17711. *Q.* Do you think it would be necessary to instruct employees on the means of escape, if your proposal to whitewash the travelling roads at every turn was adopted? *A.* I think the whitewash would be a sufficient indication to any man—he could not get very far wrong.
17712. *Q.* The only thing would be to follow the white arrows, or any other indications which might be put up.

ALFRED ASHLEY ATKINSON, who had been previously sworn, was called, and further examined, as under:—

Re-examined by Mr. Ritchie:—

17713. *Q.* I think you said yesterday, as a matter of fact, that there has been objection raised by the Managers and the miners to the introduction of safety-lamps? *A.* Yes.
17714. *Q.* Can you tell us of any cases that have come under your notice where this objection has been raised, either by the miners or by the Managers? *A.* Yes, at the Burwood, the Seam, the South Clifton ——
17715. *Q.* Just tell us who were the parties who objected? *A.* At Burwood, both parties; at Seaham, both parties; at South Clifton—I have had no correspondence from the men; but the management objected; at Bulli, both sides; at Brown's, and at the Duckenfield's the management have objected; at West Wallsend, the management have objected; but I think they intend to introduce safety-lamps; at Seddon's Teralba, the management have objected; and at Mount Keira the management have objected; but they intend to put in safety-lamps.
17716. *Q.* Does that exhaust the list? *A.* Yes, of objections.
17717. *Q.* Have you any list of places where the miners have desired safety-lamps to be brought into use ——
17718. *Mr. Bruce Smith.*] Do you mean since the Kemb'a disaster, or before it?
17719. *Mr. Ritchie.*] *Q.* At any time? *A.* I do not remember. I do not think there is any official communication from the miners asking that lamps shall be used.
17720. *Q.* Then in the majority of cases the objection has come from the Managers? *A.* We have correspondence with the Managers on this question; and in that way we have definite objections.
17721. *Q.* Are there any collieries, besides those two which you mentioned, where they intend to put in safety-lamps, but where flare-lamps are still in use—am I right in supposing that you have requested safety-lamps to be used there? *A.* Yes. But flare-lamps are still in use.
17722. *Q.* You told us of two? *A.* There are Brown's, and Duckenfield, the West Wallsend—excepting some men working in pillars, Teralba—and I forgot to mention Waratah.
17723. *Q.* Who objected in the Waratah mine? *A.* The Management. They also intend to used safety-lamps; but they are only using them now in certain parts of the colliery.
17724. *Q.* Am I to understand that they notified you to this effect? *A.* It is not sufficiently distinct to state that.
17725. *Q.* You have corresponded with them, and believe they intend to do so? *A.* Yes.
17726. *Q.* Are there any other collieries where flare-lights are in use? *A.* Mount Keira.

17727. *Q.* They are going to adopt them there? *A.* They are using the naked lights there; but they are going to use safety-lamps; and then there is Mount Pleasant, with the exception of some work going on in some pillars.
17728. *Q.* These are all collieries where the Department has requested the use of safety-lamps, but so far the request has not been complied with? *A.* To some extent it cannot be complied with, owing to their being unable to get lamps.
17729. *Q.* They have placed that before you as a reason? *A.* Yes, several of them have.
17730. *Q.* Are there some mines which defy the Department, without any excuse? *A.* Yes, there are some who say that they will not use safety-lamps.
17731. *Q.* Can you give us the names of those? *A.* There is Brown's, Duckenfield, and Seddon's Teralba. I think they are the only three who have refused.
17732. *Mr. Barry.*] *Q.* Is not Brown's and Duckenfield one and the same? *A.* No, the Duckenfield is a separate colliery.
17733. *Q.* I understand that you do not consider it necessary to have cut throughs at any regular distances; *A.* That is my evidence.
17734. *Q.* Do you think that it should be required that a mine should provide wooden brattice after a certain distance from a cut through, instead of canvas? *A.* Not so long as the air is carried to the face by the ordinary brattice.
17735. *Q.* I suppose you have observed, where canvas sagged very much, it did not serve its purpose where it is put up for long lengths? *A.* I have sometimes seen brattice which has not been fixed up properly; but with reasonable care I think the air would be carried to the face. Wooden brattice would also be liable to derangement.
17736. *Q.* If tongued and grooved boards were erected, would there be the same likelihood of derangement as with canvas? *A.* I have never heard of tongued and grooved boards being used.
17737. *Q.* What sort of boards have you heard of or seen? *A.* Ordinary ½ inch deal.
17738. *Q.* Lining boards? *A.* I do not know how you describe them; but they are not tongued and grooved.
17739. *His Honor.*] *Q.* Do they overlap? *A.* No.
17740. *Q.* I mean chamfered? *A.* No.
17741. *Mr. Ritchie.*] *Q.* But they overlap them when they put them up, so as to prevent the escape of air? *A.* That is the intention.
17742. *Q.* Do I understand you to say that they would be as likely to become deranged as canvas? *A.* Perhaps not so likely.
17743. *Q.* Do you hold the opinion that ventilation can be carried as well with canvas as with wooden boards? *A.* I think the canvas affords a little more opportunity for leakage than the boards, supposing both are carefully put up.
17744. *Q.* You consider that, if both are carefully put up, wooden brattice would be more efficient? *A.* Yes.
17745. *Q.* We have heard something said about its being necessary for a certain amount of ventilation to escape into the other workings. I suppose that could be done by regulators, and that then you could allow the exact quantity to escape? *A.* I do not think there would be any necessity to regulate it. The air would either be going up the intake or coming back behind the brattice.
17746. *Q.* Did you state that it was necessary that a certain amount of air should escape through the canvas? *A.* I do not remember.
17747. *Q.* Then, where canvas is used, it is not necessary for any air to escape—it should all be conveyed to the working faces? *A.* It is impossible to convey it.
17748. *Q.* How is that? *A.* A certain amount will always escape, whether you use wooden or canvas brattice.
17749. *Q.* Do you think it is possible, with canvas, that the whole of the air intended for a certain face may escape before it gets to the face at all? *A.* If the canvas has very large holes in it, and is unfit for the purpose for which it is used, and is slovenly put up, in that case, the greater portion of the air will escape.
17750. *Q.* After all, I may take your opinion on this matter to be, that, of the two systems of carrying ventilation in mines, wooden brattice is most effective? *A.* Yes.
17751. *Q.* In view of your statement that wooden brattice is more effective, and in view of the complaints that canvas brattice sags, do you not think that in the case of long lengths it would be better to make the mine officials use the most effective means of carrying the air? *A.* If there is any difficulty in getting the necessary ventilation by using the ordinary canvas brattice, then I think wooden brattice might be resorted to; but I do not think it is necessary to make a regulation making it compulsory.
17752. *Q.* Have you not heard of complaints where long lengths of canvas are used; and do you know of wooden brattice being used here? *A.* Yes, in the A. A. Company's Sea Pit.
17753. *Q.* Is that the only one? *A.* As far as I know at present.
17754. *Q.* With these complaints, and also with the fact that long lengths are being worked without cut-throughs, still no wooden brattice is being used elsewhere? *A.* No.
17755. *Q.* Do you take that as an indication that, if the matter is left to the management, no wooden brattice will be used? *A.* I think that if the management were convinced that wooden brattice was more effective, and not more costly, the probability is they might try it.
17756. *His Honor.*] *Q.* It is more costly is it not? *A.* I think the experience of the A. A. Company is, that over a period, the wooden brattice is no more costly than the canvas brattice.
17757. *Q.* Because it is more durable? *A.* They can use it more frequently.
17758. *Q.* It would involve the use of a good many more studs or posts? *A.* The wooden brattice is fastened on to the props.
17759. *Q.* But the props must be at a more regular distance than for ordinary canvas? *A.* I do not think so.
17760. *Mr. Ritchie.*] *Q.* The wooden brattice is kept in separate lengths like shutters? *A.* Yes.
17761. *Q.* So that it can be taken down and handled without any great amount of labour? *A.* Yes.
17762. *Q.* Now, in connection with measuring the air in a mine, can you suggest any clear means of measuring nearer the face than the plan generally adopted, in order to ascertain if the quantity of air set down by law is coming into the pit? *A.* Do you mean, if the measurements are taken at the split.

17763. *Q.* I suppose you know that split measurements are taken a long way from the face—sometimes half-a-mile? *A.* Sometimes.

17764. *Q.* Do you suggest any way of taking the measurement closer? *A.* In cases where there is any doubt about the necessary quantity of air being supplied to the men the measurement can, as I have already said, be taken close to the commencement of the split, on the intake side—and possibly in the middle of the split, or after it has left the last man in the split. Beyond that I have no suggestions to offer.

[The Commission, at 4 p.m., adjourned until 11·45 a.m. the following day.]

WEDNESDAY, 18 *FEBRUARY*, 1903, 11·45 *a.m.*

[*The Commission met at the Land Appeal Court, Darlinghurst.*]

Present:—

C. E. R. MURRAY, Esq., D.C.J. (President).

D. A. W. ROBERTSON, Esq., Commissioner. | D. RITCHIE, Esq., Commissioner.

Mr. Bruce Smith, Barrister-at-Law, instructed by Mr. Wood, Crown Solicitor's Office, appeared on behalf of the Crown.

Mr. A. A. Atkinson, Chief Inspector of Coal-mines, assisted Mr. Bruce Smith.

Mr. A. A. Lysaght, Solicitor, appeared on behalf of—

(*a*) the representatives of deceased miners, wheelers, &c., (victims of the explosion);
(*b*) the employees of the Mount Kembla Colliery (miners, wheelers, &c.); and
(*c*) the Illawarra Colliery Employees' Association (the Southern Miners' Union).

Mr. C. G. Wade, Barrister-at-Law, instructed by Mr. C. J. Barry, was present on behalf of the Mount Kembla Coal and Oil Company (Proprietors of the Mount Kembla Mine).

(Mr. J. Garlick, Secretary to the Commission, was present to take shorthand notes of the evidence and proceedings.)

Mr. WILLIAM BOWER was sworn, and examined, as under:—

Examination-in-chief by Mr. Lysaght:—

17765. *Q.* What is your name? *A.* William Bower.

17765½. *Q.* What are you? *A.* I am a miner, and District Check-Inspector for the Colliery Employees' Federation, at Newcastle, at the present time.

17766. *Q.* And you are deputed by the Colliery Employees' Federation of the Northern district to give evidence in support of certain recommendations? *A.* Yes, that is so.

17767. *Q.* What mining experience have you had? *A.* I have had about thirty five years' experience as a coal-miner.

17768. *Q.* And where was that experience gained? *A.* Principally in the Newcastle district.

17769. *Q.* Now, dealing with the recommendations from the Illawarra district, the first one is, "Managers, under-managers, deputies, and shot-firers, to hold certificates of competency by examination, and to have had five years' practical mining experience, before being eligible for respective positions." Would Your Honor permit Mr. Bower to offer to any notes he may have on this matter.

17770. *His Honor.*] Yes.

17771. *Mr. Bruce Smith.*] Notes made by himself.

17772. *Mr. Lysaght.*] Yes.

17773. *Q.* What do you say regarding Recommendation No. 1? *A.* Managers and under-managers certainly have to have certificates now; but deputies and shot-firers have not. I consider that deputies should have some qualification beyond simply five years' experience, for the simple reason that they ought to have some knowledge of the gases of a mine, and the gases likely to be met with in coal-mines; and they should have general experience in mining, as well as experience of actual coal-getting—a matter of simply five years at the face would not be sufficient experience.

17774. *Q.* It has been suggested that the employment of deputies should be left to the discretion of the Manager—can you give any instances of your own knowledge where deputies without any mining experience at all have been employed? *A.* Practically speaking, yes; I have known men come straight from the bush, from farming or something like that, to coal-mining, to do a little shift work, and gradually in the course of a few years get the responsible position of a deputy.

17775. *Q.* Were those cases in the Newcastle district? *A.* Yes.

17776. *Q.* In your opinion, is it safe or wise to trust the discretion of a Manager exclusively in the selection of a deputy without any certificate of his competency? *A.* I would put it this way: that Managers are very human, after all, and a little bit of influence or relationship may cause them to push a man faster forward than he would go under ordinary circumstances.

17777. *Q.* Now, you are aware that certain Managers and under-managers hold what are termed service certificates? *A.* Yes; there are a considerable number, I believe.

17778. *Q.* In your opinion, is it wise and expedient that persons only holding service certificates should not be eligible to continue in their positions, or to be appointed to the position of Manager, or under-manager? *A.* In many cases, yes; but in a good many cases, no, for this reason: that there are a considerable number of men with respect to whom it is very doubtful if they had the requisite qualifications when they got the service certificates. However, they got them; and certainly there are a good many of those men held in contempt to day by the workmen, although they hold the position of Managers. It is very doubtful if the intention of the Act was not frustrated in some way by the method of its administration.

17779. *Q.* That being so, do you think that some steps should be taken for persons holding service certificates who are now actually managing collieries to be called upon to give some evidence of their capacity? *A.* That is the opinion of my Board in the Newcastle district.

17780. *Mr. Bruce Smith.*] Is it his own opinion? 17781.

17781. *Mr. Lysaght.*] *Q.* What does the Board of the Newcastle district represent, in point of numbers? *A.* Between 5,000 and 6,000.

17782. *Q.* Now, I presume your remarks applied to the shot-firers as well as to the deputies? *A.* It is certainly necessary that a man should have some experience of how to charge these explosives. It would not do to turn anybody loose in a mine and to let him fire shots.

17783. *Q.* And do you know that there are shot-firers appointed who, in your opinion, are not competent shot-firers, and are persons whom it is not advisable to trust with such a position? *A.* Not of my own knowledge; because it is only very lately in the Newcastle district that shot-firers have been employed; and, as a rule, those that I have met are men of experience: but still the same remarks that apply to deputies would apply here too; a man might be put on, but not have the necessary experience, for the same reasons.

17784. *Q.* Is there anything else you wish to say on Recommendation No. 1? *A.* No.

17785. *Q.* Now, Recommendation No. 2—"Inspectors to be vested with absolute powers to order use of safety-lamps." What do you say upon that? *A.* I do not think so. I think it is a matter that should be referred to some competent authority to deal with, an independent tribunal of some kind, because, undoubtedly, it would cause a lot of friction, and has caused a lot of friction already, to my knowledge. I think it would be a good deal better, probably, if the arbitration clauses of the Act were used.

17786. *Q.* I will read to you the modification suggested by Chief Inspector Atkinson—"I would propose that the Chief Inspector should have power to enforce the use of safety-lamps; subject, however, to arbitration, as provided by the Coal Mines Regulation Act, section 25." Does that amended suggestion meet with your approval? *A.* Yes, that fairly represents it.

17787. *Q.* And, pending the determination of the Arbitration Court on the question, what would you suggest? *A.* I would suggest a conference between the representatives of the three parties interested, first. That could be done immediately; in fact it has been done already; because I have been at a conference of that kind before.

17788. *Q.* And has that proved satisfactory? *A.* It resulted in the lamps going into Seaham, finally; within some fortnight or three weeks.

17789. *Mr. Robertson.*] *Q.* Do you say that the lamps were put into Seaham within a fortnight of Mr. Atkinson's request? *A.* No, I said some fortnight or three weeks after a conference took place between Mr. Humble, the local check inspectors, and the Manager.

17790. *Q.* Was that the first conference that was held? *A.* The first that the miners were represented at, that I am aware of. We asked for a conference; and Mr. Humble met us at the colliery office, along with the Manager.

17791. *A.* But had not the miners raised objections long before? *A.* I believe the Manager had raised objections long before.

17792. *Q.* But had the Manager and the miners not raised objections long before this conference? *A.* Certainly; the miners held this view, that there was no necessity for the lamps to be put into Seaham.

17793. *Mr. Lysaght.*] *Q.* The Chief Inspector suggested that, pending the finding of this Arbitration Board, the Manager should put in safety-lamps—do you approve of that? *A.* Scarcely, for the simple reason that the impression in the northern district is that Mr. Atkinson would have safety-lamps in every mine in the northern district almost immediately, if he had his way. That is the general impression, there is no doubt about that, whether right or wrong.

17794. *Q.* Then you do not approve of the Chief Inspector having the power to compel the Manager to put the lamps in pending arbitration? *A.* Absolutely no.

17795. *Q.* Do you think that the Conference would be an effective way? *A.* I think so. I think the Inspector, in that case, would have full opportunity of putting his views before the men; and I do not think that the men are unreasonable—I have found them reasonable always, if the case is put reasonably before them. They are the parties that will suffer; and surely it is not reasonable to suppose that they would resist lamps being put in if they thought their lives were likely to be risked through the lamps not being put in.

17796. *Q.* Recommendation No. 3—"Ventilation by furnace prohibited; and fans substituted." What do you say in support of that? *A.* I am decidedly in favour of doing away with the furnaces, and of fans being substituted.

17797. *Q.* Have you anything in particular to say upon that? *A.* There is always this danger, at any rate, that, if an explosion took place, the ventilating appliances, as represented by a furnace, might be completely destroyed; and it would cause a great deal more risk for rescue work afterwards; besides, a furnace, in no case that ever I have found, is as regular in its work as a fan. It is not so reliable. It depends entirely on the hard work of one or two men, generally one, to keep it going; and they are working as a rule in foul air; and men are not able to keep the strain up, and they do not try to. I have known an instance, in Wallsend Colliery myself, where I found a furnace drawing a current of only 50,000 feet of air; and that furnace, if kept going, was able to keep up 150,000 feet.

17798. *Q.* Was that during one of your check inspections? *A.* Yes. Of course the furnace-man said it was not a fair catch; but the fact remains that no single man could do the work to keep it going up to near its maximum.

17799. *Q.* Is that a recent illustration? *A.* I would say it was a couple of years ago, or more, perhaps.

17800. *Mr. Ritchie.*] *Q.* What do you mean when you say the furnace-man said it was not a fair test? *A.* We caught him at his usual. He had not got any notification that we were likely to drop on to him.

17801. *Q.* Do I understand you to mean that you caught him at the normal state of ventilation?

17802. *Mr. Bruce Smith.*] It may have meant that he caught him at an abnormal state; that it was not fair.

17803. *Witness.*] The normal condition of that furnace was about 100,000 feet. That is what it was supposed to do usually, from 90,000 to 100,000 feet; and we found it at about 50,000 feet that day.

17804. *Mr. Lysaght.*] *Q.* And all the men employed at the colliery were then at their ordinary work? *A.* Not all of them; but the majority of them were.

17805. *Q.* Was there any explanation given for the small amount of ventilation, except that it was not a fair catch? *A.* No. We understood the thing. We did not press it.

17806. *Q.* Do I understand, from what you remark, that, when you do go to make these check-inspections, preparations are made for you? *A.* I would not say that, because the same thing would apply to the Government Inspector; because no Inspector can get near the mine without being noticed; but to inspect a colliery like Wallsend takes three days. Well, it is possible that the furnace-man thought in this case that we were not going to check the furnace at all; and it was the last thing we did, at the end of the day's inspection, before we finished. I am satisfied it is impossible to make an inspection of a colliery without its being known all through the colliery, if they wish to let it be known.

17807. *Q.* In addition to the case you mentioned, can you mention other cases where you found the ventilation defective because of the furnace, throughout your various check-inspections? *A.* I would not like to say that I have. There is one mine in my mind's eye now that is not very well ventilated at present; but I believe that possibly the fault is not with the furnace altogether so much as with the position of the mine itself. At any rate, I do not think anyone need hesitate a moment in saying that a fan is far before a furnace under any circumstances.

17808. *Q.* I think that is agreed: the only point is whether, in cases where there are furnaces in existence, the Legislature should prohibit their use, and substitute the fan? *A.* I think so.

17809. *Q.* Recommendation No. 4—"Waste workings to be absolutely sealed off, and surrounded by return airways; such return airways not to come in contact with intake." That is opposed, as it stands, on account of its being impracticable, in the opinion of the Northern Union. I would like to hear what you have to say upon that matter? *A.* I do not believe in sealing-off under any circumstances, if it can be avoided. I believe in ventilating goaf as well as working places, if it is practicable at all. Of course it is sometimes necessary to seal off a portion of a mine; but that, generally, should only be done in the case of fire, or something like that.

17810. *Q.* In a small goaf, where it is practicable, should it be sealed off, in your opinion? *A.* There is always a certain amount of risk in sealing-off. It causes an accumulation of gas, if there is any there to accumulate; and there is always the danger of a fall knocking the stoppings out and driving the gas out; in fact, I know of a case only a few months ago something similar.

17811. *Mr. Wade.*] *Q.* What is that case?

17812. *Mr Lysaght.*] *Q.* Mr. Wade wants to know what is that case? *A.* In the Newcastle Co.'s B Pit.

17813. *Q.* What happened? *A.* That was a closely sealed-off small waste with about twenty bords in it. It was bounded on one side by the sea barrier, by the narrow bords that communicate the two pits, the A and B pit, by a fault, and by what they call the Ladysmith Heading, or the Sea Headings. The bords were finished on this fault; the inclination of the fault was to the B pit, the working places from both pits finish on the fault; there were a pillar or two to be taken out; and somehow or other the Manager thought it better to leave them in. They sealed the gob up; and the ground started working, and threatened the communication between the two pits; and finally fell in the goaf, broke a stopping, burst a stopping, and drove a considerable quantity of black-damp out on the main airway to the Ladysmith district. If it had been fire-damp the result might have been disastrous. It happened to be black-damp in this case; but still it caused the pit to knock off.

17814. *Mr. Robertson.*] *Q.* Was that main airway an intake? *A.* Yes, it was an intake to the district working the sea coal at that pit.

17815. *Mr. Lysaght.*] *Q.* And what kind of stopping was put into that place? *A.* What were called refuse stoppings, cemented.

17816. *Q.* Then you give that as an illustration of the danger of sealing off any waste? *A.* That is how I look at it. There is always a danger of gas, or something of that kind, accumulating where the goaf is completely shut off from the air.

17817. *Q.* And you suggest that the goaf should, as far as practicable, be ventilated? *A.* Yes.

17818. *Q.* You mean by an independent split of air? *A.* Or the return air from working splits.

17819. *Q.* Then you approve of that part of the recommendation, that it is to be surrounded by return airways? *A.* I do not know. That seems to me almost impracticable in many cases. To attempt to do that in those pits that I know now, would cost nearly as much as reopening the pit again, or opening a new mine.

17820. *Mr. Robertson.*] *Q.* But, with reference to the future, what do you say? I think your remarks only apply to existing conditions? *A.* It would cost no more than the driving of a narrow place, if it is for new workings; although I do not actually see the necessity of it.

17821. *Q.* Is it not possible to so arrange, in a new mine, or a new district, that the old workings or wastes shall be surrounded by return airways? *A.* It is possible enough, certainly.

17822. *Mr. Lysaght.*] *Q.* Do you think that would be a wise precaution to have taken in the future? *A.* It would not do any harm, certainly.

17823. *Q.* Then you approve of that recommendation so far as the future is concerned? *A.* Yes.

17824. *Mr. Ritchie.*] *Q.* In the case of the fall you have mentioned, if there had been a return airway instead of an intake airway, would the danger, which you foresaw might have arisen from that fall, still have been there? *A.* Yes, the possibility is that the fall would shift the stoppings between the return and the intake, just the very same.

17825. *Mr. Robertson.*] *Q.* But then the return airway would have carried away the black-damp without its coming in contact with the men at the faces? *A.* I am of the opinion that, under the circumstances, if there had been a return airway between the intake and that fall, there would still have been a considerable portion of the black-damp forced out on the main airway.

17826. *Q.* If the stoppings were blown out between the return and the main airway, the result would have been to short-circuit, and noxious gas would certainly have been taken away to the furnace or the fan? *A.* The faces would be left without air altogether, in that case.

17827. It is better to be left without air than to have black-damp? *A.* Yes.

17828. *Mr. Ritchie.*] *Q.* How far were the working faces, in that case, from where the fall took place? *A.* They were on the inbye side. There is a 5-chain barrier; and then the working faces were inside of that. I think it is a 5-chain barrier, if I recollect rightly.

17829. *Mr. Lysaght.*] *Q.* I take it, then, that you do approve of the wastes being surrounded by return airways? *A.* Yes, in new developments.

17830. *Q.* And, where practicable, under present conditions? *A.* Yes.

17831. *Q.* Are you opposed to an intake airway passing a waste; that is to say, an intake that has to go on to the men? *A.* And the waste open?
17832. *Q.* Yes? *A.* I do not believe in intake air being taken past an open goaf, and carried into the mine—certainly not.
17833. *Q.* In your opinion, what is that? *A.* My opinion is that it would vitiate the air.
17834. *A.* That is, it is bad management to do such a thing? *A.* Yes.
17835. *Mr. Ritchie.*] *A.* How would you prevent that, when you say you do not believe in the sealing-off, and you say it is not necessary to have the goaf surrounded by return airways? *A.* I do not see that it is necessary to have the goaf sealed-off. In this case there would be a line of stoppings shutting it off from the intake airway.
17836. *Q.* Supposing there were nothing but intake airways round that place, what would you do then? *A.* Then you would have to seal it off. That would be a very unusual condition of things.
17837. *Mr. Lysaght.*] *Q.* Let me show you here on this plan. (Mr. Lysaght then pointed out the 35-acre goaf on the plan, showing the witness that, on the side towards the No. 1 main level, the goaf was passed by a return airway, but on the three sides, the south, east, and north, the roads by which it was passed, called respectively the 2nd Right rope road, the Cross-cut Heading rope road, and the 5th Right rope road, were all intake airways. Mr. Lysaght informed the witness that on the eastern and northern sides of the goaf there were some openings from the goaf on to the intake airways).
17838. *Mr. Lysaght.*] The point is that there was an intake passing an open waste.
17839. *Mr. Wade.*] That is not correct.
17840. *Mr. Robertson.*] I do not think there is any evidence that that waste was open. It was stopped up.
17841. *Mr. Lysaght.*] With every respect, I believe there is evidence; and I am now in possession of evidence which I did propose to offer to the Commission hereafter, from some stonemen, that not one of these openings was closed—the practice was to leave the whole of them open.
17842. *Mr. Robertson.*] I do not know what evidence you intend to bring; but my impression, from the evidence that is before us, is that the openings were stopped off by stoppings.
17843. *Mr. Lysaght.*] I understand that it is not too clear that that was so. Mr. Morrison said a few of them were open. I am putting this question to Mr. Bower, in view of what Mr. Ritchie said—what would he do if an intake airway were allowed to pass an open goaf? *A.* In this particular case, if you have described it correctly, the air must have short-circuited. It must have gone through the goaf and into the return.
17844. *Q.* No doubt some of it did scale through the goaf.
17845. *Mr. Robertson.*] *Q.* The tendency would be for the air to go into the goaf and pass out into the return? *A.* Yes, that is reasonable to suppose.
17846. *Q.* Yes, but it is a 35-acre goaf, fallen and rammed tight? *A.* If it was tight and settled, it should have been stopped off.
17847. *Mr. Ritchie.*] *Q.* Suppose a fall had taken place in the centre of the goaf, and had left the eastern side with a great space that had not been closed by falls next the intake airway, what would you do then? *A.* I would still send a scale of air through that goaf.
17848. *Q.* But suppose it was closed up about the centre so that no air could get through? *A.* My original answer would apply to that; because, if there were a good portion of that goaf standing, certainly, if you sealed it tightly off, it would be likely that there would be an accumulation of foul gas of some kind—that must naturally follow.
17849. *Q.* If the stoppings are open, and a very large portion of that goaf is falling next the intake airway, as it would naturally be generating gas, that gas would naturally come out in the intake airway? *A.* Certainly it would, if there is no circulation through to the return.
17850. *Q.* Say, for instance, that an accumulation took place in the goaf when these stoppings were in, secure; and a heavy fall took place in the part of the goaf which remained unfallen, and sent a very large accumulation out on the intake airway? *A.* The result, to my mind, would be exactly the same. If a heavy fall took place, it would blow any reasonably built stopping out, and the gas would be forced out on the intake all the same; but if your contention is correct, that there was no air circulating through that goaf to the return, then it should have been stopped off altogether, to stop the exudations from the goaf getting out on the intake airway.
17851. *Q.* In the case of a goaf known to be standing and likely to fall at any moment, which may have contained an accumulation of noxious gas, what would you do with the men working on the inbye side of that? *A.* Have them out. They should not have been in there.
17852. *Q.* Where you anticipated a heavy fall? *A.* The men should have been knocked off and sent out.
17853. *Q.* Without any knowledge, of course, of what the fall might send out? *A.* Yes.
17854. *Q.* And, in all cases like that, you would always have the men out? *A.* Yes, in anticipation of a heavy fall of ground, it is not right for men to be on the inbye side of it at all: at least it ought not to be allowed.
17855. *Mr. Robertson.*] But would it make any difference if the fall discharged the gas, assuming there was gas in there, into a return airway, if the men were not inbye, in the sense that the return airway passed the place where the fall was expected? *A.* I think, where a great displacement like that would happen, it is hard to say where the gas might be driven to, because the air would be reversed in all directions probably. The gas might be driven into any corner of the mine.
17856. *Mr. Ritchie.*] *Q.* Through disarrangement of the canvas? *A.* Through a disarrangement of the ventilation altogether. With a great dislocation of air like that it is hard to say where air may travel in the mine.
17857. *Q. Mr. Robertson.*] Then you cannot provide for such a contingency? *A.* You can do this: there should be a proper patrol to watch a fall like that, if there is any indication of it. It does not, as a rule, come away immediately—at least that is not my experience of falls—and there is generally time to get men out after it begins to work. I have known ground to work for days; and so, I suppose, have most of you.
17858. *Q.* And sometimes it comes away suddenly. You cannot stop the men in the expectation of a fall taking place that may not take place for six months? *A.* I believe it would be better so. The ground may work; but I can hardly understand its working like that for six months.

17859. *Q.* It may not work : it may stand up for six months? *A.* That is not my experience ; and I have seen a lot of falls.
17860. *Q.* But I presume you have seen ground stand up for a long time? *A.* Yes, I have seen ground stand for years, and there were no sign of its falling at all.
17861. *Q.* Would you stop the colliery in such a case? *A.* No ; I say there should be a proper system of patrol.
17862. *Q.* Then you would patrol for years? *A.* Certainly ; why should not a man be kept to look after a goaf like that, if necessary. Better that than a disaster at any time.
17863. *Mr. Lysaght.*] *Q.* If, Mr. Bower, a fall had taken place 2½ feet high in that 35-acre goaf, what should have been done? *A.* That is 2½ feet thick of it coming away at first—that is an indication of its working, certainly.
17864. *Q.* And what should then have been done by the management? *A.* It should have been watched to see if any more were breaking ; and, if there were any symptoms of it, the men should have been withdrawn.
17865. *Q.* Well, in the Kembla case, 2½ feet of that roof had fallen at the edge of the goaf, according to the examining deputy, a week before the disaster. Should all the men have been withdrawn on the inbye side of that goaf until the fall was completed? *A.* Not necessarily so. It should have been watched, though, very closely.
17866. *Q.* Such a fall having taken place, there was always the possibility of a much larger fall, with the probability of forcing out inflammable gas? Exactly.
17867. *Mr. Robertson.*] *Q.* If you knew of the existence of gas? *A.* If you knew of it, of course ; but, unless it was possible to examine the goaf, it would not be possible to know whether the gas was existing or not.
17868. *Mr. Lysaght.*] *Q.* But it would be possible to examine the goaf with a fall of only 2½ feet? *A.* That would depend upon circumstances. A man would not always travel a goaf of that extent over the top of a fall, without he is sure that the roof is steady.
17869. *Q.* But where black-damp was discovered at the edge of the goaf after the fall, what should have been done? *A.* I do not know what he could do, except report it, and try to get it carried off, I suppose.
17870. *Q.* In such a case should the men have been withdrawn?
17871. *Mr. Bruce Smith.*] You might tell him how much there was, an infinitesimal quantity.
17872. *Mr. Lysaght.*] Then you do see the necessity, in the case of an intake airway passing a goaf, of having the goaf sealed off against that intake airway so that the air cannot possibly scale through the fall? *A.* Certainly it wants sealing off then, on that side.
17873. *Q.* But you would leave it to be ventilated by a return airway, or by an independent air split? *A.* Just so.
17874. *Q.* Recommendation No. 5—"All places, excepting prospecting drives, to have cut-throughs not more than 30 yards apart"? *A.* Yes, I was always in favour of short cut-throughs. Before the 1896 Act was passed, I think we recommended from our district 20-yard cut-throughs.
17875. *Q.* Have you ever read of a creep through having the pillars too small in this State? *A.* Oh, yes, plenty of creeps.
17876. *Q.* Can you say what were the sizes of the pillars in the cases you have in your mind? *A.* I think they were 4 yards in all cases—4-yard pillars by 35 yards long, or thereabouts.
17877. *Mr. Wade.*] *Q.* Is that the Hamilton case you are speaking about? *A.* No. Wallsend, lately, for that matter.
17878. *Mr. Lysaght.*] *Q.* What was the size of the pillars at Wallsend where the creep took place? *A.* They were 4-yard pillars, by 35 yards, I think.
17879. *Q.* What was the cause of that creep? *A.* The place there had stood something like twenty-five or twenty-six years, and had not fallen at all, until the present workings got back, and they started to take the pillars out. It was quite evident that there had been just enough coal left in to carry the roof ; because, almost immediately they started to take the pillars out, she started to work, and ran over the lot of them. That is what happened.
17880. *Q.* And at the Hamilton Pit what was the size of the pillars? *A.* Thirty-five yards, by 4, I think.
17881. *Q.* And was the fall there through the removal of those small pillars? *A.* Exactly the same conditions—as soon as they started to remove the pillars the ground started to work, and she travelled over the lot.
17882. *Q.* Are those the only two instances you have in your mind of creeps through having the small pillars? *A.* No, there have been creeps in almost all the mines in the Newcastle district, through the same fault. I recollect more than one creep in Lambton over thirty years ago, where the pillars were not disturbed at all.
17883. *Q.* However, all these were under practically the same conditions? *A.* Yes, a 4-yard pillar was the only pillar left in those days.
17884. *Q.* Do those creeps at all bear upon the suggestion of having cut-throughs every 30 yards? *A.* No, I do not see how that has anything to do with it.
17885. *Q.* It has been suggested that there is a danger of creeps if the cut-throughs are every 30 yards. What do you say upon that? *A.* That, if there is any doubt about it, they can leave another yard or two on the pillar, and make up the difference.
17886. *Q.* In your experience, with your practical knowledge, do you think that there is any danger of a creep through having cut-throughs every 30 yards? *A.* No, I do not think so ; if the pillars are left large enough, I do not see how it can weaken them worth talking about.
17887. *Q.* Then these creeps that you have mentioned are not, in any sense, an argument against this recommendation? *A.* No.
17888. *Q.* The conditions were such as to be altogether different from the conditions which this recommendation suggests?
17889. *Mr. Bruce Smith.*] He has not said a word about the conditions. That is entirely your own evidence, which you are asking him to assent to.
17890. *Mr. Lysaght.*] *Q.* I ask you, are the conditions altogether different?
17891. *His Honor.*] Mr. Bruce Smith objects to that, Mr. Lysaght.

17892. *Mr. Lysaght.*] It is a natural deduction which is quite clear to everybody else but Mr. Bruce Smith.
17893. *His Honor.*] I have very often said, Mr. Lysaght, that evidence which is led up to in that way really comes with very little weight to any Court.
17894. *Mr Lysaght.*] I appreciate that.
17895. *His Honor.*] Whereas evidence which is given by a witness of his own motion has the full effect which the witness' evidence, due to his knowledge and integrity, deserves.
17896. *Mr. Lysaght.*] Yes, Your Honor.
17897. *Q.* I ask are the conditions which you mention when the creeps took place altogether different from the conditions which would exist if the cut-throughs were every 30 yards.
17898. *His Honor.*] That is really the same.
17899. *Mr. Bruce Smith.*] He has never really mentioned any conditions at all.
17900. *His Honor.*] The witness was speaking about pillars of a certain size. That, I understand, is the only condition which he has mentioned which distinguishes these cases from other cases where the pillars are of a different size.
17901. *Mr. Lysaght.*] In your opinion, what is the largest size of pillars requisite for all safety purposes? *A.* That would depend upon the thickness of the strata above the seam.
17902. *His Honor.*] That is just it.
17903. *Witness.*] I can fix it for you, at the present time. Taking the last Wallsend creep, and how they work now with 8-yard pillars, it is breaking the ground at the surface now, where they are extracted, without any crush at all, under 400 or 500 feet of strata; and, in this particular case that I referred to, where the 4-yard pillars were left, it was not above 300 feet thick, but the pillars would not carry it. That is taking Wallsend alone into consideration; but the same thing applies all over the northern district to-day. They have all larger pillars than they had thirty years ago—more than double the thickness; and they are carrying the ground very well so far.
17904. *Mr. Ritchie.*] *Q.* Do you know of any colliery in the north, where, in your opinion, it would be unwise to have cut-throughs every 30 yards? *A.* I do not. I believe myself that it would be beneficial in most cases.
17905. *Q.* Have you been in nearly every colliery in the north? *A.* I have been through every working colliery in the northern district, with the exception of one only.
17906. *Mr. Lysaght.*] Then, would the enforcing of cut-throughs every 30 yards, in your opinion, at all interfere with the safety of the mine in any respect? *A.* I do not think so; I do not see how it could possibly do so.
17907. *Q.* What do you offer as the advantages of these cut-throughs every 30 yards? *A.* In the first place it would assist in the extraction of the pillars, where they are going to be taken out; and it would certainly assist the ventilation, to the extent of not having to carry brattice so far; and my experience of any bratticing is, except it is specially erected, that it loses its air very rapidly—it carries the air badly
17908. *Q.* In your experience, has the bratticing been done in a way that would carry the air to the face? *A.* When it is carried in a workmanlike way; but this happens to be the case, that the men have not the time to put it up on the most scientific principles, that is to make it perfectly air-tight. It is nothing like that. It is losing air from the time the brattice catches it till it gets to the face. There are a great number of places in the northern district to-day where it is very doubtful whether the Act is complied with at all; because you could put a light behind many brattices, and you would not find the light deflected a bit, especially when they are up to the distances to put over cut throughs.
17909. *Q.* You might tell us what is the longest drive you know of in the Newcastle district without a cut-through? *A.* I think Dudley is the only place I know where they are driving 70 yards; and my experience of that is this, that I find, where those bords are worked, the temperature is considerably higher, perhaps a couple of degrees, than where the cut-throughs are cut shorter. That is my experience, and that is what I told the Manager at Dudley, too.
17910. *Q.* And do you know whether that defect has been remedied by putting in the cut-throughs? *A.* Not that I am aware of. They still continue a certain number of 70-yard bores.
17911. *Q.* In addition to its being hot, what do you say about the air that one can find passing there? *A.* The brattice is losing air all the way; the force of it is much less effective than it would be if the cut-through were only 30 yards further back.
17912. *Mr. Robertson.*] Mr. Bower did not say the places were hot, Mr. Lysaght; he said the temperature was two degrees higher.
17913. *Mr. Lysaght.*] *Q.* Did you mean to say that the temperature was hot in those places? *A.* I mean to say that the temperature had increased perhaps a couple of degrees more than I would find in places situated where the cut-throughs were not so far apart. I do not say they were excessively hot.
17914. *Q.* Mr. Bower, the Commission object to the use of adjectives. The places were not excessively hot; but were they hot, as you, as a mining man, would consider a place hot? *A.* I consider that the distance those bords were driven had a tendency to increase the temperature.
17915. *Mr. Robertson.*] *Q.* Can you state the general temperature of the mine? *A.* I think it is about 76.
17916. *Q.* The general temperature of the mine? *A.* The general temperature runs about 72 to 74; that is, at a distance away from the pit bottom; generally speaking about the working places.
17917. *Q.* Then it is very much lower than the temperature at present on the surface? *A.* Yes. Naturally you would expect that; you do not suppose you could work in a coal-mine with the temperature as high as it is on the surface.
17918. *Q.* They have to in many places? *Q.* I do not think so. You could not stand 120 in the shade down below, very well.
17919. *Mr. Lysaght.*] *Q.* I want to know whether, in your opinion, as a mining man, those places could be called hot that they had driven 70 yards without a cut-through? *A.* By comparison with the normal temperature of the mine, they were hotter than they would have been if the cut throughs had been 30 yards apart.
17920. *Mr. Robertson.*] Mr. Bower said a few minutes ago that they were not hot, Mr. Lysaght. He said they were two degrees higher in temperature.
17921. *Witness.*] What I want to convey by that is that it has a tendency to increase the temperature of the air current if the cut-throughs are 70 yards apart.

17922. *Mr. Lysaght.*] *Q.* Now, recommendation No. 6—"Inspection with locked safety-lamp in all cases." That, I believe, is pretty well in practice in the Newcastle district? *A.* Except in mines where gas has never been reported. I believe in some places they make inspections with the naked lights yet.
17923. *Q.* In your opinion, do you think they ought to make inspections with the safety? *A.* Certainly, I see no objection to it at all.
17924. *Q.* You approve of the recommendation? *A.* Yes; that an inspection should be made with the locked safety-lamp.
17925. *Q.* Recommendation No. 7—"Monthly examination and report by deputies and District Inspector with hydrogen flame." *A.* I would like to hear what you have to say on that? *A.* I have had very little experience with the hydrogen flame myself. Of course I have been among the Government Inspectors, and seen it used; and I have been among the Managers, and seen it used; I have never used it myself; but it is certainly the most useful kind of lamp to find out the amount of gas that is in the air; that is, for small quantities, at any rate.
17926. *Q.* Do you think the monthly examination would be practicable, and not too expensive? *A.* I do not see why the main returns of the colliery could not be tested with it every day for that matter. If there is one at the colliery it might as well be used for that purpose as anything else. It is not much trouble to go into the main returns and test them.
17927. *Q.* It has been suggested that it is a very dangerous lamp to handle? *A.* I have never had any experience of it. I do not see why it should be. They seem to handle it all right.
17928. *Q.* You have seen it used by Managers? *A.* I have had colliery managers with me using it; and I have been along with Mr. Humble when he has used it; and I have been along with Mr. Tennant, when he was under-manager at Seaham, when he was using it.
17929. *Mr. Robertson.*] *Q.* Are you aware that the gas which is contained in the cylinder is at an enormous pressure? *A.* I heard so; something about 180 lb. to the square inch.
17930. *Q.* And do not you think it is a very dangerons lamp to take into an explosive atmosphere? *A.* If it burst it would be, certainly.
17931. *Q.* If you lost control of the valve, and gas at the pressure of 1,500 lb. to the square inch should issue too freely, you might communicate the flame of the lamp to the gas in the mine, if you were testing in an explosive atmosphere? *A.* It is a very reasonable way to put it. It is possible it might happen. It is also possible that the glass of an ordinary safety-lamp might get broken by accident.
17932. *Q.* But the glass of the hydrogen lamp might also be broken. That danger is present with the hydrogen lamp as well as with the safety-lamp? *A.* Yes; that is true.
17933. *Q.* And the hydrogen cylinder containing gas at a very high pressure is only an additional danger; the hydrogen contained in a cylinder at the enormous pressure of 1,500 lb. to the square inch is an additional danger, as compared with the ordinary safety-lamp? *A.* It is very satisfactory to know what the current of air is carrying to you.
17934. *Q.* Yes, I know; but the point I wish to show you is that the hydrogen lamp is not a lamp to be taken into any place where you expect to meet with an explosive mixture? *A.* If it is right for the Government Inspectors to take them in now, as they do, when the mine is at work, why is not it right for the Manager or under-manager to test the return air regularly?
17935. *Q.* But they do not take it into a place where they know there is an explosive mixture? *A.* Well, I question whether they know till they go in; because I have been in with them in returns where there was a half per cent.
17936. *Q.* At all events it is not a lamp to be taken into a place where there is an explosive mixture of gas? *A.* I could not say that, because any safety-lamp at all is in the same predicament; because something may happen, and it may set an explosive mixture off.
17937. *Q.* But the ordinary safety-lamp has not a cylinder containing gas at a pressure of 1,500 lbs. to the square inch? *A.* But that cylinder, I suppose, is tested to carry the strain.
17938. *Q.* But I am suggesting to you the possibility of losing control of the valve, and the gas issuing from the cylinder to such an extent as to carry the flame of the lamp to the outside atmosphere? *A.* I see. The same thing applies to nearly everything connected with mining. There are always miners' risks all the time; and no one knows that better than you.
17939. *Mr. Ritchie.*] *Q.* But would it not do if this lamp were used only where the ordinary safety-lamp could not detect gas? *A.* I see no objection to that.
17940. *Q.* There would be no use in using a lamp so sensitive as the hydrogen lamp when you could detect the gas with the ordinary safety-lamp? *A.* That is so.
17941. *Q.* It should only be used when you could not discover gas by the ordinary safety-lamp.
17942. *Mr. Lysaght.*] I might say that the recommendation was not intended to apply to a place where gas could be found with the ordinary safety-lamp. I never anticipated that a construction would be put upon this that was manifestly absurd. It was quite clear, I thought, that the suggestion was that the hydrogen lamp should be used for the purpose of discovering whether a mine was giving off a percentage of gas less than 2½ per cent. If it could be found with the ordinary safety-lamp, it would not be necessary; and I did not suggest that the hydrogen flame should be used.
17943. *Mr. Robertson.*] But if you are to find out whether a mine is giving off gas of a percentage less than 2½ you must test it with the hydrogen lamp.
17944. *Mr. Lysaght.*] Yes. If it is discovered that the mine is giving off 2½ per cent., which can be found with the ordinary safety-lamp, there is thereafter no necessity to use the hydrogen lamp; but if gas has never been discovered to be given off by the mine to the extent of 2½ per cent., then it is necessary to use the hydrogen lamp to see whether the mine is giving off any gas at all.
17945. *Mr. Bruce Smith.*] Then you would require to go round and examine the mine twice?
17946. *Mr. Lysaght.*] No.
17947. *Mr. Robertson.*] Take the case of Kembla, where I understand gas cannot be discovered with the ordinary safety-lamp; that is to say 2½ per cent. I presume, under your suggestion, the hydrogen lamp would have to be taken all through the mine, from end to end.
17948. *Mr. Lysaght.*] Not so; if, before the disaster, gas had not been discovered with the safety-lamp, if the hydrogen lamp had been used it would have been found that it was being given off in some places under 2½ per cent.; and then steps could have been taken to meet the danger.

17949. *Mr. Robertson.*] I did not understand that there was any limitation to this recommendation.
17950. *Mr. Lysaght.*] It was never intended to recommend that the hydrogen lamp should be used where gas could be discovered with the ordinary safety-lamp. With regard to the objection of Mr. Bruce Smith as to going round twice, the mine is inspected every morning with the ordinary safety-lamp; and, if gas is discovered with that, then there is no necessity for the hydrogen lamp to be used.
17951. *Mr. Bruce Smith.*] But on every day that no gas was discovered with the ordinary safety-lamp a fresh examination would have to be made with the hydrogen lamp.
17952. *Mr. Ritchie.*] But you suggest that it should be made monthly, Mr. Lysaght.
17953. *Mr Robertson.*] Under that proposal every mine in the district would have to be examined from end to end with the hydrogen lamp.
17954. *Mr. Lysaght.*] No; I understand that every mine in the district would not have to be examined with the hydrogen lamp; because in the majority of the mines in the Illawarra district, inflammable gas has been discovered often with the safety-lamp. The annual report shows that gas has been discovered at Mount Pleasant, Bulli, and Keira. The necessity for the adoption of this recommendation is emphasised by the Kembla disaster, from the fact that the hydrogen lamp, in various headings, detected a percentage of gas under 2½ per cent., which the safety-lamp did not detect; and that percentage is a danger which should be known, and would be known in the future if this recommendation were adopted.
17955. *Q.* Mr. Bower, for the word "Deputies" I would substitute the words "Manager, or Under-Manager"; because, in view of the ways deputies are appointed, there may be a danger of an incompetent person getting hold of the hydrogen flame? *A.* Yes. My committee took this view of it, that it was only meant to use it in the returns.
17956. *Mr. Robertson.*] A very sensible view to take, I think.
17957. *Witness* (continuing): And that it did not mean going into every working place with the hydrogen flame; but that it simply meant to find out what the ordinary safety-lamp would not find out—that is, what amount of gas the mine was giving off.
17958. *Mr. Lysaght.*] I put it before the Court, as from the Illawarra Union, that a monthly inspection should be made with the hydrogen flame where 2½ per cent. has not been discovered with the safety-lamp. I do not confine it, as from the Illawarra Union, to a mere inspection of the return airway; because I can see that a danger might arise from that.
17959. *Q.* In a case where the face, being freshly opened, gave off a percentage of gas under 2½ per cent. a few days after an examination was made, with the hydrogen flame, of the return airway, it would be apparent to you that the examination of the return airway with the hydrogen flame would give no indication of the danger arising from this newly-opened place giving off under 2½ per cent.? *A.* If a new face were giving off that quantity, it would show, by testing at the face, a good deal over 2½ per cent, if there were 2 per cent. in the mixture some distance back from the face. I have myself seen the hydrogen flame detect 2 per cent. immediately at the face, where it would not have detected any in the air-current. It was practically a blower.

[At 1 p.m. the Commission adjourned until 2 p.m.]

AFTERNOON.

(On resuming at 2 p.m., Mr. W. R. Pratt attended to take shorthand notes of the evidence and proceedings).

WILLIAM BOWER, previously sworn, was further examined, as under:—

17960. *Mr. Lysaght.*] *Q.* We were speaking about the use of the hydrogen lamp; under what conditions do you think it should be used? *A.* I think, as I said before, that it could be used to find out what amount of gas there is in the general atmosphere. It may happen that a number of faces of coal are giving off gas which cannot be detected by the ordinary safety-lamp. The hydrogen lamp might be used to find out what amount of gas there is in the atmosphere in these workings. Suppose, for instance, there were half a dozen places each giving off an amount of gas, but yet not enough to be found by the ordinary safety-lamp, then the hydrogen lamp might be used to find the amount of this gas, because in the return airway the gas might be diluted to an extent to make it unnoticeable.
17961. *Mr Robertson.*] *Q.* If you could not find the gas with the ordinary safety-lamp, you would use the hydrogen lamp? *A.* I take that to be the meaning of the recommendation.
17962. *Mr. Lysaght.*] *Q.* How do you know that the faces are giving off gas? *A.* It is not hard to discover whether a face is giving off gas. A man may not find the gas so far as his lamp is concerned; but if you applied a light to it, you would get flame.
17963. *Mr. Robertson.*] *Q.* There are places where you could try, and it would not be effective? *A.* There are places where I have been working where you could not detect gas with a safety-lamp; but, at the same time, you could light it.
17964. *Mr. Lysaght.*] *Q.* Would you have the hydrogen lamp used only in the return airways, or would you have it in other parts of the mine where there may be an accumulation of gas under 2½ per cent. I would not call it an accumulation of gas; the atmosphere may be vitiated to 2 per cent., and yet the ordinary lamp may not detect it. When it travels back, it may get diluted with the ordinary air until you cannot notice it at all.
17965. *Q.* Is it not possible that there may be danger from the gas, although you might not be able to detect it in the return airway? *A.* It may be that a solitary place gives off gas. It is possible that the atmosphere may vitiate it until it may not be noticeable in the current of air at all; if there is 2 per cent. of gas in a place, and it is at all dusty, it would be possible for an explosion to result.
17966. *Q.* And that 2 per cent. would not be shown by the ordinary safety-lamp? *A.* No.
17967. *Mr. Ritchie.*] *Q.* Do you not think that the hydrogen lamp ought to be used in abandoned workings, where the same current of air is not travelling as in the working places? *A.* In such a place as that you would find an accumulation of gas. If no air got to it, it might fill up like a gasometer; but if the air was travelling through it, I do not think you would find an accumulation.
17968. *Q.* The air in an abandoned working may not be sufficient to reduce the gas to a non-explosive quantity? *A.* The hydrogen lamp would show what percentage of gas there was there.

17969. *Q.* The gas might be reduced to 2 per cent. or to 1½ per cent., which amount could not be detected by the ordinary safety lamp? *A.* The hydrogen lamp would be very useful in a case of that kind.
17970. *Q.* Will you advocate that abandoned workings should be examined periodically—say monthly—with the hydrogen flame? *A.* Yes.
17971. *Q.* And in the case of goafs which have not fallen, would you advocate that they should be periodically examined with the hydrogen flame? *A.* I have no objection to that.
17972. *Q.* Apart from your objection to it, would you advocate that it should be done? *A.* Most of the mines have these lamps; and it is only a question of using them.
17973. *Mr. Lysaght.*] We now come to Recommendation No. 8, which is—"Minimum of 500 cubic feet of air per minute to be provided for every horse, instead of 100 as at present." To this the Newcastle Board has added the following:—"Not less than 200 cubic feet of air per minute for each man and boy." What do you say to that recommendation? *A.* I think it would be a very useful innovation indeed. There are cases certainly where it may not be necessary; but in all mines now 200 feet of air is little enough, and it is certainly little enough in many cases. I do not think it is too much to ask. In fact, the best mines in the Colony supply that amount of air now, and more; but in some of the mines the air now is still very bad.
17974. *Q.* Where the minimum amount of air under the Act is supplied, do you think it is insufficient? *A.* Generally speaking, it is.
17975. *Q.* You think that it ought to be increased to 200 feet for every man and boy, and to 500 feet for every horse? *A.* Yes.
17976. *Q.* Recommendations Nos. 9 and 10 relate to the erection of doors, and read:—"All doors erected so as to close and remain closed of their own motion. Double doors on drives, as between main intakes and returns, and main headings." Are these in practice now? *A.* No.
17977. *Q.* What have you to say on this matter? *A.* I say that it is necessary. I do not know that I can call it anything else but neglect on the part of those persons who hang doors which are not self-closing; but in many mines there are such doors. It is not more trouble to hang a self-closing door than it is to hang one that will not close. Double doors are necessary; an open door will short circuit the current. You can tell when you are measuring the air in a mine whether there is a door open or not. I have noticed it frequently.
17978. *Q.* In the Kembla mine it is stated that the intake air depended upon at least four single doors. What is your opinion about that as far as management is concerned ——
17979. *Mr. Wade.*] Is that a fair question to put to the witness? It is not the only matter on which the air depended; it depended on a lot of other things. It depended, for instance, on a man going round daily to see whether the doors were closed.
17980. *His Honor.*] Amongst other things, as a primary condition, we have the fact that the air in the Kembla mine depended on the closing, and on their being closed, of four single doors. That is what Mr. Lysaght is asking about; and I do not see that it is an improper question. Mr. Lysaght said that the air-current depended on these doors; the air-current depended on other things as well. The omissions of other persons do not affect the question whether the question put by Mr. Lysaght is proper or improper.
17981. *Mr. Wade.*] There may be some defect connected with a double door.
17982. *His Honor.*] You may take the case of where a watchman is allowed to have an enormous amount of property dependent upon his doing his duty properly. Even if you have two watchmen they might fail; but there is a difference between one watchman and two watchmen. It may be gross negligence only to have one watchman; but then both may fail. But, with regard to this matter, it is admitted that it is a proper thing to have double doors under certain circumstances.
17983. *Mr Lysaght.*] I want to get from the witness an expression of opinion that it is bad management to have only single doors?
17984. *His Honor.*] That could not help the Commission very much—he has already said that double doors are essential.
17985. *The Witness.*] I would make it compulsory that there should be what we call a trapper at the door. Several doors are used by wheelers. When a wheeler comes to a door, he props it open until he gets his tubs through; and there may be a short-circuit of air for several minutes at a time.
17986. *Mr. Robertson.*] *Q.* You would not have that if there were double doors? *A.* Not if they were far enough apart. I think it should be made compulsory to have trappers. A wheeler is a most neglectful animal—I have been one myself. He props a door open, and goes away and leaves it open.
17987. *Mr. Ritchie.*] *Q.* I take it that the object of having double doors is that they would not both be open at once? *A.* That is what is wanted.
17988. *Q.* They could be wide enough apart to enable a wheeler to get through, and for one door to close before he opened the other. *A.* Yes. And it is necessary that they should have trappers.
17989. *Mr. Lysaght.*] *Q.* Recommendation No. 11 is—"Weekly measurements of air in each section, and report thereof to be sent to the Inspector"—to which your district has added the words "instead of monthly, as at present." Do you approve of a weekly measurement? *A.* Yes.
17990. *Q.* Why? *A.* Well, the measurement of the air is taken where it is most useful; and sometimes I take it three or four times.
17991. *Q.* Where do you take, in the centre or from the side? *A.* I usually try my lamp immediately behind the brattice.
17992. *Q.* The evidence is that the management take the air in the split? *A.* I do that myself; but I always like to see that the air is carried to the face. I take it three or four times, in order to get the average. It does not matter what the amount of air travelling may be; but the question is, what amount the men are getting at the face.
17993. *Mr. Ritchie.*] *Q.* How can you measure it at the face? *A.* By the deflection of the lamp, or by getting some dry dust to see which way the current is moving. If you have a naked light at the face, and the flame is deflected, you can easily judge of the air.
17994. *Q.* Can you tell by the deflection of the light, or the floating of the dust, whether the required quantity of air is there? *A.* I judge by the temperature, and by my own senses, whether the air is there or not.

17995. *Q.* You may be more sensitive yourself than others. Do you think that the deflection of the light is a sufficient test? *A.* Sometimes you can confine the current sufficiently to get an anemometer to work; but it will only take a very small area. As a rule, I have been able to judge whether the air is circulating or not,

17996. *Q.* As a rule, how far are the tests taken from the split? *A.* I believe that the officials have specific places marked off where they take the air. I have found the places marked, and have taken the air at those places. If I am not satisfied I will take it again, and take it in the return airway. I find out how much air is wasted before it gets to the end, and I average the three measurements.

17997. *Q.* To test their measurements, you take your measurement where they take theirs? *A.* Yes; and I also take a measurement in the cut-through.

17998. *Q.* How far in your district is the brattice kept from the face? *A.* In some mines it is 20 yards; in others it is close up—2 or 3 yards.

17999. *Q.* Where it is 20 yards away it is satisfactory? *A.* Not always.

18000. *Q.* Can you get any deflection in such cases as these? *A.* There has to be a good current if it does; but, generally speaking, it gives one. It has to be a strong current to strike the face.

18001. *Q.* It wants a strong current to travel 20 yards to the face? *A.* I have had the air circulate at the face, although the brattice was 60 yards away from it.

18002. *Q.* The air has to come back again? *A.* Yes.

18003. *Q.* Is it consistent to find it strike at the face and come back again? *A.* If it gets to the face it must come back again.

18004. *Q.* The ingoing and the outgoing air must travel at the same pace? *A.* Yes. You may get a gannon bord in the intake airway, and that bord is working with the place well ventilated, although without brattice; but, in another place, it will not be ventilated, because the current has to go round at right angles.

18005. *Mr. Lysaght.*] *Q.* You suggest that the measurements should be taken as near the face as the anemometer will record, and not only at these stations? *A.* I think that the measurement should be taken as close to the working faces as the air currents travel. That is where it is wanted.

18006. *Q.* In practice, do you think there would be any difficulty in having the measurements taken every week? *A.* I do not think there should be any trouble.

18007. *Q.* Now we come to the recommendation as to safety-lamps. It is No. 12, and is as follows:—"Extra supply of safety-lamps and their requisites, equal to one-third of the number of persons employed below ground, to be kept constantly in good order and ready for use." The Chief Inspector has suggested that, in mines where open lamps are used, the supply should be equal to one-fifth of the number of the persons below ground, and, where safety-lamps are used underground, one-tenth of the number should be kept as a surplus supply.

18008. *Mr. Bruce Smith.*] Tell the witness why the distinction is made.

18009. *Mr. Lysaght.*] The idea is that there should always be a number of safety-lamps in a mine available for rescue parties, and, therefore, if there are safety-lamps in use, there would be no necessity to have the same number of lamps, as a surplus, as if they were not in use. Do you think that is a sufficient number; or do you think that a greater proportion should be kept on the surface? *A.* The Chief Inspector suggests that there should be one-fifth surplus in the case of open lights. Take the case of the Teralba Colliery, where they are working with a single shift; that would be only four lamps.

18010. *Mr. Bruce Smith.*] *Q.* That is extra? *A.* They are using naked lights. There would be only four lamps. What would be the good of that in a mine which is giving off gas.

18011. *Mr. Lysaght.*] *Q.* You say that the mine is giving off gas? *A.* Yes.

18012. *Q.* Does the Chief Inspector know that? *A.* Yes, I think so.

18013. *Q.* Has it been reported? *A.* I suspect it has. It may or may not have been reported.

18014. *Q.* Have you examined it? *A.* Not as a check-inspector. At the invitation of the owner I went down it; I found it giving off a good deal of gas.

18015. *Q.* You say that naked lights are being used there, and that there would be only four lamps in the case of an emergency? *A.* Yes; and that would be too few.

18016. *Mr. Robertson.*] *Q.* Should there not be a minimum number of lamps kept at any time? *A.* It depends how many lamps are kept. If a sufficient number is kept, you do not want a maximum or a minimum number.

18017. *Q.* There should be a number of lamps kept? *A.* There should be enough to equip any rescuers.

18018. *Q.* A colliery employing twenty men would not require many rescuers. Do you suggest that a certain minimum number of lamps should be kept? *A.* Well, I happen to know that at that colliery the owner has 100 lamps now.

18019. *Q.* Take that colliery; and suppose that the owner has not got any lamps. What do you say is a fair thing, as to the minimum number of lamps to be kept? *A.* I cannot say how many lamps should actually be kept; but in the case which I have illustrated the lamps would not be effective at all. Therefore I consider that there ought to be forty or fifty lamps available in a mine at all times.

18020. *Q.* In any colliery? *A.* Yes, at any colliery.

18021. *Q.* But suppose you have only about ten men employed? *A.* Well, if you put any minimum at all, a man might shelter himself under it, unless you say so many lamps for so many men.

18022. *Mr. Bruce Smith.*] That is the proposal here.

18023. *Mr. Robertson.*] *Q.* The idea would be to have a certain proportion, or have a certain number and make that the absolute minimum; but a mine employing five or six men would not require to have forty or fifty lamps kept in reserve? *A.* There are mines like that; but the fact of the matter is that they ought not to be allowed to work.

18024. *Mr. Ritchie.*] *Q.* The proposal by Mr. Lysaght is that the supply of lamps should be equal to one-third of the number of persons below ground? *A.* That would make six or seven in a case like that I have mentioned.

18025. *Mr. Robertson.*] I think the only way is to have an absolute minimum number at any colliery.

18026. *Mr. Lysaght.*] I think we ought to have a graduated scale according to the number of men employed.

18027. *Mr. Robertson.*] How would it do to have a minimum number of thirty for any mine employing over twenty persons.

18028. *Mr. Ritchie.*] There appears to be a necessity for having a minimum number. 18029.

18029. *Mr. Lysaght.*] *Q.* Would you have a minimum number equal to the number of persons employed, if safety-lamps are not being used? *A.* It would be too much, would it not? It would mean in the Wallsend Colliery 500 lamps ready all the time.
18030. *Mr. Bruce Smith.*] This is not the place to settle the question.
18031. *Mr. Robertson.*] We are only putting the matter to the witness.
18032. *Mr. Lysaght.*] We want to see whether the witness will adopt the idea as to a minimum.
18033. *Witness.*] I would take the suggestion as a basis, and take twenty lamps for each hundred men employed. That may be a way out of the difficulty.
18034. *His Honor.*] *Q.* What would you do if a less number than twenty men are employed? *A.* You could start with a minimum of twenty. Below that number there may be enough lamps to do something with. The days are rapidly going past for a less number than twenty men to be employed. I would make it twenty in all cases. Where a company is sinking a shaft, they will not work with less men; because they want to make it pay as soon as possible, and a mine will never pay with less than twenty men; I think they should always have twenty lamps.
18035. *Mr. Lysaght.*] *Q.* Recommendation No. 13 is—"Travelling and haulage roads, and other places necessary to be properly watered." To this the Newcastle Union has added "All travelling, main, and horse roads to be 6 feet high." From Lithgow it is also suggested that there be added the words: "And properly timbered and kept clear of any tops that may have fallen; and that the travelling roads be made not less than 6 feet high." What do you say as to the first part of that recommendation? *A.* I am in favour of it. It is done now in some mines; and I think it ought to be done. The watering is done automatically; and there is no trouble attached to it.
18036. *Q.* Are there many mines in the Newcastle district where automatic watering has been carried on? *A.* Yes; and since the Kembla disaster a good many more have been added to their number.
18037. *Q.* Prior to the Kembla disaster how many mines were there which, to your knowledge, were automatically watered on the travelling and haulage roads? *A.* Several were doing it partially; but to day they are doing it more effectively.
18038. *Q.* Had they appliances? *A.* They used to water round about the travelling ways with skips and tubs; but that did not water round the sides of the mine, and they have appliances now which do that.
18039. *Q.* Did they, before the disaster, have appliances which watered round the sides? *A.* The Dudley Colliery had in a portion of the mine; and the Seaham Colliery had pipes laid down, but had no water supply.
18040. *A.* In other mines where they water the roads, do I understand that the water was not allowed to run out of a hole in the bottom of the tank, but that it ran all over the road? *A.* Since the disaster they are adopting a better means of watering, but not before.
18041. *Q.* Regarding the height of the travelling, main, and horse roads? *A.* We have an example of that in one of the most expensive mines, the Minmi Colliery. They carry it out there, and that shows that it can be done. The roads there were from 4 feet to 5 feet high; and they are brushing them up to 6 feet high—all the horse roads and the travelling road.
18042. *Q.* Do you agree that the height of the travelling, main, and horse roads should 6 feet? *A.* Yes. And I may say that, since that idea has been carried out at the colliery I have mentioned it is one of the best collieries, and most effectively ventilated, in the district. It has been difficult to ventilate, because it is an old colliery with a large number of goafs about it; but the ventilation now is the best in the district.
18043. *Q.* And do you agree that all the roads ought to be properly timbered and kept clear of any tops that may have fallen? *A.* That ought to follow as a matter of course. But I want to say this: that the Minmi Colliery is one of the most expensive collieries in the district, as far as the miners' money is concerned, because it costs a lot to put the coal on the surface; but notwithstanding that fact, and also the fact that they have a very hard roof, they are carrying out this brushing. If they can do it, every other colliery ought to be able to do it
18044. *His Honor.*] *Q.* As far as you know the colliery is a paying one? *A.* Oh, yes; it is paying. The Browns do not run any colliery which would not pay.
18045. *Mr. Ritchie.*] There are three other collieries there.
18046. *Mr. Robertson.*] *Q.* You say that it can be done without expense? *A.* No; but I say that it pays them to do it. The Seaham and the West Wallsend Collieries could have carried it out, and it would have been less difficult for them, with their seam of coal, if they had done so.
18047. *Q.* This 4 feet seam of coal is a thin seam, is it not? *A.* There are hundreds of acres visible now.
18048. *Q.* With a 4 feet seam brushing is indispensable? *A.* Why?
18049. *Q.* You could not work a 4 feet seam for any distance without brushing. Can you work a horse in a 4 feet seam? *A.* You can get ponies in, as they are doing now at Wallsend.
18050. *Q.* At all events, this is a very thin seam; and I take it that brushing is indispensable? *A.* Yes.
18051. *Q.* Having to brush, the cost is not so much greater to brush from 4 feet to 6 feet than from 4 feet to 5 feet? *A.* I think it would be in the case in my mind.
18052. *Q.* At all events they have to brush, and the extra cost of brushing to 6 feet would not be very material? *A.* And they have to brush at West Wallsend; but they are waiting until they are compelled to brush up higher.
18053. *Q.* But you are quoting a case where brushing cannot be done without? *A.* And other mines cannot do without it.
18054. *Q.* Do you mean to say that, if they had a 5 or 6 feet seam as a minimum, people would go to the trouble to brush to 6 feet? *A.* Probably they would.
18055. *Q.* You do not think they would? *A.* I do not know that they would.
18056. *Mr. Lysaght.*] *Q.* Do you think that they should? *A.* I think that they should; and I think that they would according to what I know of the Browns.
18057. *Mr. Robertson.*] That is all very well; but we want the collieries to pay. They are not run as benevolent institutions.
18058. *Mr. Lysaght.*] *Q.* Recommendation No. 14 is—"That Managers should be compelled to give more personal time and attention to the management of the colliery"? *A.* I do not know very much about that. From what I have heard some of the men think that the Managers give too much attention to the colliery, and they are sometimes in the road.

18059. *Q.* What do you think would be a fair thing to demand of a Manager, with regard to visiting the underground workings? *A.* I would not make any suggestion. I know, as a matter of fact, of one colliery Manager who has followed his deputies through the mine in the morning to see that they were doing their work. That might be considered an excess of zeal.

18060. *Mr. Ritchie.*] *Q.* Should a Manager devote a great deal of time to the underground workings? *A.* I know of one Manager who makes it a practice to see every working face in the mine every fortnight. I have worked in a mine where I did not see the Manager for more than three or four times in the whole of the period I was there. I do not know whether he did his duty or not; but I did not see him at my place. I think a Manager would be a peculiar man if he did not keep himself posted up in all the work of the mine.

18061. *Q.* You know that the Manager has higher qualifications than any one else about a mine, unless he has under him a first-class man. But he ought to be competent to see everything that is going on, and he ought to be compelled to give a certain amount of his time underground, and not have the matter left to his own discretion—that is the question? *A.* I think the Manager should visit the underground workings periodically—that is, often—in order to see every part of the mine.

18062. *Q.* You realise the importance of the Manager himself visiting the mine? *A.* Yes.

18063. *Mr. Robertson.*] *Q.* You have no reason to believe that they do otherwise? *A.* I cannot give a reason.

18064. *Q.* You recognise that the Managers have something more to do than to hunt round the underground workings? *A.* Yes; but there are none of them who could not spare time once a fortnight to visit the mine.

18065. *Mr. Lysaght.*] *Q.* I gather, then, that you think that the Manager should, at least once a fortnight, visit the underground workings? *A.* I think that they should see the whole of the mine at least once a fortnight; but it would take the Manager more than one day in the fortnight.

18066. *Mr. Robertson.*] *Q.* Supposing that was impracticable, unless the Manager devoted the whole of his time to walking round the mine? *A.* I have never struck a mine of that size yet.

18067. *Q.* I will show you one to-morrow, and I will give you a fortnight to do it in. Do you mean the working faces? *A.* I mean that the Manager should see all the working faces at least once a fortnight.

18068. *Q.* Do you not think it sufficient to meet the case, if the Manager is more or less in the mine every day. You would not pin him down to go into every place in the pit? *A.* He would be none the worse to see them every fortnight.

18069. *Q.* There are many things which a Manager might not see in a large mine? *A.* Well, the Manager might only sit at the top; and with some of them, if they did so, you could feel that they were there at the furthest part of the mine. With regard to others, it does not matter whether they are above or below ground.

18070. *Q.* Then they have no control over the officials at the mine? *A.* Well, you do not feel it. There is a maxim attached to one man in the Newcastle district that whenever he goes into the mine something is sure to happen. No doubt it is a good thing to have a reliable staff; but all the same, a staff is worth looking after, just as in the case of the Manager, whom I have mentioned, who followed his deputies round, and discharged two of them the same morning as a consequence.

18071. *Mr. Lysaght.*] *Q.* What do you mean by saying that when a certain Manager went into a mine something would happen; do you mean that an accident would happen? *A.* Something of the kind. They used to say that. It was a sort of maxim.

18072. *Q.* With regard to Recommendation No. 15, which relates to instruments being placed at the bottom of the upcast, I will not trouble about it; but Recommendation No. 16 is that—"The size of the manholes should be enlarged." The Newcastle district desires to add that they shall be "Not less than 6 feet high, 6 feet deep, and 3 feet wide; and to be whitewashed." What have you to say in support of that? *A.* The reason for having enlarged manholes is that, when half a-dozen or a dozen men are going along the travelling road, they may all rush for one hole, and the men cannot get in. The recommendation as to the places being whitewashed is so that they may be visible, because sometimes the men go past the place. It is really wonderful the accidents which do not come off sometimes.

18073. *Mr. Wade.*] *Q.* Would you have luminous paint? *A.* We do not want that. If Mr. Wade would go down the pit, and try to find one of these manholes, he might find that he had missed a dozen. There are plenty of mines which recognise that fact, and that do whitewash the manholes; but there are others who do not. I know the difference of trying to find a manhole which is whitewashed and one which is not.

18074. *Mr. Robertson.*] *Q.* This would only be necessary in the travelling roads which are used as haulage roads? *A.* It would only be necessary in haulage roads used as travelling roads. Where the haulage road is not so used, it would not be necessary.

18075. *Q.* You know the difference between an endless rope and the main and tail rope? *A.* Yes.

18076. *Q.* With the endless rope there is really no need for manholes? *A.* Yes; I can tell you of a case where the endless rope broke with something like two or three hundred skips on it; and it was a wonder how the men got out of the way.

18077. *Q.* That is an extraordinary occurrence? *A.* It is not often that endless ropes break in this way, or that they are fitted to an incline such as this was.

18078. *Q.* Would you limit the recommendation, with regard to increasing the size of manholes, to haulage roads, where the main and tail rope system is used? *A.* Yes; I think a man could always get out of the way of the endless ropes.

18079. *Q.* The speed of the endless rope is only from one to two miles an hour. And that is not dangerous, because a man could walk in front of it? *A.* Yes. But I should insist upon the manholes being splashed with whitewash. That is not much cost; and I think it is necessary.

18080. *Q.* On the haulage road only? *A.* On the haulage road certainly.

18081. *Mr. Lysaght.*] *Q.* Recommendation No. 18 has reference to the instruction of employees regularly on the means of escape. To this the Newcastle district desires to add the following:—"And that proper machinery be kept at the second shaft outlet to lift all employees to the surface within one hour." The Lithgow Union desires to add the following words:—"That all escape shafts be properly equipped with means to draw men in case of accident; and proper means of signalling be also fixed." What have you to say to that? *A.* With reference to the first part, it is carried out now in some mines. It is necessary that th men should know the easiest and the best ways out if anything arises.

18082. *Q.* What is carried out? *A.* In some mines the men are taken out by alternative roads—by the second outlet—so that in case of anything happening they need not go out by the usual road. I think this should be made compulsory. I think that every man working in a mine should know all the outlets.
18083. *Q.* Where is it that the men are taken out in this manner? *A.* They are taken out, so many each day, by the deputies. I know it is regularly done at Stockton. And I know that the men take it like a dose of physic—they do not like it. They have to climb a long ladder at the shaft.
18084. *Q.* Has it been found practicable to do it at Stockton. *A.* Yes.
18085. *Mr. Robertson.*] *Q.* Does the deputy only take out some of the men? *A.* The deputy takes out so many men each night, until he works that district out.
18086. *Q.* The difficulty suggests itself that, in an extensive mine, where there are a large number of alternative roads, it would take a long time—it might take weeks—to show the men a different way out. It was proposed by a witness here yesterday that, instead of the men being taken out in this manner, the different turnings should be whitewashed; so that the men would know the direction in which to go to find their way to the shaft? *A.* That is done at some places now.
18087. *Q.* Would that not be a sufficient substitute for showing the men the different outlets, where the mine is very extensive, and where there might be some difficulty in getting the men to come out? *A.* The idea is a very good alternative, if it is carried out thoroughly; because you can easily guide men by whitewash splashes to go anywhere.
18088. *Q.* In a large mine the men might forget the lesson which they have been taught; but with the corners of the road whitewashed every man would find his way out? *A.* It would do as an alternative.
18089. *Q.* You have no objection to it? *A.* I have found my way out in that way in the Wallsend Colliery, where they have the travelling roads marked in that way. There are marks on the roof, and crosses elsewhere. I think that would do as an alternative; supplemented as it is by the evidence that the men do not take kindly to being shown the way out.
18090. *Mr. Robertson.*] Well, here it is said that the men rather like it, and that they tumble over each other to be shown the way out.
18091. *Mr. Lysaght.*] *Q.* Do you put that as a substitute to the recommendation that has been made, or as an addition? *A.* I would put it as an alternative. I would put both proposals in, and let it be optional.
18092. *Q.* Why not have both systems? *A.* I would leave it optional.
18093. *Q.* In collieries where the travelling roads are marked, are not the men also shown the way out? *A.* Yes.
18094. *Q.* You approve of the suggestion—firstly, that the road out should be marked in the way suggested, and also that the men should periodically be given general instructions on the way out—
18095. *Mr. Robertson.*] I do not think he said that.
18096. *Mr. Lysaght.*] I am trying to carry the witness further than you did.
18097. *Mr. Robertson.*] Now you are asking two things. The witness was willing to accept the whitewashing proposal as an alternative.
18098. *Witness.*] If the men are agreeable to go a different way out, why not send the deputy with them? Mr. Lysaght said that they do not object. I say that, if the men do not take kindly to being shown new ways out of a mine, then you could have the travelling ways marked with whitewash, and the other ways fenced off, so that the men could find it themselves if necessary. I do not see why it should be made compulsory to have either way.
18099. *Mr. Ritchie.*] *Q.* We want it carried out. But you would not make it compulsory? *A.* I think you would find a difficulty in making it compulsory.
18100. *Mr. Lysaght.*] *Q.* What about the proposal that proper machinery should be kept at the second shaft outlet, to lift all the employees to the surface within one hour? *A.* It might be impracticable in some cases. In the second shaft in some mines it might take four or five hours to get all the men up. We had a case at Waratah to that effect. I have also had experience of the matter myself. It took us a long time to get the engine-driver to answer the signal after we got on the cage. That was at Hetton Colliery. But I went to a neighbouring colliery; and four minutes after we signalled we were drawn up. That was at Wickham and Bullock Island. In a good many collieries there is a difficulty in getting the machinery to work at the second outlet.
18101. *Mr. Robertson.*] *Q.* Do you mean that they should have the machinery ready, and that they should have steam up? *A.* After they have steam up, the machinery may be insignificant and not do the work.
18102. *Q.* What was the difficulty? *A.* The actual haulage machinery was too slow and too light, the cage was too small, and there was some trouble to get three men into it. I thought that we were going to the old country, and should never get to the top of the mine.
18103. *Q.* Was that Waratah? *A.* Yes.
18104. *Mr. Lysaght.*] *Q.* Recommendation No. 19 is—"Coal Mines Act to forbid a black-list of employees being kept, and penalising the improper prevention of discharged persons obtaining employment." Have you anything to say with regard to that matter? *A.* It is a fact that men get discharged for peculiar things; and when they have been discharged there is rarely any prospect of their getting work again in the same district. I know a considerable number of cases of that kind. In the Newcastle district there are twenty or thirty men under the ban of being victimised. At South Greta they formed a Lodge, and the secretary and his four sons were discharged; and also the chairman—and, strange to say, most of the committeemen. The Manager said that he wanted to shorten hands; but that is a nice way of shortening hands. I had a man travelling with me at Hetton who was discharged because the report he sent in was too strong; he was discharged simply because he did his duty.
18105. *Mr. Ritchie.*] *Q.* Was that a check-inspector? *A.* Yes. We organised the Union at East Greta. We squared that; it had reference to three officers and eight committemen; the ninth one happened to be sick. It was a Saturday night when they took office; and on the Monday they were sacked; but we got them reinstated.
18106. *Mr. Wade.*] *Q.* What was the reason? *A.* The reason was palpable. They were officers of a Lodge.
18107. *Q.* Was there not a written agreement on their part not to join any Newcastle Union? *A.* What do you mean?
18108. *Mr. Lysaght.*] *Q.* Had they signed a contract not to join any Newcastle Union? *A.* I never saw that contract.

18109. *Mr. Wade.*] *Q.* Did the Manager give that as a reason? *A.* He did not give it to me. I had them put on again; and I brought about an arbitration case which we are about settling. At my suggestion the matter was referred to arbitration.
18110. *Mr. Ritchie.*] *Q.* Do I understand that there are some of these men travelling round the district now trying to obtain employment? *A.* Yes, there are men travelling now looking for work; but I do not think they will get it.
18111. *Q.* Is it the South Greta Mine that you refer to? *A.* It is the South Greta Mine I was speaking about.
18112. *Mr. Robertson.*] *Q.* How will legislation help you? *A.* It is difficult to say. We never see your black-list.
18113. *Q.* You are assuming now that there is a black-list? *A.* Well, it is strange, if a man gets discharged, that he never gets work again.
18114. *Q.* How can you force me to employ you? *A.* I am only talking about the matter—just referring to it. I am not suggesting any way out of the difficulty.
18115. *Q.* You are recommending that legislation should be framed to prevent the penalising of discharged persons who desire to obtain employment? *A.* I suppose that I have the names of a dozen men who are in that position now.
18116. *Q.* I know of this by repute; but how is legislation going to find you employment if I do not wish to employ you? *A.* I do not think you would employ anyone if you did not wish to do so; and if we put anything in the law a Manager might evade it.
18117. *Q.* It is unnecessary to keep a black-list of discharged persons; there can be a black-list in a man's mind? *A.* Yes.
18118. *Q.* How can legislation prevent that? *A.* I do not see how it can. I am thoroughly beaten. At the same time there is no harm in referring to it. There is no doubt it is common knowledge that such things are done.
18119. *Q.* You are asking that something should be put into an Act of Parliament that would be no good. *A.* It might be of some good. It might not deter you; but it might deter others. You think that we could not prove that men were victimised.
18120. *Q.* No legislation can force me to employ a man if I do not think fit to do so? *A.* It may prevent your discharging a man.
18121. *Q.* I cannot discharge you because of your connection with a union? *A.* It is being done all the time.
18122. *Mr. Ritchie.*] *Q.* Mr. Robertson says that, instead of keeping a black-list, a Manager would have a good memory? *A.* That is right. But, if a Manager had got a written list, he would not put it in a place where it could be found, to give evidence against him.
18123. *Mr. Lysaght.*] *Q.* There is provision made in the American law against black-listing. Do you think if a provision like that was embodied in our local law it would be of any effect? *A.* It might act as a deterrent, but the difficulty would be to find proof of such a thing.
18124. *Q.* Of course you are assuming that the Managers would break the law? *A.* I am not saying that. They need not break any law. I am thinking of the various rules that we work under at the different collieries. A Manager can get at a man any time he thinks fit. They are the rottenest rules that ever a man worked under.
18125. *Mr. Robertson.*] *Q.* What rules? *A.* You can send any man out of the pit to-morrow, because no man can work under them.
18126. *Q.* Do you suggest that the Special Rules should be wiped out? *A.* I suggest that they should be put in such a way that the men could work in peace. I was one of three that took considerable trouble to take down the Special Rules which were proposed at a colliery, and to write out our objections to them. These objections were submitted to the men and were approved of. They were sent on to the Acting Chief Inspector of Mines; and we waited for a reply for three weeks, when we got a reply that, because we had not sent our objections in print, they would take no notice of them.
18127. *Mr. Wade.*] *Q.* They were dated on a Sunday? *A.* Yes. This happened when Mr. Dixon was acting as Chief Inspector. A question has been asked in the House on the matter; and that was the answer given—because we had not printed our objections he refused to take any notice of them.
18128. *Mr. Robertson.*] *Q.* Is that a fact? *A.* Yes.
18129. *Q.* I can hardly credit it? *A.* I am sorry you cannot. The Act provides that the notice shall be printed. We did not take any notice of that provision, because we had not got any printing machinery with which to do our work.
18130. *Q.* Did the Department take that objection? *A.* Inspector Dixon took that objection; and our notice never got any further than the Inspector.
18131. *Mr. Ritchie.*] *Q.* Was no notice taken of your objections at all? *A.* No notice was taken of them.
18132. *Q.* Did not the Minister take notice of them? *A.* The time had expired. The Special Rules had been gazetted by the time we got the reply.
18133. *Q.* You know that it is within the power of a Minister to refuse to gazette rules if he so chooses? *A.* We were trying to find out what was the cause of the delay. Mr. Estell was secretary at the time; and he can tell you all about the matter.
18134. *Mr. Robertson*] *Q.* Did you have any conference with your employers about it? *A.* I have told you that, if every Manager attempted to carry out the rules in their entirety, every man would be liable to be discharged.
18135. Did you have no conference with the Managers? *A.* The Managers hung the rules up, as required by the Act, for fourteen days. We noted them, and put our objections in. Before we got any reply the rules were gazetted.
18136. *Q.* We have some most comprehensive rules at Helensburgh—there are some 250 of them; and all possible offences are thought of; but we never had any trouble. We simply had confidence in our men. They sent in their objections; and we made amendments? *A.* You may have different methods. A man may be summoned at Newcastle; but they never take a case into Court. The cases are generally too trivial; and they discharge the man.
18137. *Q.* Will you send me a copy of the rules you objected to? *A.* I may have the original objections yet. If I have, I will do so.
18138. *Mr. Lysaght.*] Do you mean the rules relating to the Newcastle collieries.
18139. *Mr. Robertson.*] I mean these particular rules.