

## FIRE AND SUBSEQUENT EXPLOSIONS AT BELLBIRD COLLIERY.

As the mine is still sealed down and as further light may be thrown on the cause and circumstances attending the fire and subsequent explosions when the mine is reopened, I propose to give only a brief outline of the chief points revealed by the evidence given at the inquest held on the bodies of the fifteen victims which were recovered from the mine on the 1st September, 1923—the day of the disaster. The accident resulted in the death of twenty-one persons.

The adjourned inquest was held at the Court House, Cessnock, on the 19th, 20th, 21st, 24th, 25th, 26th, 27th and 28th September, and the 3rd and 4th October, 1923, before Mr. George Brown, District Coroner, and a jury of six.

All the evidence available which would throw any light on the cause of the disaster was called—in all, a total of forty-two witnesses were examined, thirty-three being called by the Police, who were represented by Mr. Kidston, of the Crown Law Office; seven by Mr. Hoare, representing the Miners' Federation; and two by Mr. Rodgers, representing the Colliery Company. None of the inspectors were called.

The Bellbird Colliery is owned by the Hetton Bellbird Collieries Limited, and was acquired by them in 1907. It is situated near the village of Bellbird, about 3 miles to the south-west of Cessnock. The area of the colliery holding is about 2,900 acres.

The coal is won by means of tunnels—the only shaft being that used for an upcast, at the top of which is a ventilating fan. This shaft is 16 feet in diameter and 90 feet deep.

Electricity is used for haulage, pumping, coal-cutting, and lighting purposes.

Naked lights are used through the mine, except for inspections under General Rule 4.

The staff consists of a manager, under manager, engineer, and mine electrician, surveyor, assistant surveyor, and eight deputies—four of whom are employed on the day shift, one on the afternoon shift, and three on the night shift. The latter three examine waste workings during the early part of their shift, and then inspect the working places under General Rule 4.

The Greta seam is being worked, and at this colliery varies from 14 feet to 28 feet thick, and dips south at a grade of about 1 in 8. It is worked on the "bord and pillar" system, panels being formed about  $\frac{1}{4}$  mile square. The pillars are 16 yards by 38 yards, the bords 6 yards wide, headings 4 yards, and the cut-throughs 6 yards wide. The height of the first working is from 8 feet to 9 feet, after which the top coal is taken down to a height of about 18 feet. So far, no pillars have been extracted.

Coal was first sent to market in the year 1912, and at the end of 1922 the average daily output was 1,700 tons. A total of 615 persons were employed at the colliery—441 of whom worked underground.

The fire apparently started immediately after the day shift had left the mine and the afternoon shift had gone in to work.

There were twenty persons employed on the afternoon shift, viz:—

Name.	Age.	Occupation.	Address.
Frederick Moodie .....	53	Deputy .....	Wollombi-road, Cessnock.
Harold Richards* .....	39	Miner .....	Sheddon-street, Cessnock.
William Albert Griffin* .....	30	do .....	Ann-street, Cessnock.
Charles Augustus Mills* .....	38	do .....	Aberdare-road, Cessnock.
Gordon Locking* .....	25	do .....	Cruikshank-street, Bellbird.
William Hartley .....	27	do .....	Stephen-street, Hall Estate, Cessnock.
Alfred Hines* .....	25	do .....	William-street, Sheddon Estate, Cessnock.
Jerry McLaughlan* .....	36	do .....	View-street, Cessnock.
John Stewart* .....	38	do .....	Edden-street, Bellbird.
Jack Graber* .....	43	do .....	Edden-street, Bellbird.
John Morgan* .....	50	do .....	Edden-street, Bellbird.
Maurice W. H. Hyams* .....	28	do .....	Aberdare-road, Aberdare.
George Sneddon* .....	33	do .....	Cruikshank-street, Bellbird.
Alexander Corns .....	21	Wheeler .....	O'Brien's Estate, Cessnock.
Philip Roberts* .....	21	do .....	Kalingo-street, Bellbird.
George Robinson Kelly* .....	22	do .....	Edith-st., Hall's Estate, Cessnock.
George Chapman* .....	32	do .....	Daniel-street, Cessnock.
Joseph Fred. Lambert* .....	22	Driver .....	Harris-street, Cessnock.
Fred. Fone .....	21	Waterman .....	Mt. View-road, Cessnock.
Malcolm Bailey .....	28	Sub-station attendant	Bellbird.

All of these persons were lost, and, in addition, one of the rescuers, Mr. John Brown, manager of Aberdare Colliery, lost his life.

The bodies of those marked \* were recovered on the day of the disaster. The other six are still in the mine.

It appears from the evidence that smoke was first noticed by Frederick Moodie, afternoon deputy, as he was proceeding down the haulage tunnel on his way to work, shortly after 1 p.m. He had just passed Deputies Sneddon and Wilson at No. 4 West. They had recently come up the haulage tunnel after inspecting Nos. 10, 11, and 12 East and 11 West Districts, and were standing at No. 4 West waiting for Deputy Eke. Moodie said to them, "How are things?" and they replied, "All right."

Moodie continued down the haulage road, and when he got to No. 5 East he met dense smoke. He retreated back to No. 4 West, and informed Deputies Sneddon, Wilson, and Eke (Eke had just joined them, after inspecting No. 4 West) of what he had seen. He said "Come back, quick, boys." Wilson said, "What's wrong, Fred?" He replied, "Fire, Bob." They all then went down towards No. 5 East, and met the smoke coming back up. Eke returned to the telephone cabin at No. 4 West to ring up the office, and inform the management. He rang four times, and finally got a ring in reply, but the smoke was then so dense that he had to leave the telephone cabin without informing them of what had happened.

Deputy Sneddon then went to the surface and informed the under-manager, and Deputy Moodie went to get his men out. He was not seen afterwards.

It appears that just about the time when Sneddon reached the surface, shortly after 1:30 p.m., Milton Mathieson, assistant surveyor, noticed smoke issuing from the upcast shaft.

In the meantime Deputies Wilson and Eke went to the door leading into No. 4 West. After a consultation they opened the door, as they said, to short circuit the smoke through No. 4 West District, and thus prevent it going down the travelling road. This would cut off the pressure and a large proportion of the ventilation from the Dip Workings. After opening the door, they went up the travelling road to No. 2 West, and then to the main haulage road and to No. 3 East overcast. They opened the small door in the overcast and found the smoke bad, and closed it again.

Smoke was up to No. 3 East full shunt by this time. They returned to No. 2 West. They were joined there by Mr. Noble, under manager, Deputy Sneddon, and Milton Mathieson. All five went down the travelling road to No. 4 West. The door was still open, and smoke going through it. Noble and Wilson went through the door and down the first left-hand to try and get on to No. 6 West Main Heading. They tried to break through three brick stoppings, but failed to do so. Deputies Sneddon and Eke, and Milton Mathieson, who were left at the door, appear to have got somewhat alarmed. Eke went to the main haulage road at No. 2 West to watch for smoke there, and Milton Mathieson went to the surface for further assistance.

A slight explosion occurred, and, in consequence, smoke went back up the tunnel more strongly. Eke feeling this, ran to the travelling road and down towards No. 4 West to look for Sneddon. He found him in rather a bad way, and took him to

to the surface. The explosion had closed the door leading into No. 4 West. Noble and Wilson, who had failed to get on to No. 6 West Main Heading, returned to the travelling road at No. 4 West. They found the door closed, and they shut it again after they had passed through. After resting awhile they found the air on the travelling road was clearing below No. 4 West. They then went down the said road to No. 8 West. Noble tried to get along from No. 8 West towards the main haulage tunnel at No. 8 East, but the smoke was too thick, and they returned back to No. 6 West, and went a short distance along No. 6 West main heading, but had to return to the travelling road, as they were both feeling the effects of the fumes. They were making their way slowly back to No. 4 West when Deputies Eke and Tennant came to their assistance. Eke took Wilson to the surface. A wheeler named McClusky appears to have joined Noble and Tennant about this time, and together they proceeded down the travelling road. When they got a little below No. 4 West they discovered four bodies lying one behind the other near the right rib. They were lying at an angle, their heads being towards the rib and facing outbye. It was then arranged that Tennant should go to the surface for assistance to remove the bodies. He did so. Noble and McClusky then went to No. 8 West. When they reached 8 West McClusky would go no further, and returned to where they had found the bodies. Noble continued alone down the travelling road towards No. 11 West. When he got to 9 West he found nine men and three horses—they were all dead. He went on to the "bridge," and tried to go up the jig over the fault, but met fumes there, and could not go any further. He returned to the "bridge" and took off his hat, coat, and shirt, and put them on a skip. He then travelled up the main haulage tunnel to No. 8 East, where he found a man and a horse dead. Here he saw a glare or reflection as coming from a big light in No. 8 East and went to investigate. He found a big fire burning in the first cut-through beyond the overcast leading to the trapper's door on No. 8 East left back heading. A strong current of air was passing over the fire, carrying the smoke and fumes away. A skip, which had been sided over against the right-hand rib of No. 8 East main heading opposite the said cut-through was also on fire. Having seen this he made his way outbye first along towards 8 West, and then up the travelling road to near No. 2 West, where he was found by rescuers, and assisted to the surface.

Whilst Noble was wandering somewhat aimlessly about the mine, others were recovering the bodies. In all 15 bodies were recovered and taken to the surface, but, unfortunately, one of the rescuers, Mr. J. B. Brown, manager of Aberdare Colliery was overcome by the fumes and had to be left in the mine. Two others, whom with Mr. Brown, formed the rescue party, viz., Mr. Marshall, manager, Aberdare Central Colliery, and Mr. Hughes, a miner at Bellbird Colliery, although in a bad way, managed with assistance to get safely out of the mine.

This sad death would have been prevented had Mr. Brown and party strictly adhered to the arrangements arrived at after consultation with Mr. Jos. Jeffries and party before they entered the mine. This fact goes to show the absolute necessity of strict discipline in operations of this character.

A party consisting of Mr. Jos. Jeffries, superintendent, Abermain Collieries, Mr. Mathieson, manager Bellbird Colliery, Mr. Gallagher, a miner at Bellbird Colliery, and Mr. Lewis, Inspector of Collieries, had arranged with Mr. Brown that they would go down with the second stretcher party (Mr. Brown going with the first stretcher party to recover the nine bodies at No. 9 West) and would join his party at No. 9 West, where the bodies lay; it being distinctly understood that Brown's party was not to go beyond No. 9 West until they arrived and had a consultation there as to whether it would be advisable to try and recover the remaining five bodies.

When Jeffries' party got to No. 9 West they could not find Brown's party. They had waited for about a quarter of an hour hoping Mr. Brown and party would turn up, when two explosions occurred in quick succession, and the fumes almost overcame them. It was impossible for them to face the fumes on the travelling road, so they got into the old workings at No. 8 West, and travelled to the outbye end of the barrier between No. 8 West workings and No. 6 West main heading, where they managed to break a hole through a brick stopping and get on to No. 6 West main heading. In a weakened state they made their way along No. 6 West main heading to the stone drive through the fault leading to the new tunnel. They were met in the stone drive by rescuers, and assisted to the surface and then to the office.

After resting a while, Mr. Jeffries made a statement to the various superintendents and managers of the Maitland-Cessnock Collieries, who had assembled in the office, together with Senior Inspector Hutton and Inspector Lewis, as to the internal condition of the mine. A consultation followed—everyone present expressing the opinion that to try and recover the bodies still in the mine would be incurring a serious risk and might result in further loss of life. A unanimous decision was then arrived at to seal the mine down. However, before any action was taken, three representatives of the local Miners' Lodge were called in, and with the aid of the Colliery plan the position was explained to them. Each of them concurred in the decision to seal the mine down.

The four tunnels were sealed first, and then the upcast shaft, the whole operation of the sealing being completed on the evening of the following day. Three or four explosions occurred while sealing operations were in progress. One of such explosions wrecked the brickwork of the upcast shaft and put the fan out of action.

Such is a brief outline taken from the evidence of what occurred at the colliery shortly after the accident became known.

It will be seen there was no organised attempt at rescue immediately after the disaster, when time is such an important factor, and when there is a possibility of saving life. The under manager, after seeing the position for himself, instead of wandering about the pit, should have returned at once to the surface (especially when he knew that the manager was unfortunately absent from the colliery) organised rescue parties, appointed leaders, and given them definite instructions as to where they should go and what they should attempt to do. I do not suggest that under these conditions any lives would have been saved but an organised effort would have at least been made to save them.

The evidence generally went to show that the mine was considered a safe mine; that the ventilation was good; that inflammable gas had never been found in the mine by officials or workmen, except in one instance in 1920, when a witness, a miner named Perkins, said that out of curiosity he tried to see if he could find any gas in the mine. He said—

"I bored a hole 4 feet deep at an angle of 75 degrees, looking towards the roof. I left the hole overnight, and in the morning I put my naked light to the mouth of the hole, when there was a little puff with a blue flame for about a second. The place was near a fault. I never reported the occurrence to anyone. The ventilation was good. It would be impossible to find any gas on a safety-lamp."

There was evidence that in some instances the roof coal fell before the "tops" were worked, and that in some cases the whole of the coal thus fallen had not been filled away, but there was no evidence of heating or spontaneous combustion ever having occurred in the mine, except that a miner named Howell stated that a fortnight before the strike or lockout (about the end of March, 1923) while he was filling at a fall of top coal in No. 5 East some of the coal was hot, but this was filled away, and he came to cool coal again. He did not find any smell of gob-stink, and because he came to cool coal he did not report it to anyone. Both Perkins and Howell were called at the request of Mr. Hoare.

In the early stages of the inquest an idea had somehow gained ground that the fire had originated in No. 3 East, and as no work was being done in this District, and as it was known that falls of roof coal existed in such district, it was thought that it might have arisen from spontaneous combustion, but Deputy Wilson, who opened the small door in No. 3 East overcast, dispelled this idea, as he found that smoke was travelling over the overcast from the dip side, and as all the return air from the east side inbye No. 3 East has to pass over that overcast it follows that the fire was below No. 3 East.

There was no evidence to show that an explosion of gas had preceded the fire.

The consensus of opinion was that there was a fire near No. 8 East; that such fire had distilled gas (crude coal gas) from the coal, and that such gas had been brought into contact with flame and exploded on several occasions sometimes as mere "puffs," at others with greater violence; and that such fire was probably caused by a naked light in some way at present unknown.

A fire was seen by Mr. Noble, under manager, on the first left cut-through off No. 8 East inbye the overcast leading to the door on the back heading. No one else saw a fire in the mine.

Electric cables from the sub-station at No. 6 West pass through a brick stopping a short distance from the door in No. 8 East, and close to where Noble saw the fire. These cables were "live," but, I understand, they were about 3 feet apart, and that the ends were securely taped; so that it is unlikely that they played any part in the causation of the fire.

In the total absence of any evidence to the contrary, I am of opinion that the fire was in the first cut-through on left of No. 8 East, where it was seen by Mr. Noble, and that it was caused probably by a naked light in some way. All the workmen used naked lights, and as some passed through the door in No. 8 East and others along No. 8 East heading, it is just possible for a fire to have been started from one of their lights.

There was also evidence that workmen travelled out through what might be termed old workings from No. 8 to No. 5 East. Such places may not have been examined within the prescribed time. This showed lax discipline, and should not be allowed.

The question of lighting was brought up, and the evidence was to the effect that naked lights should be prohibited on the Maitland-Cessnock field. Mr. Jeffries, superintendent of Abermain-Seaham Collieries, advocated a protected light, and was opposed to safety-lamps in some of the mines if General Rules 8, 9, 10, 11, and 12 had to apply. It is hard to understand how the carrying of matches, smoking, and indiscriminate shot-firing could be controlled if safety-lamp conditions are not to apply.

Mr. McKensey, superintendent, Hebburn Limited, stated that in his opinion, safety-lamps should be installed in all mines.

Mr. Kirk, manager, Aberdare Extended Colliery, was also of opinion that naked lights should be taken out of the mines on the Maitland field.

The evidence was also in favour of stone-dusting being made compulsory in all dry and dusty mines.

The evidence also favoured men being set apart specially for the examination of old and waste workings; that they should hold a Third Class or Deputy's Certificate; and that such examinations should be made on the day shift.

A good deal of evidence was given about rescue work and rescue apparatus. There was a difference of opinion as to whether such apparatus would have been of service in the early stages of rescue operations. The managers who gave evidence preferred to take the fresh air in with them as against using the apparatus. No one was opposed to its use under certain circumstances with thoroughly trained men, properly equipped under proper supervision, and where the rescue operations were properly organised. Even then some doubted if they would be as effectual in saving life as the general public anticipated. All were in favour of a central rescue station being established.

#### Verdict of Jury.

That the said deceased, fifteen in number, hereinbefore mentioned, met their deaths in the Hetton Coal Company's (Limited) Colliery at Bellbird on the 1st day of September, 1923, from carbon monoxide poisoning, caused through a fire or an explosion in the said colliery, but there is no evidence to show how such fire or explosion was caused.

#### The Riders.

1. The evidence adduced at this inquest does not prove how the disaster on the 1st September, 1923, in the Bellbird Colliery, originated; and, therefore, the jury recommends:—That gentlemen of mining experience be appointed and vested with the powers of a Royal Commission to ascertain the real cause thereof.
2. The great weight of evidence at this inquest shows that the Bellbird Colliery was a safe one; but the jury believes that similar accidents are likely to recur in any of the South Maitland collieries; and in view of the increasing numbers, recommends:—That a central rescue station, with a trained staff, be forthwith established, equipped with the most modern appliances known, for the saving of life in such disasters.
3. The jury believes that the Coal Mines Regulation Act of 1901 and 1902 is obsolete, inasmuch as that Act does not enforce sufficient precautionary measures for the protection of underground employees engaged in collieries, and therefore should be amended to provide for that degree of safety which the past fifteen years' experience in the art of mining has shown to be necessary.

TABLE U.—Particulars of Accidents, 1923.

Accidents Classified according to Character and Cause.	No. of Fatal Accidents.	No. of Deaths.	No. of Non-fatal Accidents.	No. of Persons Injured.
<b>Falls of roof and side :—</b>				
At the working face .....	8	8	34	34
On roads while repairing or enlarging .....	...	...	...	...
On roads while otherwise working or passing .....	...	...	1	1
<b>Total from falls underground .....</b>	<b>8</b>	<b>8</b>	<b>35</b>	<b>35</b>
<b>Explosives :—</b>				
While charging or stemming holes .....	...	...	1	1
While boring or working near unexploded remnants left by incomplete detonation of the charge .....	...	...	1	2
Blows from coal or stone projected by shots, when persons had not taken sufficient shelter .....	...	...	6	6
Miscellaneous .....	...	...	1	1
<b>Totals .....</b>	<b>...</b>	<b>...</b>	<b>9</b>	<b>10</b>
<b>Underground haulage :—</b>				
While engaged in hauling operations .....	...	...	...	...
While walking in-by or out-by to or from their work .....	...	...	...	...
Miscellaneous .....	...	...	1	1
<b>Totals .....</b>	<b>...</b>	<b>...</b>	<b>1</b>	<b>1</b>
<b>Trams and tubs (run over or crushed by) :—</b>				
Mechanical .....	...	...	6	6
Horse .....	1	1	7	7
Hand .....	...	...	...	...
Runaway trams and tubs .....	...	...	1	1
<b>Totals .....</b>	<b>1</b>	<b>1</b>	<b>14</b>	<b>14</b>
<b>Surface railways or tramways :—</b>				
While engaged in moving waggons or tubs .....	1	1	...	...
While engaged in coupling or uncoupling waggons or tubs .....	...	...	1	1
Run over while passing along or across railways or tramways .....	...	...	...	...
Crushed between waggons or tubs and structures .....	...	...	1	1
In other ways .....	...	...	1	1
<b>Totals .....</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>

*Falls of roof and sides.*—As compared with 1922, the fatal accidents and deaths under this heading are two more, while the non-fatal accidents are one less.

*Explosives.*—There were no fatal accidents due to the use of explosives, but the non-fatal accidents from this cause were one more than occurred during 1922; the number of persons injured was also one more. As nearly all the accidents under this head could be prevented with the exercise of a little more care and judgment, I propose to give a brief description of each:—

On the 11th January, 1923, at the Cessnock Colliery, B. Victor, a miner, aged 40, and mate were working in a bord and a hole had been bored 6 feet deep along the left side. It was charged with 15 plugs of samsonite. After the shot was fired the men heard a sizzling noise in the hole but continued to work. A second explosion took place and a piece of coal struck Victor on the left ankle, causing a nasty flesh wound.

On the 14th January, at the State Coal Mine, Lithgow, Chris Hall, a miner, charged two holes and retired after lighting the fuses. He heard only one report and thinking that the second shot had not been lit, he returned. Finding the fuse burning he attempted to run back, but was struck by flying coal from the shot and received slight injuries.

On the 16th February, at the Ebbw Vale Colliery, Adamstown, Donald Kerr, a miner, aged 53, was tamping a shot hole in the coal face when the charge exploded and knocked him down. He received abrasions to the face. It was thought that the tamping charge stuck in the hole and Kerr hammering away at it burst through and struck the detonator embedded in the charge.

On the 9th April, at Abermain No. 2 Colliery, Kearsley, Thomas Mowbray, a miner, aged 41, and mate were firing a shot in No. 2 heading, No. 2 West District, and retired to a place of safety. A shot was fired in No. 1 heading and, mistaking this for their own shot, they returned to the face of their heading when their own shot went off. The coal from the shot struck Mowbray on the left leg causing bruises.

On 2nd May, at Ivanhoe Colliery, Piper's Flat, William Gates, a wheeler, aged 19, retired to the first cut-through on the right with the two miners he was wheeling for as a shot was being fired. He was sheltering 3 yards back in the cut-through when a piece of coal was projected by the shot, struck a prop and glanced into his eye, necessitating nine days' rest.

On the 27th June, at the State Coal Mine, Lithgow, two miners, James Reynolds and William Hutchinson, were working in the east boundary heading and had a mis-shot on the afternoon of 26th June. They claim that about 10 minutes after firing a relieving hole on the 27th the mis-shot exploded. Reynolds lost the sight of the left eye and Hutchinson received cuts on the face and chest.

On the 27th June, at the South Teralba Colliery, Fassifern, John Walsh, a miner, aged 35, and mate were working in No. 7 bord—his mate at the time of the accident being some distance along the bord. The miners in No. 6 bord had prepared a shot and, as the pillar between the bords was thin, they warned Walsh, who, however, did not take cover. The shot went off and blew through and injuries were sustained by Walsh on the face and arms.

On the 4th August, at the Burwood Colliery, Charlestown, James Fallins, a deputy, aged 56, in the process of charging a shot broke the detonator wires leaving 6 oz. of quarry monobel in the hole. Another 2 oz. were inserted and a fresh detonator supplied. The shot was tamped and fired by Fallins, who thought the shot did not make the usual report and went in to investigate when the second shot went off, causing injuries to his face and eyes.

On 22nd November, at the Wave Hill Colliery, Charlestown, Henry Beacock, a miner, aged 49, lit a fuse to fire a shot at the bottom of a shaft which was 10 feet deep. Before he got clear the shot exploded and projected stones, which caused abrasions to the under side of the left leg.

*Underground Haulage.*—The accidents due to haulage underground comprised in the above tables were 1 fatal and 15 non-fatal, as against no fatal and 19 non-fatal in 1922.

*Surface Railways and Tramways.*—The accidents under the above heading were 1 fatal and 3 non-fatal, as compared with 2 fatal and 6 non-fatal in 1922.

#### FIRE-DAMP AND USE OF SAFETY-LAMPS.

Fire-damp has been reported under the general or special rules during the year at the following collieries:—

Northern District.—Aberdare Extended, Aberdare South, Aberdare Central, Abermain No. 2, Brown's (Minmi), Dudley (Victoria Tunnel and Borehole seams), East Greta, Hebburn, Hebburn No. 2, Lambton B, Richmond Main, Redhead (Victoria Tunnel and Borehole seams), Seaham Nos. 1 and 2, South Greta, Stanford Merthyr, Stockton Borehole, West Wallsend and West Wallsend Extended (Killingworth).

Southern District.—Balmain, Bulli, Coal Cliff, Corrimal-Balgownie, Excelsior No. 2, Metropolitan, Mount Kembla, Mount Pleasant, North Bulli, South Bulli and South Clifton Tunnel.

Western District.—Fire-damp was not reported during the year.

Safety-lamps are used throughout the workings of the following collieries:—

Northern District.—Aberdare Central, Aberdare South, Burwood, Dudley (both Victoria Tunnel and Borehole seams), Hebburn Nos. 1 and 2, Lambton B, Pelaw Main, Richmond Main, Seaham Nos. 1 and 2, Stanford Merthyr, Stockton Borehole, West Wallsend and West Wallsend Extended (Killingworth).

In addition to the above, they are used in certain parts of the following collieries:—Aberdare, in the east dip split on the south side of pit; Abermain No. 2 in the headings of No. 2 East District, Nos. 1 and 2 South-East Districts and No. 1 East District; Brown's (Minmi) by all persons working in pillar districts.

Southern District.—All the collieries in the Southern District use safety-lamps throughout, except Excelsior No. 1, Mount Kembla Extended, Wongawilli and South Kembla. I understand that safety-lamps are used for inspection purposes under General Rule 4 at the latter collieries.

Western District.—Safety-lamps are used for making the examinations required by General Rule 4 at all the larger collieries in the Western District.

Electric safety-lamps for general use by workmen in collieries where safety-lamps are used: The matter of lighting underground is still engaging the attention of both managers and workmen in the Northern and Southern districts where oil safety-lamps are in use. I am pleased to say from information I have at hand that in practically all the collieries in the latter district at which oil safety-lamps are now used, electric safety-lamps will be installed during the next few months.

Electric safety-lamps have also been introduced into several of the Northern collieries during the year, and I understand that at least two other collieries contemplate installing these lamps at an early date.

Mr. C. Fletcher, in his presidential address before the members of the Manchester Geological and Mining Society on the 20th November, 1923, stated, *inter alia*:—

"I am convinced, however, after considerable personal experience and most careful inquiries, that a good electric lamp—with the outer glass frosted—is beneficial in every way; it being understood, of course, that each place or group of places will have in addition at least one flame safety-lamp for gas-testing purposes. Subject to this, I consider that their use tends to greater safety and comfort as well as to an improved output and cleaner filled coal. The outer glass should, however, be frosted. It has been proved conclusively that the obscuring of the glass reduces both the shadows from the lamp pillars and the general glare of the lamp without affecting in any way the visual acuity. Our men now prefer the frosted glass, and, of course, no one who has once had the good reliable electric lamp ever wishes to go back to an oil lamp."

The only part of the above address I question is "that each place or group of places, will have *in addition* at least one flame safety-lamp for gas-testing purposes." I am opposed to the giving of additional lamps at any time as they are very liable to be left unattended and may under certain circumstances become a menace rather than a safeguard.

These