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LEYCETTE. Newcastle-under-Lyne, Staffordshire. 21st. January, 1880.

Mr. Wynne was Her Majesty's Inspector of Mines for the district. The explosion left sixty two dead at the Fair Lady Pit owned by the Crewe Coal and Iron Co. The pit had opened in 1879 and mined the Seven Foot Banbury Seam. The workings extended two hundred in one direction and three hundred yards in the other at a depth of four hundred and ten yards. There had been complaints about the ventilation in the Seven Foot Banbury Seam.

The explosion took place at the Lady Fair pit of the Leycette colliery which belonged to the Crewe Coal and Iron Co. near Newcastle-under-Lyne. There had been an explosion at the colliery on the 12th. September which had killed eight men but this time there was a great deal of destruction and loss of life. On the Monday before the disaster, the late manager and Burgess one of the deceased was summoned at the Newcastle Magistrates Court for neglecting to provide sufficient ventilation in the mine for the last explosion. The cases had been brought forward for a week.

On the morning of the explosion, seventy lamps had been given out to the men and boys in the pit and the explosion occurred about 8.30 a.m. A new ventilation fan had been installed since the last explosion and the roof of the fan house was lifted off but the fan was fortunately not damaged and soon freed the mine of gasses so that the rescuers could get below ground. A party was quickly formed but on descending the pit, they found that the guide-rods were damaged and it was sometime before they got down the pit as these had to be repaired. Even so, the cage would not go the full depth and ladders had to be used. Mr. Lawson, the manger of a neighbouring pit and seven men were the first to go down.

A cage load of survivors was brought to the surface about noon and they included, William Burgess a fireman who was in charge of the pit at the time, Joseph Highfield, George Rowley, and Thomas Brookfield. They walked to the lamproom from the pithead where they recieved attention and then went home.

At intervals of fifteen minutes the cage came up the shaft bringing two or three men at at time. Most of them were seriously injured and among them were Levi Knapper who died on the way to his house, Thomas Dean, Thomas Mayer, John Salisbury, Henry Darlington, Joseph Allen, Jesse Salmon and Edward Parry.

During the morning experienced mining engineers arrived at the pit and gave their assistance. Thomas Wynne, the Inspector of Mines, and Mr. Sawyer the assistant Inspector arrived during the day. There were many willing colliers ready to go down the pit and rescue parties were formed to descended the pit. In the afternoon the bodies of Mr. Greener, the manger since the last explosion, and his son, who was the underlooker, were found fifty yards along the south slant from the bottom of the pit. They were brought to the surface along with nine other bodies.

There were twelve bodies at the bottom of the pit when the work was interrupted by some blowers of gas which ignited and the work could not go on until they had been extinguished. The workers in the mine ran a geat risk of suffocation and had to retire.

One theory as to the cause was that there was blasting on the South Side at the time but only wedges were used on the North Side. It was found that hole had been bored and everywhere there

were signs of the violence of the explosion such as was caused by lighting a shot. It was said that the ventilation of the pit had been improved by the instalation of the fan.

Those who died were-

H.R. Greener certificated manger.

George Greener, underlooker.

Isaac Johnson, fireman.

Joseph Viggers, hooker-on.

John Kynerton, hooker-on.

Samuel Lambsdale, hooker-on.

Joseph Highfield, bratticeman.

James Scott, dayman.

Thomas Turner, trammer.

William Burgess, trammer.

Fred Jervis, a loader.

Patsy Hutchinson, collier.

Horatio Cartledge, collier.

George Bolton, wagoner.

Andrew Smallwood, loader.

Thomas Edwards, collier.

George Dixon, bricklayer.

Thomas Madders, bricklayer.

John Evans, labourer.

William Winkle, braker.

John Testall, collier.

William Yardley, loader.

Thomas Dean, loader.

Edward Viggars, collier.

John Eysley, loader.

Thomas Cross, collier.

Richard Lear, braker.

John Turncock, loader.

Jabez Burgess, jigger.

Richard Jenkinson, collier.

Herbert Walker, wagoner.

Fred Viggars, trammer.

William Huxley, trammer.

Henry Grocott, wagoner.

Jospeh Heywood, loader.

James Webb, collier.

John Morris, collier.

William Lear, bratticeman.

John Lawton, bratticeman.

John Hall, loader.

George Tomkinson, collier.

Alfred Loundes, collier.

James Beesley, loader and jigger.

Henry Ferniough, riddler.

James Whaling, loader.

John Davis (Cross) collier.

William Pickering, dayman.

George Thorley, collier.

Thomas Darlington, colier.
John T. Williams, colier.
Henry Darlington, jigger.
John Salisbury, jigger.
George Rowley, collier.
Thomas Brookshaw, loader.
Jesse Salmon, loader.
George Salmon, collier.
Edwrad Parry, collier.
John James, taker-off.
Levi Knapper, crutter.
Benjamin Harrison, crutter.
Isaac Bailey, crutter.
Thomas Mayer, crutter.
John Boulton, crutter.
George Clews, labourer.
Edward Thornton, wagoner.

Those who were injured were-

Thomas Hulse,
John Salisbury,
Joseph Allen,
Edward Parry,
Thomas Mayer,
Henry Darlington and
Jesse Salmon.

The burials of sixty two victims took place at Madely cemetary the following Sunday. The inquest into the disaster was held at the Offley Arms Inn at Maidely before Mr. Booth, the Coroner when evidence was taken to try to find the cause of the explosion from men who were involved.

The first witness was Henry Beech, a miner, who was working at the pit on the day of the explosion. He had worked at the pit since last October. He came out of the the pit early ,at 2 a.m., on the morning of the explosion and was employed at the Bang Up Level on the south side. He came up early that morning because he had had a missed shot otherwise he would have come up at 6 p.m. He reported that all with the mine when he came up.

Isaac Johnson was the fireman and he had been to Beech'' place twice during the night and fired a shot by blowing the flame through the gauze of his lamp after the place had been inspected.

When he his cannister underground when he came up which was produced by George Smith at the inquiry. It had contained two cartridges whenhe left but mow it contained only one. Tompkinson would have to drill the hole where the shot was missed and use a cartridge and a cannister.

Thomas Fletcher a miner testified that Johnson examined his place during the night and fired a shot about 1 a.m. A week before the explosion a shot had blown the brattice down and some gas had accumulated but this was easily cleared out.

Henry Thornton was a collier who had worked on the pit before the explosion but he had not seen gas and since the explosion he would not go down the pit. He knew another man named Foster was also afraid to go down the pit.

George Rowley, a collier went down the pit at 5.40 a.m. on the morning of the explosion. Johnson, the fireman had examined all the lamps and the places were clear of gas. Rowley got his pick and went to work in the lower part of the south workings. Thomas Bradshaw, another collier, was with him and they continued working until the explosion at 8.20 a.m. He did not hear the explosion but was affected by the gas when he tried to make his way to the pit bottom taking

Thomas Brookshaw with him. His back was slightly burnt. Thomas Salmon was the engineman at the time of the explosion.

Mr. Samuel Lawton was the manager of the Harrison and Woodburn pit and went to the Fair Lady pit when he heard of the explosion. He could not get down the pit for about three and a half hours but he went down with a party of rescuers when the shaft was repaired. The party had difficulty in getting to the workings and they could get only one hundred and fifty yards on the south side. They found traces of gas on the west side and at the top of the No. 1 slant they found firedamp. He assisted in the recovery of the bodies.

Charles Roberts a firmen at the pit, was not in the pit at the time of the explosion but said that the pit was clear of gas at 10 p.m. and his report book showed no gas. There had been a small quantity on the 20th. and the 29th. December. He had made a thorough examination since the explosion and he thought that the explosion had been caused by an overcharged shot on the Bang up Level on the south side. He thought that dust had had a part to play in the disaster and he said that the mine was ventilated by pipes that had been installed since the September explosion.

Mr. Miles Settle, managing director of the Crewe Iron and Coal Co., told the inquiry that Mr. Greener had been the manager of the colliery since the 13th. October. The mine was ventilated by a Schiele fan which was twelve feet in diameter which was driven by a steam engine with a pair of nine inch vertical engine. This was a temporary measure and a more powerful engine was being erected at the colliery. The work had been done under the direction of Mr. Greener. About three weeks before the explosion Mr. Greener tested the fan which gave 65,000 cubic feet per minute at the maximum but it usually gave 28,000 cubic feet per minute when it was working.

Greener did not like blasting the coal and had offered to pay 6d per yard for wedging and money had been spent on the safety of the mine. Blasting was totally prohibited on the north side and it was only used in rock on the south side. It was thought that a shot had been missed on the south side as they found some rock was standing. Some gas might have been given off at a fault and fed on coal dust it could have been an explosion of coal dust rather than gas.

Hugh Thomas, engineman on the ventilating engine on the night prior to the explosion, left the pit at 6 a.m. and believed that all the day shift men had descended and the fan was working well. There had never been any trouble with the fan. When he left work he had handed over to John Viggers.

John Viggers of Scotley was the day engine tender and he said the engine was in good order when the explosion occurred at 8.30 a.m. and that the fan was undamaged and was still working after the explosion. Alfred Bowers, the lamp cleaner had given out seventy eight lamps One was a Meusler lamp, forty one were Teal Meiusler, thirteen Teal Davy lamps and three ordinary Davy lamps. He had examined all the lamps that came out of the mine after the explosion and found the fireman's Davy lamp unlocked. This was the only one that was unlocked. Other lamps were given put to the bricklayers by James Morris, another lampman. The unlocked lamp was found in Joseph Johnson's hands. The lamp station was at the bottom of the shaft and it had been used for a week prior to the explosion. Sometimes as many as twenty lamps had to be relight in a shift. Mr. Greener had arranged the position of the lamp cabin and there were still eleven lamps still missing.

Morris had left the pit sometime before the explosion when Mr. Settle had given him the 'sac'.

Edward Parry was one of the men injured by the explosion and had not fully recovered and was allowed to sit down to give his evidence. He was working on the second slant just past the thurlings and was getting coal when the explosion occurred. He was working with George and Joseph Salmon both of whom were killed. The ventilation was good and there were no signs of gas. He did not remember what happened to him after the explosion as he lost consciousness.

William Fletcher, the underviewer at the Harrison and Woodben pits and he went down the pit after the explosion. He found the roadways were filled with broken tubs, rails and rods. They found Edward Parry sitting against the face at the bottom of the slant. He described the passage of the exploring parties who found the dead and injured. He believed that the explosion came from a slant in the Bang up Level. Some brattice had been broken down and the fault was unventilated and he thought that there had been gas hanging about.

Edward Jones, a collier, testified as to the carefulness of Johnson the fireman. Both the men who worked in the place with him were killed. He said there was plenty of dust in the pit.

Mr. R.H. Wynne mining engineer with twenty five years experience went to the pit when he heard of the explosion and went down the pit. He found that stoppings had been blown down along the south level but even with the stoppings down the ventilation was good. After consultation with Mr. Settle, Mr. Sawyer and others they came to the surface.

In the evening they descended again and assisted with the recovery of the bodies and he found gas but only in small quantities and a sheet was put up at once and the gas quickly cleared.

He found a shot hole drilled in the end of the south Bang up Level but he thought that the hole had been charged. He also found a hole that was an unused shot and it appeared to him that there was an overcharge of powder. There might have been a small quantity of gas but there was also a large quantity of dust and that might have been the cause of the explosion.

There was no evidence to show that the explosion had taken place on the north side. The north workings were a little charred but there were no signs of a separate explosion. In his opinion the ventilation was sufficient but he thought that the shot fired in the return airway should not have been fired.

It was a dusty mine and it was known that 2% of gas and coal dust would explode in contact with lamps. The dips on the south side were the dustiest that he had ever seen.

George Hunte manager of the Talke colliery, concurred with the evidence that Mr. Wynne had given. He said that Mr. Greener, the manager who was killed in the explosion was an efficient and careful man.

James Morris, the lamp man who gave the Meusler lamps to the bricklayers on the morning of the explosion told the court that the lamps were in good order but he could not know if they were taken into the pit.

William Burgess, a butty collier at the pit was one of the few that were rescued from the pit alive and he had received serious injuries and looked very ill in court. He went down the pit with Mr. Greener, the manager, and his son on the morning of the explosion. They had gone to measure some work and were at the pit bottom at the time of the explosion.

He had noticed a thirling had been cut from a tunnel in the south side to the Seven Foot Bang-up return air way on the previous day and there was an escape of air but brattice had been put up and the air restored to its proper course before 7 a.m. which was an hour and a half before the explosion. Several places had been fenced off on the south side because of a small blower of gas. He thought the thirling had nothing to do with the explosion and he found the ventilation good. In answer to a question from the Coroner, he said there had been more powder used in the mine since Mr. Greener had become the manager.

Mr. R.A. Sawyer, Assistant Inspector of Mines for the district had visited the mine on several occasions since the first explosion. On the 9th. October he had measured the ventilation in fourteen places and he found gas on the extreme south side of the workings. He had reported to Mr. Wynne that the roads were widened and that the ventilation was good. On leaving the pit he had told Mr. Greener that he would return and make another inspection in a month. The day that he should have made the inspection was the day of the explosion but he had been prevented from going by other work.

From a previous report he noted that Mr. Settle agreed not to allow blasting in the Lady Fair levels and was greatly astonished to find that blasting was still going on in the coal on the south side. He knew Mr. Greener before he became the manager of this colliery and thought he was a careful and experienced man.

On the day of the explosion he reached the pit at noon and went down at once. The few men that got out of the pit alive had come up but there were a few fires that had been found had not been extinguished.

He made his way to a large fire in Davies's place on the south side and the levels were and dips were full of gas. He saw it put out with an extinguisher and pails of water. He then went to the north side and was joined there by Mr. Settle. This was full of gas and they put the fires out as they

went along. Passing up the Bang Up pit, they went along to the Bang Up level in which he found the fireman's book, clothes, a tape, and an open cannister that belonged to Thompson with one cartridge, some fuse and a scraper and a rammer. At the face of the Bang up level he saw a hole drilled in the coal which, on close examination proved to be blown out shot. He saw that the fires were put out and left the mine in a safe condition.

The explosion was instantaneous all over the mine and almost all the bodies were found in the workings. Edwards was found with his pick in his hand in the act of striking the coal. Rowley and Bradshaw owed their marvellous escape to the fault at which the blast expended itself. Morris was the only one who had moved any distance. The bodies were burnt and many of them badly knocked about.

The Assistant Inspector found a missed shot and there was evidence of a shot fired in Morris' place a short time before the explosion. There was a strong deposit of coke. The blown down coal was still at the face and a pick was found close by. This showed that he had been at work when the explosion came. He must have been able to proceed a little way down the road followed by Lear and Lawton and they were all were found facing the pit indicating that they were trying to get out of the pit. Morris's cannister was empty when it was found. Samuel Plant (No.42) was working at the top of the level had left his work and stepped into the cage a few minutes before the explosion. He had been told by Morris to tell the fireman if he found him that he had a shot ready to fire. The furnaceman's body was found at the bottom of the second thirling from the face and was covered with bricks and rubbish in the explosion.

Templeton's body was at the bottom of the dip and Hall's was found ten yards up the dip. He concluded that the fireman was coming to the south side and he first fired a shot in Morris' place and then lighted a stone shot in Tompkinsons' level, taking refuge at the bottom of the second thirling whilst Tompkinson and Hall fired the shot. The fireman's was buried by a blow down stopping.

The ventilation according to George Greener's note book was 18,630 cubic feet per minute passing along the south side. Allowing for leakage, 10,000 cubic feet would be leakage and the rest would enter the Bang up level. He believed that gas was continually being emitted on the south level and gas would give off in the working places.

The Seven Foot Banbury at the Leycett colliery was very dirty and the dust very fine and was held in suspension in the air. The coal was riddled underground and this would cause a lot of dust in the south workings. The dust produced by Thorley, Allan and Cross would make a lot of dust which would be mixed with the air before it went up to the Bang up level. On occasions, the dust had been so thick that Brown, one of the firemen had often waited for the bulk to disperse before he fired a shot. It was known that dust mixed with gas could soon become an explosive mixture. He believed that the stone shot was overcharged and produced a large flame that formed an explosive mixture and was fired by the flame of the shot. The dust raised by the good ventilation would feed the explosion.

Evidence of the power of the explosion was seen by the body of Walker whose body was literally cut in two the pieces being found three yards apart and of Greener and his son whose bodies were not recognisable and had all traces of clothing torn off. Greener had intended to do away with the riddling and was making a jig brow which was good to the memory of the men.

Mr. Wynne came to the conclusion that the explosion was caused by a blown out shot in the south Bang up level. Mr. T. Evans Inspector for the Midland district thought it possible that the gas was ignited by faulty lamp.

The verdict of the jury was-

"That the men met their deaths by explosion caused by the discharge of a shot in the No.1 Bang Up level and that no blame be attached to anyone at the pit."

The jury also made the following recommendations:-

"1). That blasting by powder be discontinued altogether in firey mines while men were working therein.

2) There should be more frequent inspections at uncertain intervals."

The jury also respectfully presented to the Home Office the great inconvenience that they had been put to and hoped that they would see fit to give them adequate remuneration for the time they spent at the inquiry. The coroner said he would make the necessary representations on the point.

BEDWELTY. Tredegar, Monmouthshire. 10th. March 1880.

The colliery was the property of the Tredegar Iron Company and Mr. W.P. Jones was the manager. Six were killed in an explosion of gas. at the inquest five colliers who were working in the same district were examined and they all said that they thought the colliery safe and that the air was sufficient ventilation. In one place where some gas had been found the men were using locked lamps but the rest of the pit was worked with open lights.

Those who lost their lives were:-

William Braithwaite,
Henry George,
Thomas Pullen,
Thomas Jones,
Edward Thurse and
Gwilym Jenkins.

The fireman, overman, underviewer and manager gave the opinion that the ventilation was sufficient and that the explosion was caused by a sudden blower of gas coming off the floor which was ignited by one of the open lights. Their statement was supported by the fact that no gas could be found at the faces shortly after the explosion, as soon as the sheets had been put up to restore the ventilation.

The jury returned the following verdict-

“Accidentally killed by an explosion of gas caused by a sudden outburst from the floor ignited by the open lights. The jury impress upon the manager the necessity for carrying out the recommendation of the inspector that the pit in future be worked with locked lamps only.”

This recommendation was acted in immediately and locked lamps were used in that section of the workings.

GARNOCH. Swansea, Glamorganshire. 7th. July, 1880.

The colliery was the property of John Glasbrook and situated in Gower Road. At the time of the explosion was being worked with naked lights. Two of the victims were driving a stall to communicate with another stall which, owing to a fall that morning was not being worked. When the Inspector inspected the area after the disaster he could find no gas.

The victims of the disaster were-

John Lewis, collier aged 30 years,
Daniel Rees, collier aged 29 years,
Thomas Hugh aged 29 years, collier,
William Morgan aged 33 years, collier,
David Rosser aged 21 years, collier and
Daniel Watkins aged 14 years collier's boy.

At the inquest before Mr. Strick, Coroner, the overman stated that he had inspected the area a half an hour before the explosion and found it free from gas. It was thought that the gas accumulated in the vacant stall and was ignited at the lamps of the colliers.

Mr. Abraham of the Miners' Association of Wales said that he had inspected the workings after the explosion but had found no gas. He was of the opinion that gas had accumulated between two stalls after they had been joined and that the gas ignited at Rosser's candle. He thought the fireman should have satisfied himself that there was no gas in the stall. Mr. Wales, the Inspector, voiced the opinion that the overman should be reprimanded but he did not think him criminally liable.

The jury brought in verdict of 'Accidental Death' and recommended that in future the overman should be more careful. It was also recommended that the colliery should, in future, be worked with safety lamps and the owner was reported to have acted on this recommendation.

RISCA. Black Vein Pit. Risca, Monmouthshire. 15th. July, 1880.

The New Risca Colliery was on the eastern side of the entrance to the Sirhowy Valley about one mile to the west of the outcrop of the South Wales Coalfield and about 1,260 yards to the north west and in the same seam as the Risca Colliery in which an explosion occurred in 1846 which led to the deaths of thirty five, another in 1853 causing 10 deaths and another in 1860 causing one hundred and forty two deaths.

The existing colliery began work in June, 1878 and was separated from the old colliery by an extensive barrier of unworked coal. The shafts were 298 yards deep and passed through the Rock Vein, which was 4 feet thick, at 113 yards, other seams and the Black vein, nine and half feet thick at 287 yards and the Brass Vein, two feet thick, at 298 yards. The only seam which was worked at the colliery was the Black vein and was the seam in which the Abercarne explosion occurred in 1878. A section of the Black Vein showed 3 feet of coal, a small smooth parting, three feet six inches of coal, and inch of rubbish, two feet six inches of coal, three inches of rubbish and six inches of coal. The strata dipped to the north of the shafts for about 100 yards then flattened at the working faces. The same seam was traversed in many places by transverse slanting and splits or cleavages. The coal was a hard steam coal, extremely fiery and very dry and dusty and contained streaks of soft coal that were even more fiery.

The Black Vein was 298 yards from the surface but the principle workings were driven under the mountain which gave an additional height of 800 to 900 feet so that the depth of the workings from the surface was from 5 to 600 yards. The roof was for the most part, shale but in some places the shale was replaced by sandstone and it was near to one of these places that the explosion was thought to have originated. but only six feet of coal was got leaving three feet of coal as the roof in most parts of the mine and the other parts as the floor. The mine was subject to a lot of creep of the floor sides and roof. In the main intake, the No.1 North Dip, the floor had risen so much, that continual excavations to maintain the height had raised the floor level clear above the top of the vein in which it was originally excavated.

The Risca Colliery had two shafts, a downcast, 293 yards deep and an upcast 287 yards deep both seventeen and a half feet in diameter. From the foot of the downcast shaft, two straight main roads, No.1 North Dip, which was the main intake and No.1 Return had been driven 80 yards to the north. From the No.1 North Dip a branch passed off to the right or East side to the "old Long Wall" district and another further on, on the same side to 'Hill's and Wrentmore's' District. Further on towards the ends of these main roads, there was a third district, Crook's, Brake's and Dix's.

On the left or west side, another branch crossed the return and was called No.2 level which formed a fourth district comprising several sub-districts, Sage's and Bright's, Harvey's and Lewis', Paget's and Penrhiwbicca. On the south west side of the, shaft two other new roads had been driven for 700 yards, the West Intake and the West Side Return. There were not working faces on these at the time of the disaster and had little bearing on the explosion.

The four principal districts of the mine, Hill's and Wrentmore's on the east, the North Dip, the Old Long Wall on the east and the No.2 Level on the west were not entirely separate districts with the division made between them was by movable doors.

The colliery had been worked by double stall, two roads being driven 14 yards apart and the whole of the coal taken away between the and the space filled up with rubbish and small coal and

pillars of coal, six yards wide left between the roadways separating one stall from the next. About 18 months before the explosion, longwall working had been adopted with the roads eight yards apart and the whole of the coal, except that for the roof and floor, extracted between the roads and the space between them filled.

The long walls were worked away from the shaft and the consulting engineer, Mr. Foster Brown, considered that the system of driving advance headings to the boundary and working longwall towards the shaft was not applicable to the colliery. His view was supported by Mr. Wilkinson of Powell Duffryn and Mr. Green of Newport Abercarne. These men were all of the opinion that the great pressure on the roof would make it almost impossible to keep the necessary roads open. Mr. Joseph Dickinson pointed out that longwall system was worked under similar conditions in the north west of England and suggested that some of the dangers might be minimised by these of longitudinal transverse walls to support the roof and gob.

There were 650 persons employed in the mine. The mine was worked on three shifts of eight hours each, two being work shifts and the third a repairing shift. There had been some objections of working two working shifts in a day and carrying on the faces too fast which did not allow the gas to drain away. About four men and two boys were employed to each 20 yards of face. These men did their own stowing and timbering of the face. They undercut the coal and brought it down by wedges. The output of the colliery was about 600 tons per day. The workplaces were examined regularly by the firemen and overmen and from the evidence given at the inquest, the mine was worked by Clanny lamps and the firemen had Davy lamps.

Blasting was prohibited except in the main intakes, No.1 North Dip and No.2 Level. The shots were permitted only at night by the firemen or deputy overmen and it was restricted to the parts of the mine where the roof was rock. No shot had been fired on the night of the explosion.

Discipline and the ventilation in the mine were good and there had never been an accumulation of gas in the pit. The workings were regularly inspected. The agent, Mr. Llewellyn, inspected the workings on the first three days of each week and the Manager, Mr. Evans, was in the mine every day. Three overmen, one for each district, attended each working shift and two attended the night repairing shift.

Ventilation was from a Guibal fan 40 feet in diameter and 12 feet wide. It was driven by a steam engine that had a 36 inch cylinder and a 36 inch stroke. There was also a spare engine of the same type. Both worked at a pressure of 40lbs. per square inch. There was a total of 132,830 cubic feet of air per minute and 46,110 cubic feet went to Hill's and Wrentmore's district and the North Dip, 33,600 cubic feet to the Old Long Wall district and 27,300 to the No.2 North Level. The stables and the new main roads on the south west took about 37,700 cubic feet.

Timbering was very important due to the exceptional conditions in the mine and there had been complaints that there was an insufficient supply of timber in some parts of the mine but there had been no such complaints recently and there were few deaths from falls of roof after the explosion which stood as testament to the work of the colliers.

The roads that were to be filled up to the top for about six yards from the end and to about 15 to 18 yards of the top, this being left open to allow some ventilation to get to the end until they were filled up. The filling consisted of the rubbish from the partings in the coal, the slack or small coal and the shale or rock got from the driving the headings, cutting the roofs, floors or walls of the main roads. It was never necessary to stow rubbish above ground. There was no evidence that the method of stowing the gob had anything to do with the subsequent explosion.

The explosion occurred about 1.30 a.m. on the morning of the 15th. July. At the time the only men that were in the pit were a repairing shift consisting of one overman and 117 men and boys. The shift had descended between 10 and 10.30 p.m. on the 14th. and had been at work for about three hours. The explosion affected all working parts of the mine.

G. Drew, the fan man was working at the moment of the disaster and the engine and fan were working perfectly up to that time. He was greasing the engine with tallow when he saw a bright flash and at the same time heard the sound of the explosion. The covering of the fan was blown off and the fan stopped. The book that recorded the state of the fan was buried with debris and was

not recovered for some hours. Two men, H. Harris and Watkin Watkins came from the bottom of the shaft a few minutes before the explosion and stated that the ventilation was normal, a third man, Coles came up ten minutes before and gave the same account.

The blast went through all of the open workings and apparently killed every man in the pit on the spot. The ventilating fan was damaged in the explosion. The covering doors of the upcast shaft acted as a safety valve and gave way, otherwise the damage to the fan might have been greater. The men who came to the surface prior to the disaster said it was all right at the pit eye and others who had come from the workings two to four hours before the disaster said that they had seen no gas.

From Friday, numerous gangs had been used in the exploration and by Saturday they had cleared a way to the foot of the upcast shaft. Near this point there were three roads one to the east west and north. The air was first established on the west side.

On the Saturday after the disaster, Mr. Joseph Dickinson, the Chief Inspector of Mines and Mr. Wales, the Inspector for the district arrived at the colliery. They descended and inspected the 'great fall' at the bottom of the shaft. The condition of the dead horses below ground was offensive and it was decided that the bodies of the remaining horses should be got out of the pit as soon as possible. By Saturday night and Sunday morning twenty one horses had been brought out of the pit which made thirty four animals had been killed in the disaster.

No human bodies were brought up and the repairs continued and the ventilation pushed forward 700 yards from the downcast shaft. Saturday and Sunday was spent with efforts made to clear the falls in the No.2 District. The work was arduous as the falls were very great but there was no gas encountered and the explorers reached a point beyond Brights' heading to Sage's Deep and Monday was sent clearing away a fall in that place.

Bodies were recovered from the No.1 and No.2 Districts and two more bodies were found on Monday night. The further the teams went into the mine the evidence of the violence of the explosion began to emerge. Early on Tuesday they found a horse with its legs blown off.

Mr. Dickinson, Mr. Cadman, Donald Bain and Mr. Foster descended the pit with Mr. Llewellyn, the manager, went down at 9 a.m. and stayed until 4.30 p.m. Owing to the falls in Sage's Level, it was found impossible to get air into the main roadway to the upcast shaft and it was necessary to make a 'spout hole', ten yards long, through the old workings in order to take the air in to the main airway.

By Wednesday eighty out of the one hundred and ten bodies were unrecovered but by Thursday another nine were brought out bringing the total recovered to forty four but the work was still impeded by the damage.

Those who died were-

Uriah Edwards aged 37 years, overman,
Thomas Lewis aged 42 years, fireman,
Henry Brookman aged 44 years, fireman and
Thomas Bowden aged 36 years, hitcher.

The colliers-

Thomas Cheddy aged 30 years
S. Powell aged 76 years
Thomas Wooley aged 29 years
Llewellyn Lewis aged 17 years
Dan Lewis aged 47 years
David Brake aged 29 years
James Powell aged 18 years
Thomas Summerhill aged 24 years
George Poole aged 45 years.
Lewis Price aged 15 years.

The hauliers-

Henry Harvey aged 51 years, master haulier.
Thomas Lent aged 36 years, master haulier.
Henry Baker aged 24 year.
John Milsome aged 20 years.
M. Francis aged 26 years.
T. Theophilus aged 40 years.
William Lester aged 19 years.
M. Yemm aged 20 years.
Henry Marsh aged 18 years.
S. Williams aged 25 years.
Thomas Wallace aged 17 years.
J. Daley aged 18 years.
James Jones aged 20 years.
Edward Wilcox aged 30 years.
Thomas Thomas aged 18 years.
Thomas Price aged 32 years.
J. Woodford aged 18 years.
Thomas Breeze agd 23 years.
Henry Adams aged 43 years.
D. Moor aged 19 years.
T. Morgan aged 17 years.
F. Baker aged 17 years.
Thomas Jones aged 25 years.
Thomas Rogers aged 21 years.
A. Baker aged 24 years, roadman,
Evan Hayes aged 27 years, roadman and
James Haycock aged 25 years dukey rider.

The timbermen-

L. Leyshon aged 50 years.
M. Emery aged 29 years.
J. Harler aged 32 years.
Rees Leyshon aged 23 years.
J. Morgan aged 28 years.
J. Everett aged 59 years.
Thomas Dix aged 25 years.
William West aged 40 years.
C. Rendell aged 27 years.
T. Griffiths aged 38 years.
Thomas Wallace aged 50 years.
S. Dix aged 50 years.
P. Jones aged 26 years.
S. Gulliver aged 45 years.
J. Wynn aged 30 years.
L. Williams aged 32 years.
T. Waters aged 32 years.

The top rippers-

William Hayes aged 54 years,
J. Potter aged 29 years,
C. English aged 45 years and

William Cordey aged 48 years.

The bottom cutters-

Robert Lugg aged 40 years,
George Evans aged 55 years,
S. Tucker aged 35 years,
Gerorge Yemm aged 38 years,
William Morgan aged 31 years,
C.L. Edmunds aged 50 years,
D. Scarall aged 43 years,
William Benney aged 40 years,
S. Bash aged 64 years,
D. James aged 39 years,
J. Hiatt aged 54 years,
M. Crook aged 30 years and
William Mills aged 50 years.

The door-boys-

William Stafford aged 13 years,
J. Howells aged 16 years,
W.J. Dovey aged 13 years,
W. Vaughan aged 13 years,
C. Poole aged 13 years and
A. Shaw aged 13 years.
C. Ford aged 16 years, timekeeper,
J. Bragg aged 57 years, lampman and
J. Harvey aged 13 years, pump-boy.

The ostlers.-

J. Fry aged 27 years,
William Cairns aged 60 years and
W. Hughes aged 43 years.

The masons-

Thomas Jones aged 72 years,
J. Jones aged 34 years and
H. Toze aged 29 years.

The labourers-

Jerry Hurley aged 22 years.
W. Sheen aged 43 years.
W. Charles aged 45 years.
W. Bush aged 25 years.
W. Ashman aged 24 years.
F. Bald aged 38 years.
J. Johnson aged 26 years.
G. Vaughan aged 55 years.
Rosse George aged 35 years.
Thomas Dale aged 46 years.
J. Hemmi aged 40 years.
Edward Edwards aged 50 years.
George Smith aged 24 years.

S. Harris aged 38 years.
L. Harris aged 36 years.
William Davies aged 34 years.
Edward Jay aged 44 years.
C. Meade aged 38 years.
D. Lewis aged 31 years.
William Palmer aged 50 years.
J. Jones aged 27 years.
T. Edwards aged 24 years.
J. Sage aged 42 years.
T. Thomas aged 36 years.
J. Davies aged 18 years.

On Saturday the inquest was opened at the Tredegar Arms in North Risca by the Coroner Mr E.B. Edwards. It had previously been decided to hold the inquest on the body of T. Bowden, a hitcher, who was the first to be discovered at the bottom of the shaft. After viewing the body the Coroner adjourned the proceedings until 17th. August.

At the time of the inquest the top old workings of the Old Longwall could not be reached because of gas but the gas had been removed when the ventilation was restored.

On the 1st. October an inspection was made by Messrs. Dickenson and Cadman who accompanied by Mr. Wilkinson the new general manager who had been appointed because Mr. Llewellyn had left for a more lucrative position aboard to which he had been appointed before the explosion.

In one place in the east level they found coked coal dust about half an inch thick was left on the props and coal trams and there was much more here than in any other part of the mine. The flames had come up the face and into the east return air way.

Mr. Dickenson did not think it mattered that the explosion was in Hills or the Old Longwall because if it was in the former then there must have been gas in the latter or a very large quantity of gas was sucked out which was a dangerous state of things. It was impossible to say where the blast originated as the doors were blown in all directions.

It has been decided not to resume work in any of the Old Longwall places and the proprietors were made to fill up the east return. A cutting was made form near the top of the west main heading into Haye's level which when connected will be the return air way.

The falls in the No.1 dip north had not been cleared and on the 1st. October the ventilation fan was looked at. The building for the outlet air was about 48 feet high and 133 feet in area and was about 50 yards from the downcast shaft so that although the shafts are situated on the same side of a deep valley, in bad atmospheric conditions it might prevent the dispersion of the ventilated air and it there was a possibility that it could be drawn into the downcast shaft.

After his inspection, the Inspector concluded that the explosion was due to an outburst of gas but there was no evidence to prove this. The jury at the inquest thought that the mine was well managed. The blast was very violent and even the stoutest timber was blown down. It passed from the north side to the south side. On the north side the bodies were little burnt but the cause of death had been shock. Some had limbs blown off an the clothes of many were ripped off. According to the medical evidence the burning would not have caused their deaths. Traces of burning were left on the coal and the props in the working faces and there was coked coal dust in the Old Long Wall about half an inch thick.

There were several theories as to the cause of the explosion-

- 1). A sudden outburst of gas at the top of Wrentmoores' landing. This theory was supported by the direction taken by the blast.
- 2). The gas that may have been in the old workings above the main level close to the downcast shaft where crushed arches were being replaced by baulks of timber and open lights were used.

3). That it was lightening that went down the shaft. If this was so then there would have been burning an all four faces and this was not the case.

4). The ventilation was temporally deranged by a door being left open or on interruption of the fan. Mr. Dickenson thought this was the most likely. He thought that there were fast places in the pit and the ventilation good which would admit only a brief flame. He thought that the ventilation had been interrupted by some means.

Another possibility was that the fan could have been adversely affected by the thunderstorm at the time of the explosion. On the 1st. October the weather was fine but there was a little water standing underneath the fan and the air coming from the mine was saturated with moisture. Spray was being blown through a crevice between the shaft bottom and the fan but the crevice was not large enough to admit the passage of a large quantity of water at one time. It was considered possible that water from the thunderstorm could have accumulated in the fan and impeded the ventilation.

It was also found that dust was accumulating in the roadways and that the ventilation had not yet been returned to the original. At the inquest it emerged that the colliers were in favour of stall working on the grounds that it gave more protection from falls.

A lamp with a pick hole in it had been found near the body of a collier named Matthews and it was speculated that this had caused the explosion. The number of the lamp was 408 and that corresponded with it being issued to Matthews. The lamp was handed to the Police and the evidence was produced at the inquiry.

The questions as to where the gas came from and how it fired were considered. Mr. Dickinson thought there was a general accumulation of gas and other expert witnesses thought that there could have been a sudden blower or outburst resulting from a sudden fall of roof or from the floor and the general conclusions of the witnesses thought that the latter was the most likely cause.

As to how the gas ignited the naked light at the bottom of the shaft was discounted as was blasting and the presence of pipes or matches in the mine. No keys were found on any of the bodies.

After hearing all the evidence, the Coroner summed up-

“Gentlemen of the jury, In now congratulate you on coming to an end of this long inquiry. You have paid very great attention to it, for which I am obliged. The greater part of the inquiry, and particularly the latter part, has been more for the Secretary of State than for you because there is nothing in the management of the colliery that you can take any notice of, unless you can prove direct neglect, and certain neglect which cause this explosion. You might have three things to inquire into: first of all, the cause of death of this poor man and if possible how this explosion took place and whether there is neglect. As for as the neglect goes, gentlemen, on the evidence here given today, I really cannot point out one single instance of it. It seems to me that the pit has been managed exceedingly well, and everything done that possibly could be done to secure the safety of the mine. Therefore, I tell you now that I could not point out one single neglect that you could recognise in your verdict.

As to the explosion, how it took place is still a mystery you will never hear it. You have heard these gentlemen examined today, but it is really and truly a matter of opinion of their only. The mouths of those who could have told you how this explosion took place are sealed for ever and therefore you will never come to a conclusion except for the opinion which you have from these learned gentlemen the subject.

Now with regard to the third, the cause of death, there is no doubt at all, gentlemen, what the cause of death was. The cause of death was in consequence of this explosion in this colliery and, therefore, there is not a single doubt upon that. It seems to me that the only possible verdict that you can give would be that this poor man died from an explosion in the Risca Colliery. You may, if you please, use the word accidental but it will be a matter amongst yourselves. I do not know that you require any more assistance, gentlemen, therefore will you consider your verdict.”

The jury retired and returned the following verdict-

“That Thomas Bawden was killed by an explosion at the Risca Colliery what caused the explosion we have no evidence to prove but the jury men are all of the opinion that the colliery was well managed.”

BERSHAM. Wrexham, Denbighshire. 3rd. August, 1880.

The colliery was the property of the Bersham Coal Company and had recently been sunk to the Main Coal Seam and the workings in the mine were not very extensive but the coal was known to give off a great deal of firedamp. The Main Coal was reached by a shaft 418 yards deep. The diameter of the downcast shaft was ten feet six inches and that of the upcast thirteen feet. The ventilation was by a Guibal fan, 30 feet in diameter and the total amount of air passing through the mine on the day of the explosion was 43,110 cubic feet per minute and of this quantity, 5,980 cubic feet went to the West Side and 11,040 cubic feet went to the East Side.

The coal was worked by gunpowder and on the evening of the disaster shots had been fired at the far end of the No.2 West Level which had ignited a blower. Attempts were made by the workmen to smother the flames but without success and eventually they left the mine and went to seek the help of the manager were.

The manger with some firemen and others, nine in all, went down the pit and arrived on the scene and tried to cut off the ventilation by means of stoppings. By this time the smoke had become so dense, they could not get close to the face or the intake end of the West Level. They appeared to have partly opened an air door to try to drive away some of the smoke. The opening of the door reduced the ventilation on the North level and the neighbouring places. Gas appeared to have accumulated very rapidly and eventually came into contact with the flames in the West Level and exploded at a point 335 yards from the pit eye. The manager was killed along with seven others and a workman named Valentine was so seriously injured that he died a few days later.

Those who lost their lives were-
William Pattison aged 57 years, manager.
Joseph Mathias aged 34 years, fireman.
Edward Owen aged 49 years, fireman.
John Johns aged 42 years, fireman.
James Roberts aged 36 years, fireman.
Henry Valentine aged 44 years, pitman.
Thomas Evans aged 32 years, collier.
Edward Parry aged 36 years, collier.
Robert Lloyd aged 39 years, hooker-on.

The inquest into the disaster was held at the County Buildings before Mr. B.H. Thelwell, Coroner and the jury. Th members of the jury were, Messrs. Robert Roberts, John Salisbury, William Robert Griffiths, Edward Tunnah, David Yates, William Edwards, William Henry Simpson, Stephen Jones, R. Jones, John Prince, Benjamin Lloyd, Richard Pennah, Daniel W. Robinson, John Jones, John, Owens, and Robert Green,. Also present were Mr. Henry Hall, Inspector of Mines and his assistant, Mr. Hedley, Mr. J. Walker, a mining engineer of Wigan and number of managers from surrounding collieries. Mr. Ellis, solicitor of Wigan, appeared for the Colliery Company.

Mr. Walker, of Wigan, was the first witness to be called. He had acted as consulting engineer to the Company from the preceding March and he thought the explosion had take place in the no.2 heading, west of the No.2 pit. He had examined all the workings on the 26th. and 28th. July with Edward Lloyd Jones, the mineral agent and they found the ventilation in good order and the only gas to be found was in an office close to the downcast shaft, which had been destroyed by the explosion.

A collier, John Williams, who had worked on and off at the colliery for about four years, knew all the men that had been killed. he went into the workings at 2 p.m. on the day of the explosion with his brother. He had seen shots fired by Edward Owens about 8 p.m. and some before this. He did not know if the place had been examined by the fireman . He and his brother worked until 8 p.m. and did not see any gas in their place but there was some in the next about five yards away. Edward Owens, one of the victims, called to him that the gas had fired and added, *'let's go lads and put it out.'* John Williams went into the place with another collier, John Hughes and they tried to brush out the gas with a piece of brattice cloth. They did not succeed and gave up and went on the surface. William believed that gas had been ignited at a moderate blower.

Joseph Jones, another collier, said Edward Owens was always close when he fired the shots and a shot was never fired without the fireman's orders. When they could not put out the blower, they all got frightened and ran away by Edward Owens sent Jones for some water from the pit eye. When he returned, he could not get to Owens because of the smoke, he tried to go another way but by that time the alarm had been given and everyone was running the other way. He went with them and did not see Owens on the pit bank.

James Owen, collier, went down the pit at 2 p.m. and knew all the men who had been killed. He was working on the North Seam Level and about 9 p.m. he was called by others to come and try to put out the fire. he had gone on Owen's orders with Jones to get water from the pit eye and could not get through the smoke on his return. He met the manager, Joseph Mathias, but no words were exchanged between them. He had been a collier for forty years and when blowers had been seen, attempts were always made to wedge the coal down.

Henry Mathias, a collier, thought it was a dangerous colliery to work in but that it was carefully managed. Thomas Steen, also a collier was working on the East side of the North Level. At about 8 p.m., John Hughes came in and asked he and his partner, Evan Parry, to come and help him put out the fire. they went back and found smoke and had to run for their lives. He saw the coal on fire and heard a man named Anthony calling out as he was smothering on the road, he went back to help him. The wind rushed through the workings and a door slammed violently shut. Sure felt sure that there had been an explosion as he knew there must be gas close by. Three days before Joseph Mathias had told him to put up rails to prevent people going into the place because gas was present.

Mr. N.R. Griffiths, mining engineer of Wrexham, heard the explosion at midnight and immediately drove to the colliery. He was told the position by John Pattison and Mr. Hough and they went to look at the air that was coming from the mine through the fan drift and there was strong smell of burning coal coming from the mine. Griffiths and Hough descended the downcast shaft in the bottom deck of the cage as the cover had been blown off the top deck. They found some damage to the shaft. The water rings were broken which made it very wet and the down signal strand was broken about half way down for about four yards from the bottom and they found that the rods on the north side had been blown into the shaft and the cage jammed against them.

They returned to the surface where they met Mr. Dodd and got a ladder. With the help of the ladder, Dodd and Griffiths got into the north inset and told the other two to wait in the cage for them as they set off along the north Level. A few yards from the shaft they found a fall of roof and just beyond this they found the first body which was later found to that of William Pattison. He was lying on his face and knees facing the shaft and appeared to have been blown towards the shaft by the blast. They satisfied themselves that he was dead and went along the level. They found that both stoppings were down as was the air crossing and the air supply decreased the further they went.

At the old longwall working they could smell burning and a little further on they found Valentine alive. The door to the First West Heading was blown out and the air was stagnant. They went along the North level and there was thin, white smoke hanging in the roof. The afterdamp was very strong and affected Griffiths so they found they could go no further. They shouted once or twice but got no reply and came to the conclusion that there was no one left alive in that part of the mine. He became worried for the safety of other parts of the pit and thought that Valentine would

have some information. He returned to the pit eye and made arrangements to take Pattison's body to the surface where he spoke to Valentine.

Valentine told him that when he had left the pit eye, the hooker-on was there and as he had gone towards the north level, he had met Pattison going towards the pit eye. Pattison had told him to hurry and Valentine was certain that the men must be further along the North Level. Valentine also confirmed that the blast came from the Level towards the pit eye.

Griffiths went back down the pit with Mr. Hedley, the inspector and some men they sent to the South Side to look for the hooker-on's body. The body was found under the guide rods that had been blown into the South Inset. They found that the afterdamp was not as strong in the north Level and as they made their way down, they found the bodies of John Jones, Edward Owen and Robert Lloyd. They went back to the surface where they met Messrs. Walker, Barnes and Hall.

The work on the bratticing started on the morning of Saturday 7th. and the Second West Heading was reached. The door was found shut and not damaged by the explosion but a board was broken. This had been done intentionally, apparently to let some air pass through the door. The stopping in the Main Return was knocked out to let the air circulate. The bodies of James Roberts and Thomas Evans were found on the inbye side of the stopping.

Griffiths did not go down the pit again until the following morning when the bodies of Evan Parry and Joseph Mathias were found. On the 18th. August, the ventilation was restored throughout the pit and a full examination of the mine was made by the Inspectors and others who were interested parties.

From the evidence that was available it was seen that the explosion came Along the North Level and in the workings on the South Side there were indications of a violent concussions which had blown tubs for some distance.

The last witness to give evidence was John Laidley Hedley, Assistant Inspector of Mines. He was critical of the use of gunpowder in mines and said-

“Firedamp was freely given off in all parts of the seam and at the time of my inspection showed at the flame of the lamp in all the south headings, in addition to which there were blowers in several places. The danger of using gunpowder in such places was pointed out to Mr. Pattison, who presumably acquiesced in our views , as the work in this part of the mine was discontinued. The question the naturally arises whether in a seam of this character, it is safe to fire shots at all. I am strongly of the opinion that shots should not be fired at any time when blowers are perceptible and that under any circumstances gunpowder should only be used when the men ordinarily employed in the mine are out of the mine. If it is held that the mine can not be worked under these circumstances, I may say that the principle is now being carried out in a number of fiery mines in Lancashire.”

SEAHAM. Seaham, Durham. 9th. September 1880.

The colliery was the property of the Maquis of Londonderry and was near Seaham Harbour, sixteen miles from Newcastle and one and a half miles from the coast. The coal from the colliery was sent to Seaham harbour where it was shipped to home and foreign ports and at the time, the colliery was large and one of the deepest in the country and at the time of the disaster, was employing three hundred and sixty men above ground and one thousand three hundred and forty men and boys below. It was under the management of Mr. V.W. Corbett who was the chief mineral agent and Mr. T.H. Stratton was the resident certificated manager.

There were two shafts at the colliery, No.1 and No.2 pits. The one on the east side to the Harvey Seam, was divided into two equal parts by a three inch brattice. Both were used for drawing coal and were fourteen feet in diameter and was the downcast shaft. The other was one hundred and fifty yards deep sunk to the Hutton Seam. This is the No.3 shaft and was fourteen feet in diameter and was used for drawing coals and was divided with brattice and is the upcast shaft.

The seams were at two hundred and fifty five fathoms, the Maudlin Seam was thrown down to this level by a deep fault and was reached by a stone drift and the ventilation furnace was also at

this level. The two districts that were worked at the colliery were, the Hutton seam which was to the north of fault which brought the seam down to the level of the Harvey seam. The east side of the pit was sunk to this level at two hundred and eighty one fathoms with a drift driven through into the Hutton seam. This was as the No.2 pit and the workings were immediately beneath the Maudlin seam.

The Main Coal seam was at two hundred and eighteen fathoms and was three hundred and fifty yards west of the No.3 pit. The coal that was got in this level was dropped down a staple to the Hutton seam level at two hundred and fifty yards to the west of No.3 and then were drawn to the pit bank.

The Seaham pit, like many in the area, had a partition of planking running down the centre. The planking was of three inch planks of the best quality and it was on the same principle as the Hartley colliery but at Seaham there were three shafts, one upcast and two downcast but there were one hundred yards of partition in the drawing shaft and in the fire these had been destroyed. Mr. William Pickard, from Lancashire offered to give evidence to the inquiry after he had inspected the mine.

At 10 p.m. on a Thursday night, two hundred and thirty one men and boys descended. There were eleven deputies, eight coal hewers, one hundred and forty six stone-men and shifters, twenty four putters and drawers, two enginemen and firemen, four horse keepers, two onsetters, two furnacemen, and two fitters. All went well until, at 2.30 a.m., the explosion took place. It was heard at the pit bank and was described as being 'like the report of a heavy canon'. The report was followed by an upheaval of dust and smoke and a large numbers of brilliant sparks from the shaft.

The explosion killed everyone in Nos.1 and 3 Hutton Seam and the Maudlin Seam except the on-setter at the bottom of the downcast shaft and four shifters who escaped from the south side workings.

Everyone working in the Hutton and Main Coal escaped the explosion. Forty two people got out of the No.2 Hutton seam and nineteen from Main Coal. Four persons also escaped from the returns from the south way in the No.3 Hutton seam but thirteen others, who had refused to accompany them, died. With the on-setter from the No.1 pit who escaped, only five from the Hutton Seam were saved. A total of sixty seven got out of the pit alive.

Of those that lost their lives, twenty eight were hewers, ninety nine were stonemen and workmen, twenty were putters or drivers, two were enginemen or firemen, four were horse keepers and two were furnacemen.

The manager, Mr. Stratton. was soon at the pit with several other officials and set about rescue operations as soon as possible. It was soon discovered that all the three shafts were blocked and the cages jammed so that they would move neither up nor down. The manager and two workmen were lowered down the air shaft by rope loops when they heard distant raps from the main coal seam but the mass of rubbish in the road prevented them getting near the entombed miners and they found some of the men still alive.

The explorers were brought back to the pit bank and had a consultation with Mr. Bell, the Mines Inspector, the viewers and other colliery managers and as a result, the efforts were doubled to get the shafts into working order.

One shaft was cleared during the day and by the afternoon another party was made up and went down the pit. Nineteen men were reached in the Main Coal Seam and three of these were brought to the pit bank up the No.2 shaft. These were the ones that Mr. Stratton had heard when he first descended. Later a fourth man, William Cowley, was brought up and said that there were others waiting at the pit bottom.

It was found that there were sixteen others who were at the pit bottom. They were told to stay where they were until proper arrangements could be made to bring them up and the work of clearing up went on and forty more men were found alive in the workings. During the afternoon, batches of these men were brought out of the pit but it was thought that about one hundred and seventeen were still believed to be in the fated mine. The Hutton seam was third from the top and

was worked in three sections about a mile from each other. The Main was the first to be explored, then the Maudlin and finally the Hutton.

The Maquis of Londonderry arrived at the colliery and had consultations with the managers. About 10 a.m. on Thursday a party of viewers returned to the surface and reported that the colliery was on fire in three places, in the stables, the Hutton and the Maudlin seams and the engine house of the No.1 pit was on fire.

The work of exploration and recovery was slow and dangerous due to the damage to the shafts and the wreckage in the main ways. When the rescue parties got to the bottom of the shaft, it was found that there were fires burning in the No.1 engine house and the donkey engine house, the Maudlin stables and the bottom of the Main Coal staple.

An attempt was made to explore the east of the Maudlin seam where another fire was found raging in the stables. This was fed by the fresh air that the rescuers had brought in and there was a great danger of an explosion so the decision was taken to cut off the ventilation and everyone was withdrawn from the mine. The furnace fires had to be extinguished and the work of recovery went on until the 1st. October when one hundred and thirty six bodies were recovered from the No.1 and No.3 pits, in the Hutton Seam and the north district of the Maudlin Seam.

Sixty seven survivors had been brought out of the pit and numerous bodies were found and brought to the pit bank. Nearly two hundred horses and ponies were killed and it was soon evident that great damage had been done to the mine.

The work at the colliery continued and the rubbish was cleared and the ventilation restored. More mangled bodies were brought up and they could be identified only by their clothes. More than fifty horses and ponies were found in the Hutton and Main seams and they were brought to the surface.

On the Saturday morning after the disaster, the Home Secretary visited the colliery and was met by Lord Castlereigh M.P., the eldest son of the Maquis of Londonderry. The Home Secretary took the occasion to compliment Mr. Stratton who had just come up the No.3 shaft with a body and he complimented him on his gallantry on being the first to descend the pit.

There was an official statement at the the pit on Monday evening. The statement read-

“That in the opinion of this committee, it would be very unsafe to open out the stoppings in the Maudlin Seam for a considerable time yet. In the meantime every possible attention must be placed to places where air can possibly get into the shut-off workings, particularly in the Low Main Seam. The committee have fully considered the question that, under no circumstances, can danger to those workings arise from the fact of the Maudlin seam being opened.”

There was another meeting of engineers and the management of the colliery on Tuesday and it was agreed that the plan to renew the ventilation and furnaces was to go ahead as soon as possible. The No.1 pit was in the charge of William Coulson a master sinker of Durham, who expected to have the cage working by the next day, and by Wednesday night there would be an opening through to the Hutton seam. When this was done, the recovery of the bodies could commence.

By Thursday the exploring party had got the ventilation in and reached the No.1 pit in the Hutton seam. This was called the ‘Far-off Way’ which is about one and a quarter miles from the No.3 shaft in the South District. They found that much of the mine had been destroyed by the violence of the explosion.

Strangely they did not find any falls nor did any of the bodies bear any trace of violence. From the appearance of the bodies it would seem that none of their lamps had gone out. The men seemed to have been travelling outbye, aware of the explosion and had been overcome by chokedamp. They were found with their lamps still in their hands. Twenty men and boys were employed in this part of the mine and fifteen men and boys had been recovered. Two or three were found with their backs against the coal, sitting as though they were asleep. Some of the bodies were in a bad state and were swollen and the stench was very great. They were identified by their lamp numbers and the clothes that they wore.

The was an underground consultation and the men were sent up the shaft to get disinfectants and sheets. Each body was disinfected and tied up in a canvass sheet then placed on a stretcher to be carried out ready to go up the shaft to the pit bank. The exploring party could have made it's way to the face but it was thought that this would be unwise because of the stench and the foul air. There were still about 100 men left in the mine.

By 5 a.m. on Thursday the fires were out but all hope was lost of getting anyone else out of the mine alive. The explorers found no traces of gas in the pit but the victims had suffered the full force of the explosion and were badly mutilated.

One man was described as being '*as flat as a board.*' The majority of those saved were from the Hutton No.3 pit which was only four hundred yards from the shaft. The other two sections of the seam, where the bodies were supposed to be, was up to two and a half miles from the shaft.

The rescuers found messages scratched on a water bottle by Michael Smith after the explosion-

"Dear Macerate???, there are 40 of us altogether at 7 am. Some are singing hymns, but my thoughts wee on little Michael that him and I would meet in Heaven at the same time. Oh dear wife God save you and the children and pray for me. Dear wife, farewell, my thoughts are about you and the children be sure to learn the children to pray for me. Oh what an awful position we are in."

At a conference of engineers at the surface, it was considered unsafe to recover the bodies and it was decided to seal the Maudlin seam as soon as possible but weeks were to pass before the pit was in working order again. The work was completed on the 2nd. October by putting two strong stone dams, or stoppings in the two intakes and one in the main return. This left twenty nine bodies that had not been recovered.

It was hoped to re-open at the mine by the end of the year but a careful examination, showed that there was some leakage of gas from some of the old workings in the Low Main seam and further stoppings and dams had to be made and it was thought prudent not to re-open the mine.

Those who lost their lives were:-

Thomas Alexander aged 36 years.

William Barrass aged 28 years.

John Batey aged 33 years.

William Bell aged 44 years.

James Best aged 51 years.

Joseph Birkbeck aged 64 years.

Joseph Bowden aged 22 years.

William Breeze aged 33 years.

William Brown aged 54 years.

Edward Brown aged 21 years.

George Brown aged 62 years.

Nathaniel Brown aged 20 years.

George Brown aged 26 years.

Patricvk Carroll aged 44 years.

Thomas Cassady aged 22 years.

Joseph Chapman aged 35 years.

James Clark, snr. aged 47 years.

James Clark, jnr. aged 20 years.

Robert Clarke aged 71 years.

Joseph Clark aged 23 years.

Richard Cole aged 44 years.

Joseph Cook aged 32 years.

John Copeman aged 32 years.

Joseph Cowey aged 40 years.

William Crossman aged 18 years.

Thomas Cummings aged 71 years.
Walter Dawson aged 49 years.
Charles Dawson aged 37 years.
Robson Dawson aged 34 years.
Richard Defty aged 28 years.
John Dinning aged 51 years.
George Diston aged 55 years.
Isaac Ditchburn aged 39 years.
Lees Ball Dixon aged 26 years.
George Dixon aged 47 years.
James Dodgin aged 62 years.
Richard Drainer aged 56 years.
Robert Dunn aged 24 years.
Henry Elesbury aged 70 years.
William Fife aged 44 years.
Jacob Fletcher aged 50 years.
Thomas Foster aged 17 years.
Thomas Foster aged 64 years.
Richard George aged 31 years.
Dominic Gibbons aged 46 years.
Thomas Gibson aged 37 years.
Robert Graham aged 26 years.
Thomas Greenwell aged 29 years.
Anthony Greenbanks aged 27 years.
John Grey aged 51 years.
John Grounds aged 19 years.
Thomas Grounds aged 27 years.
William Hall aged 60 years.
William Hancock aged 19 years.
Robert Haswell aged 19 years.
Thomas Hays snr. aged 46 years.
Thomas Hays jnr. aged 23 years.
James Hedley aged 17 years.
Michael Henderson, snr, aged 57 years.
Roger Henderson aged 25 years.
Michael Henderson, jnr. aged 22 years.
William Henderson aged 19 years.
James Higginbottom aged 62 years.
Thomas Hindson aged 40 years.
William Hood aged 28 years.
George Hooper aged 51 years.
Charles Horam aged 26 years.
John Hunter aged 25 years.
Thomas Hutchinson aged 60 years.
John Jackson aged 61 years.
Robert Johnson aged 34 years.
Edward Johnson aged 39 years.
James Johnson aged 22 years.
Thomas Keenan aged 37 years.
Michael Keenan aged 50 years.
James Kent aged 16 years.
John Kirk aged 67 years.

John Knox aged 17 years.
David Knox aged 14 years.
George F. Lamb aged 36 years.
Robson Lawson aged 14 years.
John Lock aged 50 years.
Joseph Lonsdale aged 67 years.
Joseph Lonsdale aged 48 years.
John Lonsdale aged 27 years.
Thomas Lowdey aged 48 years.
John McGuinis aged 31 years.
William McLauchlin aged 54 years.
John Mason aged 21 years.
John Miller aged 25 years.
William Moore aged 30 years.
William Morris aged 54 years.
Walter Murray aged 42 years.
John Measham aged 42 years.
John Henry Norris aged 23 years.
James Ovington aged 49 years.
John Owens aged 14 years.
George Page aged 55 years.
John Thomas Patterson aged 31 years.
Mark Phillips aged 22 years.
Joseph Pickles aged 51 years.
Edward Pinkard aged 18 years.
John Potter aged 43 years.
Robert Potter aged 47 years.
William Potts aged 41 years.
Henry Ramsay aged 33 years.
Anthony Ramshaw aged 65 years.
Robert Rawlings aged 39 years.
Joseph Rawlings aged 49 years.
Benjamin Redshaw aged 25 years.
William Richardson aged 53 years.
John Riley aged 70 years.
Thomas Roberts aged 45 years.
George Roper aged 25 years.
William Roxby aged 24 years.
Alexander Sanderson aged 34 years.
Anthony Scarfe aged 40 years.
Silas Scrafton aged 17 years.
George Sharp aged 39 years.
George Shields aged 23 years.
James Shields aged 25 years.
Robert Shields aged 52 years.
John Short aged 18 years.
William Sigh aged 30 years.
William Simpson aged 31 years.
James Slavin aged 26 years.
Michael Smith aged 34 years.
Anthony Smith aged 39 years.
Christopher Smith aged 36 years.

Thomas Luke aged 26 years.
John Southern aged 40 years.
William Spanton aged 39 years.
John Spry aged 49 years.
Joseph Straughan aged 21 years.
William Strawbridge aged 48 years.
William Henry Taylor aged 24 years.
Joseph Theobald aged 67 years.
Henry Turnbull or Bleasdale, aged 23 years.
Robert Clark Straughan aged 17 years.
Alfred James Turner aged 18 years.
Samuel Venner aged 52 years.
William Venner aged 24 years.
James Walker aged 42 years.
Joseph Waller aged 16 years.
Benjamin Ward aged 35 years.
John Watson aged 38 years.
Frank Watson aged 61 years.
John Weir aged 47 years.
Robert Wharton aged 35 years.
John Whitefield aged 17 years.
William Wilkinson aged 40 years.
Samuel Wilkinson aged 26 years.
John Wilkinson aged 20 years.
William Wilkinson aged 20 years.
Thomas Henry Williams aged 14 years.
David Williams aged 18 years.
Thomas Wright aged 26 years.

The hundred and sixty one dead left one hundred and five widows, one hundred and twenty six sons, one hundred and thirty nine daughters, six mothers, four sisters and two grandchildren, a total of three hundred and eighty two people who would require relief.

Most of those killed were members of the Northumberland and Durham Permanent relief Association and at a conference in Manchester, Mr. William Pickard, the Miners agent for Lancashire, said Lord Londonderry had taken a great interest in the workforce and the sufferers of the calamity. He also criticised the system of sinking pits in the north. The pits were sunk through Magnesian limestone and had a problem with water. Pickard was also critical of the use of gunpowder in the mine and held the opinion that powder should not be used in fiery mines.

The inquest into the disaster was opened on the 10th, September by Mr. Crofton Maynard Esq., Coroner for Easington. At the first session, the jury formally identified some of the bodies at the Londonderry Institute in Seaham and the proceedings were then adjourned until the 19th. October. At the resumption of proceedings

The inquest opened and the Inspector wanted the proceedings to be adjourned until all the evidence from the mine had been gathered but the coroner said he would start the evidence from men who had worked at the pit when the explosion took place so that it would be fresh in their minds.

The evidence was taken first from the hewers and that 'class of man' and then from the overmen and finally from the expert witnesses, the viewers and finally the scientific evidence.

William Cummings was the first witness. He was employed as a shifter and went to work at 10 p.m. on Tuesday. John Mason and George Dixon were with him. At 2.20 he felt a strong wind from the direction of the shaft about a mile from No.3 and he heard a report.

Thomas Hinsdson was making man-holes and he had been told not to fire shots without orders. On his way to the shaft he saw a burnt man and dead one against a tub near the main staple pit. He

came to a fire which they could not put out as they were exhausted. The main staple was wrecked as the blast came up. By 4 p.m. they had got the fire out and tried to make their way to Nos.1 and 3 shafts. They could not get to the bottom of No.3 so they went to the bottom of the staple pit and waited there until 5 a.m. They shouted and got no answer. In travelling from No.3 to No.1, they found a heavy fall near the Maudlin engine and a body with clothes on which was on fire. They extinguished this and some timber also. On getting to the Maudlin they found another fall and a body which they did not recognise at the time.

They went on and found another fall and three men in a hole who came out when they got there. There was a fall at No.3 and he asked Robert Wilson to go over the fall and he followed. They found Laverick unconscious. The party got to the shaft and stayed there until they were got out of the pit.

Ralph Marley was a stoneman and he felt a shock and then there was a smell. His mate went to see if there were falls and he came back and said that there were not. He and a workman named Wilson went towards the shafts and found smoke. They then went to the staple top and found fresh air and wreckage. They found Wardle in the overman's cabin. He was not burnt but he was cut. They got him to the shaft and then went to warn their comrades. They all got out alive, with the exception of Rowlings who was killed.

The inquest into the death of the men killed at the colliery on 8th. September last was resumed on Wednesday the 5th. January 1881 in the Londonderry Literary Institution in Seaham before Mr. Crofton Maynard the coroner.

Mr. Wright barrister was assisted by Messrs. Bell and Willis the Government Inspectors and Mr. Atkinson the assistant Inspector represented the Home Office. Mr. Edge barrister appeared on behalf of the Company and Mr. Atherley Jones, barrister, was present on behalf of the Miners' Union. Also present Mr. J.B. Eminson the manager of the colliery, Mr. Corbett, the head viewer, and Messrs. Foreman and Paterson of the Durham Miners' Union. There were many colliers and spectators present and the room was packed.

Jacob Steel a stone man said that he was in the Hutton seam at the time of the explosion. From what he saw when he was coming out of the mine the explosion might have occurred in the Hutton No.3 or the Maudlin seams. In the Hutton No.1 there were signs that the blast had gone in-by and there was three or four inches of dust on the tube. When questioned further he thought that the blast came from the furnace but he could not account for the furnaceman being found under the bars. He had a good opinion of the management if the pit,

John Turner, a stoneman, said that he worked in the No.3 Hutton seam and when he left the pit at 11 a.m. on the morning of the explosion the two Venners were preparing a shot at the refuge hole near the staple which would be fired that night.

Hinsdson and Rawlings had fired a shot about 20 yards out-by from the Venners but they would not be firing on the night of the explosion. and he saw no danger in firing the shots.

Two paraffin lamps were used at the main coal staple bottom and these were ordinary lamps. The master shifter used to light them between two and three o'clock in the morning and they were put out when the night shift was down. He never knew of any orders being given that they should not be lighted. He was of the opinion that it was these lamps that fired the gas and that the gas came from the old workings in the No.3 Hutton seam.

William Crozier a hewer was one of the men's examiners and he inspected the Hutton No.3, Third East Way, the Main Coal and the Maudlin seams in July last and found gas in a new return in the East Maudlin. The master wasteman ordered canvas to be put up and clear it away.

The system of management of the colliery was good one in his opinion and no expense was spared and the rules were observed as far as he knew. One man Robert Greener had made a complaint when gas was found and found fault with the examiners and the men complained that their lamps had to him 5 yards from the face because of the gas and they said that this was too far. They also complained that one of the deputies was dismissed for allowing the men to work in this way when the place was not workable. The deputy was Thomas Forster who sold up and went to America within a fortnight. He was of the opinion that the explosion was caused by Venners shot.

Joseph Spence a master was the man was the next to be called and said that he was in the pit the day before the explosions and saw nothing to alarm him. He had seen gas within 60 yards of the furnace but it was not explosion but well mixed. He had no idea how the explosion occurred. Thomas Burt a hewer another of the men's examiners was the next to be examined and had made the examination with Crozier. They found gas in the goaf of the Hutton No.1 and he thought that the explosion had taken place at the bottom of the No.3 staple Hutton and started between Venners shot and the staple bottom.

There was then some discussion between the legal gentlemen present with Mr. Edge barrister for the company bringing up the question about these seat of the explosion being not clear and the question of coal dust.

Hails Harrison a stoneman said that he thought that the explosion occurred in the No.1 fore holes and that 20 years ago he remembered coal dust taking fire at the bottom of the No.1 Hutton shaft.

Mr. T.H.M. Stratton, the manager of the colliery at the time of the explosion said that examinations at the pit effectively began on 15th. September. Previous to that what had been done was to try and save the men in the pit. He repeated his evidence as to being sent for on the morning of the explosion, his descent into the pit and what was done.

On the descents of the 8th. September he got as far as the main staple and found great disorder. He went down the No.3 shaft and found everything a great wreck and then he came up to find a means of putting out the fire. He went down again and remained down until 3 the next morning.

There was also a fire in the No.1 stables and during this time the men were extinguishing the fire and he was going through the pit where possible. All the men and ponies were dead. He had a consultation with engineers on the 10th. September and it was decided that no more explorations should be made until the gas was dealt with.

They got all the bodies out on the 9th. and 10th. that were near the shaft before the Maudlin Seam was closed.

On the 28th January 1881, Lord Londonderry the owner of the Seaham Colliery decided to open the colliery at Old Durham in consequence of the men at the Seaham Colliery refusing to work until the entombed bodies were recovered from the Maudlin seam of that mine. Old Durham colliery had been closed for several years and will give employment to about 700 men.

PEN-Y-CRAIG. Rhondda, Glamorganshire. 10th. December, 1880.

The colliery was the property of Messrs. Moses, Rowlands and Williams and was in the Rhondda valley sixteen miles from Cardiff. The Colliery was situated on the Taff Vale Railway in the Rhondda Valley, Glamorganshire and belonging to Messrs. Morgan and Rowlands of Pontypridd. and the workings extended into the district of two coroners. Mr George Overton for the North Division of Glamorgan and Mr. E. Bernard Reece for the Cardiff District.

The colliery had two shafts the No.1 four hundred and forty three yards deep and fifteen and a half feet in diameter was in the parish of Llantrissant. The No.2, downcast shaft was four hundred and thirteen yards deep and fourteen feet in diameter was sunk to the Six Foot seam which was seventeen feet thick in the parish of Ystrad-y-fodwy. The two shafts were one thousand two hundred feet apart. Up to May 1879, both shafts had been worked as bratticed shafts and the number of men restricted to twenty descending by each shaft. At the time of the explosion a connection had been made between the two shafts in the middle of May 1879 and two hundred and twenty eight men were employed during the day and one hundred and six at night. The colliery raised five hundred tons of coal in twenty four hours by a system of longwall working.

Locked lamps were used but shot firing was allowed by qualified men under sub-section 1 of No.8 General Rules. Ventilation of the colliery was by a fan at the top of the upcast shaft and before the explosion 70,000 cubic feet of air per minute were passing through the mine. This had been increased from 39,000 cubic feet per minute in September 1880. The increase in the ventilation was due to the size and number of the passages being increased.

Charles Moses, the overman of the No.1 pit left work at 6 p.m. on Thursday and saw nothing dangerous in the mine. David Davies overman at the No.2 pit said the same and John Price fireman at the No. 2 left the pit at 6 p.m. and met John Williams, the night fireman on the surface and had no gas to report. The ventilation of the mine was deranged by someone leaving a door open at the mouth of the upcast shaft where some repairs to the cage were going on and the fan stopped drawing air from the downcast shaft through the workings. This allowed gas to collect and it was fired by a naked light or a shot.

The explosion occurred at 1.30 am, when one hundred and seven men and boys were at work below ground and claimed one hundred and one lives. Immediately after the explosion people started collecting at the pit and exploring parties of volunteers were led by Mr. Richards, Mr. David Davies, Edmund Thomas, Edmund Davis and Mr. Galloway, the Deputy Inspector of Mines went down the pit the following morning.

The rescuers found falls, rubbish and gas barring their way and their passage was difficult and dangerous but four men were found alive at the bottom of the downcast shaft. John Morgan was taken out of the pit alive on Saturday morning having been without food for fifty hours. He was found wedged into a crevice with the body of a dead comrade next to him. He had been given up as dead and the Insurance Company was ready to pay out #30. His son and daughter had come from Bristol to console their mother. The explorers descended the pit which was four hundred and fifty yards deep. The dead were carried to the village of Traedaw.

Those who lost their lives were:-

John Jenkins, aged 54 years who died from his injuries.

Joseph Jones, aged 30 years who died from injuries.

Richard Lewis, aged 24 years who died from his injuries.

Griffith George, aged 24 years who was burnt and suffocated.

Morgan Morgan, aged 28 years who was burnt and suffocated.

John Morgan, aged 33 years who was burnt and injured.

Thomas Jones, aged 21 years who died from burns and suffocation.

Rees John, aged 19 years who was suffocated.

John Rees, aged 34 years who was suffocated.

Griffith Williams, aged 22 years who was suffocated.

William Grice, aged 23 years who was suffocated.

Noah Rodgers, aged 39 years who was suffocated.

John Lloyd, aged 40 years who died from injuries.

Howell Evans, aged 45 years who was suffocated.

James Jenkins, aged 40 years who died from injuries.

Phillip Samuel, aged 18 years who suffocated.

Sydney Welding, aged 15 years who suffocated.

John Davies, aged 25 years who suffocated.

Evan David, aged 32 years who died from suffocation.

Henry Brooks, aged 28 years who was injured and burnt.

William Davies, aged 26 years who suffocated.

Samuel Samuel, aged 14 years who suffocated.

David Lloyd, aged 70 years who suffocated.

Thomas Jones, aged 36 years who suffocated.

Evan Jones, aged 45 years who suffocated.

Thomas Herbert Jones, aged 25 years who suffocated.

James Chadwick aged 25 years, suffocated.

John Davies, aged 25 years, suffocated.

William Robling, aged 40 years suffocated.

John Evans, aged 35 years, suffocated.

Thomas Jones, aged 31 years, suffocated.

Morgan Thomas, aged 25 years, who died from his injuries.
William Howell, aged 21 years who was burnt.
David Evans, aged 23 years who was burnt.
Joseph Morgan, aged 25 years, suffocated.
David Lodovick, aged 45 years, suffocated.
William T. David, aged 21 years, suffocated.
John Willis McCarthy, aged 32 years who died from injuries.
Evan Rees, aged 27 years suffocated.
David Rosser, aged 20 years, suffocated.
Thomas Reed, aged 29 years, suffocated.
Evan Griffith, aged 22 years, suffocated.
James Francis, aged 50 years, who died from injuries.
William Lewis, aged 56 years, burnt.
Thomas Edwards, aged 59 years, suffocated.
William Parlour, aged 29 years who died from injuries.
William Pearce, aged 37 years died from injuries.
Alfred Fry, aged 30 years died from injuries.
William Fry, aged 27 years died from injuries.
William Lewis, aged 49 years, suffocated.
Edward Hughes, aged 42 years, burnt.
David Lewis, aged 43 years died from injuries.
James Williams, aged 38 years, suffocated.
Thomas Morries, aged 36 years, died from injuries.
James Murphey, aged 50 years, burnt.
William Evans, aged 38 years, suffocated.
Benjamin Howells, aged 52 years, suffocated.
David Watkins, aged 44 years, suffocated.
William Morgan, aged 56 years, burnt.
Thomas Morgan, aged 17 years, burnt.
James Lewis, aged 15 years, suffocated.
Evan Radcliffe, aged 30 years, suffocated.
William Maskman, aged 26 years, burnt.
Joseph Morris, aged 32 years, suffocated.
Evan Williams, aged 35 years, burnt.
John Jenkins, aged 42 years, suffocated.
John Thomas, aged 18 years, suffocated.
J.R. Williams, aged 23 years, suffocated.
John Hughes, aged 29 years, suffocated.
George Samuel, aged 30 years, suffocated.
Archibald Cooke, aged 27 years, suffocated.
Evan Davies, aged 15 years, suffocated.
John Snook, aged 52 years, suffocated.
Thomas Thomas, aged 31 years, suffocated.
D.D. Williams, aged 36 years, died from injuries and burns.
James Morgan, aged 75 years, suffocated.
David Thomas, aged 33 years died from injuries.
James Gibbon, aged 20 years burnt.
Zephaniah Gibbon, aged 36 years, suffocated.
Robert Roberts, aged 16 years, suffocated.
Richard Williams, aged 49 years, suffocated.
Samuel Lewis, aged 14 years, suffocated.
Edward Lewis, aged 42 years, suffocated.

W.R. David, aged 23 years, suffocated.
Evan Phillips, aged 19 years died from injuries.
Henry Jones, aged 32 years, burnt.
Ely Raps, aged 29 years, burnt.
David Evans, aged 26 years, burnt.
Henry Isaac, aged 32 years, burnt.
Thomas Isaac, aged 28 years, burnt.
John Davies, aged 42 years, burnt.
Thomas Williams, aged 40 years, burnt.
Evan David, aged 49 years, burnt.
Charles David, aged 24 years, suffocated.
Thomas Simon, aged 23 years, burnt.
Edward Job Morgan, aged 66 years, suffocated.
David Williams, aged 59 years, suffocated.
David Roberts, aged 31 years, suffocated.
Thomas Grice, aged 21 years, suffocated.
John Stone, aged 48 years, burnt.

Subscription for the relief was opened and the Lord Mayor offered to collect subscriptions. The inquiry into the explosion that occurred at the Naval Steam Colliery, Penycraig on the 10th. December was held at the Butcher's Arms Hotel Penycraig on Tuesday. The two coroners Mr. G. Overton and Mr. E.B. Reece sat jointly. Mr. Wright, a barrister, represented the Home Office. Mr. Henry Hall, H.M. Inspector for North Wales and Mr. Wales, the Inspector for South Wales were present and Mr. Sommons solicitor, represented the Company and Mr. W. Abram the Miners' Agent, the men.

The Police sergeant employed at the colliery said the 29 bodies had been recovered and it was thought that two were still not recovered.

The engineer Mr. Moses Rowland Rowlands at the colliery who also acted as manager was cross examined and he said he had not got a managers certificate but had worked in the mines first from coal getting and then as a clerk at the colliery and with his father for who he served as assistant manager. He had been manager and sole director of the colliery for two years with his father below him.

The mine was ventilated by a fan. On the Wednesday before the explosion there had been an accident at the colliery when the cage knocked up against framework the rope broke and the cage went back into the pit. It smashed another cage four guides and caused considerable damage at the bottom of the pit. On the evening of the 9th. the damaged to the rope was repaired and 50 men went down the other shaft to clear the wreckage at the bottom of the shaft. The manager said that he was positive that the fan was not damaged.

Before the explosion there were four overmen three of whom could not write and the time keeper and the lampman wrote their reports for them. He thought that the explosion had originated in Turbevilles headings and he believed that shot had been fired in the seam without permission because they had found bring tolls and safety fuses there after the explosion.

The same system of management was adopted in the steam coal as in the house coal and no extra safety precautions were taken except that the men did not work with naked lights. There was no difference in the shot firing and matches had been found in the clothes of one of the dead, the body of William Davies a general labourer.

Thomas Jones lamp had been found unlocked and he probably had sent to the lamp station to be relight. The manager allowed his father to go through the mine almost everyday as though he were the manager and he left one section of the pit to his father even though he was neither manager or undermanager and the witness pointed out that he was acting as his associate and not doing his duty under the Act of Parliament in allowing persons to perform the duties of management for him.

There was no men's examiner at the colliery but there had been an intention to appoint one but had not been done so because the colliery was small and new.

The report book for the first half of 1879 was missing and the manger could not account for this. It was the duty of the bookkeeper to keep the report books but he was unable to find them. He thought that the accident had been caused by a shot because the men who had been ripping the roof were found behind a train of coal where it was assumed they were sheltering from the blast of a shot.

Rowland Rowlands, the father of Moses, was the next to give evidence. He said his son was the manager but he received the highest salary. The Company paid him but his appointment was not defined. He had been in some trouble when he was the manager at the Cymmer but he had been a manager of a colliery since then. While he was a manager at the old Penycraig colliery the workings had flooded and two men drowned and the verdict was accidental death with no blame held on him.

John Jones Griffiths, the banksman, stated that Moses R. Rowlands left the No.1 pit about 11.15 before the explosion when he told the banksman "Mind be careful to properly cover the mouth of the pit". They only lifted the covering three times in the night.

At the recall of the inquiry the manager was recalled and he produced the report books which could not be found the day before. The report books containing reports of ten blowers. There had been an accumulation of gas in the downcast pit about 10 months ago in consequence of an overwinding accident at the pit and the work had to be stopped. The flue stack was struck down at the time but he did not believe that this was the result of the explosion but he thought it was stuck by lightening.

The downcast was sunk through some old workings of the Dinas No.3 and the old workings were kept open to turn the foul air into the Dinas pit. The Dinas proprietor complained of this and the sub-inspector of mines complained of it as it endangered the Dinas pit and he did not believe that it had anything to do with the Dinas disaster in 1879.

The lamps stations were not placed at the safest or the most convenient parts of the pit and gas had been found in one of the lamp stations. No union men were employed at the colliery and it was the only colliery in the Rhondda where there had been no strike for the last twenty years.

The day overman Charles Moses could not write and he could only put his cross in the report book and the Coroner remarked that the Act stated that the overman should be a literate man. The overman stated that the night overman must have opened his Davy lamp to fire a shot on the night of the explosion since he had no wire but he had heard no complaint about the management of the colliery.

Shots were fired in the coal as well as in the roof for ripping. The day overman said he had inspected the workings before the men went down and he received a report from the night overman he acted on it. If any collier lost his light in his work he would go to the lamp station and relight it.

In his last examination of the working places before the explosion when did not find any gas and he reported to the night fireman that the pit was clear. The night banksman said that he was in the act of pushing a tram from the mouth of the pit when the explosion occurred and he was knocked down and stunned by the shock.

A timberman said that he had seen several fire marks fixed up in the colliery as he came to work on the evening before the explosion and there was an escape of gas near the heading. He had smelt it as he went by for the past few months. He did not report this to the overman because he did not consider it his duty to do so and because he knew he would be discharged if he said anything about it. His father had been sacked from the Llwynpia colliery for making reports of gas escapes.

The main roads were not properly maintained, the timber was bad and there were spaces left in the roof where there had been heavy falls and there were canvas doors where the ought to have been wooden ones. He had been to Turbevilles heading about six weeks before the explosion and he saw Evan Lewis give a light to Rowlands the manager and both men had their lamps open. There were double doors shown on the plan that was shown in the court but in fact this was a single door of canvas.

He had been employed in building a lamp station with a fireman and he knew that there was a void extending 20 yards inwards behind the inner wall of the station and it was not properly walled up to be air tight. It appeared to be properly stowed but it was not.

He had seen the fireman Charles Moses opening his lamp at the bottom of the shaft. He was not a union man and he knew he would be sacked if he reported what he saw but he would rather die than live in such a place. He knew that if an accumulation of gas passed the lamps station it would at once explode.

Mr. Wales was Her Majesty's Inspector of Mines for the district. The explosion occurred at the Naval Steam colliery on Friday 10th. December 1880 which resulted in the loss of one hundred and ten lives. Mr. Wales was assisted by Mr. Henry Hall, the Inspector for West Lancashire and North Wales and Mr. Reece the Assistant Inspector for this district. From the fireman's report book a little gas had been found on the 13th. September in a stall at the No.1 pit but had quickly been dispersed. On 22nd. November 1880, gas was found between in a cavity which had been filled. In No.2 pit on the 28th. October 1880 a slight blower was found but no accumulation large of gas had been found. Only small quantities had been detected and these had been dealt with. The Inspector thought that there were three ways that the gas could have come, first it was possible that it could have lodged in the old roads, second the ventilation could have become deranged by a door being left open and third there could have been a sudden large outburst in some part of the colliery. 1). There was no gas in the old workings as they were very well ventilated but the Inspector thought that it was possible for gas to come from the old roads, 2). There was no evidence that doors had been left open and 3). He thought that an outburst was the most probable cause in the Turbevilles heading and exploded by passing through the gauze of a Clanny lamp. He did not think that it was exploded by a shot.

John Jenkins was the shotfirer and he had the reputation of being a very good and careful and throughout the valley. His lamp was found with the top off but the Inspector told the inquiry that he did not think that this man would do anything that would injure the safety of the one hundred of his fellow workmen the mine. A lamp with the top off was found in the lamp cabin and belonged to Thomas Jones. It was thought that this had probably been sent there to be relight by a boy but the lampman had not got the top off his lamp. The position of the No.1 lamp cabin was not in the correct place and was not in the intake air where it should have been.

Mr. Wales stated that he thought the shot firing should not be allowed in the Welsh Steam Coal collieries and he was aware that an outburst of gas would go through a safety lamp. Mr. Hall also gave evidence at the inquest. He thought that the explosion originated below the face in Turbevilles Heading and the lamp cabin. He thought that there had been a weighting of the longwall and that had forced out the gas and the gas was ignited either by a shot or a open lamp in the cabin.

A shot was fired at the time of the explosion and the position of some of the bodies seemed to indicate this but the evidence was ambiguous. Mr. Hall also thought that the lamp cabin was in a bad and he pointed out that the gob was always a source of danger. He recommended that the use of Clanny lamps to be discontinued at the colliery and Meusler lamps be used in their place.

Mr. J. Treharne Rees, the Inspector told the court that there were one hundred and five men down at the time of the explosion. Four were recovered from the Hard heading at the back of the downcast shaft and one from the No.1 West district near the downcast shaft. The remaining one hundred and one were all killed and their bodies recovered from the mine. He condemned shot firing in the colliery and the position of the lamp station.

The jury retired and returned with the following verdict-

"We the undersigned have unanimously come to the conclusion that the great catastrophe that took place at or near Turbevilles heading and was caused by a fall in the immediate locality thereby releasing a quantity of gas confined there above which becoming mixed with the necessary quantity of atmospheric air to make an explosion caused a great velocity in this mixture and coming into contact with a lamp became ignited blowing the flame through the gauze and we decided that it was accidental.

We strongly condemn the manager Mr. Moses Rowlands for not complying with the Special Rules as follows:- not recording the ventilation as per Rule 29, second, the loose manner of not recording the giving out of lamps and keys. Rule No.24, third, not producing thermometer readings and the barometer readings in No.26 General Rule, and we believe he was guilty of an error of judgement in erecting a lamp station in the return air way.”

NEW CATHEDRAL. St. Day, Cornwall. 19th. January 1881.

The New Cathedral Mine was purchased from the Stannaries Court about two years before the accident by the New Cathedral Copper and Tin Mining Company, Limited but it had been worked for only ten months. It was new mine that the previous owners had opened from the surface and no one knew the extent of any old workings on the lode but it was known that a parallel load had been worked about 40 fathoms to the south many years before.

At the time of the accident the men in the mine were James Matthews and James Ferral on the 52 fathoms level west of the engine shaft, on the same level east of the engine shaft were George Richards, Richard Gates, Richard Bennetts and William Northley. On the bottom level of 52 fathoms level were Joseph May, John Blacker and William Blacker.

At the inquest Thomas Murrish told the court

“I have worked in the New Cathedral Mine since the first day. On the 19th. January last I was working in the end of the 52 fathoms level west and left there about 2.15 p.m. There was a little water coming from the bottom of the end than in the morning but I had no misgivings. I told my comrade, the one who relieved me, James Matthews, and he said we are going to have bet ter ground, and had better try a 'take' from Captain Davey.”

James Matthews was the sole survivor of the disaster and he told the inquest

“I was one on the afternoon care in the New Cathedral Mine on the 19th. January last. I was working in the end of the 52 fathom level west of the engine shaft and had with me a boy called James Henry Ferral. I met Murrish at the adit on my way down he told me some water was rising from the bottom of the level. I told him I thought better ground was coming. The water coming out was of no quantity. It was just running, there was no force about it. I had no idea there was any danger. We had bored two holes, of which one was in the bottom. The water did not increase at all all those hole were fired. I went into the ‘platt’ and the boy with me. One hole went off the other missed fire. I prepared a fresh charge to fire the missed hole. I waited about half an hour and was preparing to go in when I heard a rush. I called to the men at the bottom of the shaft to come up, and I and the boy ran to the winze east of the shaft where the ladder way is. when I got on the ladder in the winze a rush of air put out my light. I had previously seen the boy take the ladder. I had called to the men in the east end of the 52 fathoms level but I don’t know whether they heard me. I kept up the ladders in the dark till I came to the adit, when I lit my candle and found that I was alone. I never heard of any of the men objecting to their work in the mine on account of water.’

Those who died were:-

Joseph May aged 37 years, miner.

George Richards aged 29 years, miner.

John Blacker aged 24 years miner.

Richard Gates aged 33 years, miner.

Richard Bennetts aged 17 years, miner.

James Ferral aged 15 years. miner.

William Northley aged 15 years. miner.

William Blacker aged 20 years. miner.

The ladder at the bottom of the winze by which Matthews escaped was a movable one so that stuff could be wheeled from the level end of the shaft. When the mine was pumped out the body of

the boy Ferral was found at the bottom of the 52 fathoms east level, grasping the ladder firmly with both hands.

At the inquest the agents stated that they did not know of the existence of the old mine and although the Inspector had made inquiries he had been unable to find any plans of the old workings. Captain Davey. The manager of the mine stated that a few weeks before his appointment he asked Captain Joseph Michell, one of his predecessors, if there was any a danger for old workings and was told-

“You can extend the levels west or east and you will find no communication anywhere.”

That was about nine months before the accident and Captain Michell had been in the locality all his life the jury returned a verdict of accidental death cause by the influx of water from old workings and exonerated the agents from all blame.

The 52 level was extended to the west after the accident with bore holes kept in advance of the workings and an old winze was found and the water was let down slowly and strong brick dam installed. This contained a three inch pipe so that if further water was encountered it could be drained off through the pipe without danger.

WHITEFIELD. Hanley, Staffordshire. 7th. February, 1881 The Institute workings of the Whitefield colliery, about five miles from Stoke-on-Trent and owned by the Chatterley Iron Company, were all in the Cockshead seam which was inclined at about 1 in 3. The coal was about 7 feet 3 inches thick and included a small band of cannel. The roof was good, made of a strong shale. The Institute pit was the downcast and 431 yards deep. The Laura Pit was the upcast and was 215 yards to the rise of the Institute Pit and 330 yards deep. The levels from the Institute it were driven for 600 yards to the north and 1,100 yards to the south where work to drive them further was going on. Levels were also started from the Laura Pit, 200 yards to the north and 550 yards to the south. The Institute workings lay between these levels and those of the Laura to the rise of the Laura levels. There were also dips being driven to the west from the Institute pit.

The coal was worked by ‘*bank and pillar*’ method called, in Staffordshire, ‘*drift and pillar.*’ The jigs were about 50 yards apart and the pillars about 20 yards wide. The North Side Institute was almost drifted back leaving a gob of about 27,000 square yards. On the south side 14 small drifts were either finished or at work and there was a gob area of about 10,000 square yards. Pillars were left at the top side of the gobs so as to secure an air road to the rise and ensure their ventilation.

One current of air with minor subdivisions ventilated the North Side Institute and Laura workings and another passed along the Institute south levels and back over some of the drifts of the travelling dip. A split went up the Box dip to go to the upper south drifts in the Institute pit and the joined another split which went along the main jig to the South Laura workings. A fourth current ventilated the dip workings and was joined on it’s return journey to the Laura by the exhaust from the smithy flue. These were all united in a dumb drift which entered the Laura Pit about 20 yards above the furnace chimney.

When the colliery was first worked, a smithy was placed in the main intake about 70 yards from the bottom of the downcast shaft. The hot air and smoke from the smithy fire was carried away by a flue made of 10 inch cast iron piping. For the first 15 yards the flue was carried long the main level intake and then it turned off into a side passage, through a pair of doors up a steep travelling way rising towards the level of the upcast shaft and forming part of the return airways of the colliery. About 20 yards above the doors this travelling way was crossed by a crosscut through a small door and terminated in the crosscut about 30 yards inside this door. There was always a lot of coal dust in this crossway and the outside flue was coated with dust consisting of either coal dust or soot of both.

The Assistant Inspector of Mines, Mr. Robert Arthur Sawyer, had visited the pit on several occasions prior to the disaster and found the ventilation very good but he commented that he had

never seen a smithy in a pit before and when he saw it working the flames were very small and he considered nothing wrong on his casual inspection. Mr. Thompson, the manager, told him that the smithy was to be moved and it did not occur to the Inspector that the flue would then be shortened and the intake pipes would have a cooling effect.

Mr. Wynne, the Inspector commented-

“It is, under almost any circumstances, improper to place a smithy underground in a fiery mine but in its original position any danger of heating from the flue was diminished by the circumstance that the first 10 or 15 yards of the flue leading immediately from the smithy fire, were in the main intake near the downcast shaft at the coolest part of the mine.”

About May, 1880, in the course of opening out the mine, it was found by the manager that certain alterations of the main intake would be obstructed by the smithy. Consequently, he removed the smithy into a room which was excavated for it, which was out of the main intake. The effect was that the flue not only shortened by 15 to 20 yards but was entirely out of the cooling current in the main intake. The regulations for the use of the smithy were not clear but it seemed that it was not unusual and perhaps common, for men and boys to light their smithy fire at night to clean gauzes and other purposes.

It was stated that the practice was not to take the flue to pieces and clean it inside and out once a month. At the time of the accident it was due to be cleaned and had not been examined for three or four weeks. It was uncertain whether it had been cleaned the month before because the man who looked after it was killed in the disaster.

Mr. James Atherton was a certificated manager and was employed at the colliery as an underlooker. He examined the workings on the south side of the pit on the 5th. February and found that the ventilation was as good as usual and he had heard no complaints about it. There was always some gas to be found in the two main levels on the south side which came from blowers which were not strong but were strong enough to hinder blasting.

The evening before the disaster was very cold and the fire in the smithy was kindled about 10.30 or 11 p.m. by some of the boys. It was not known whether they did it to do some work or because they were cold which they had not right to do. There was evidence that they fed it with coal and not breeze and that it was a larger fire than usual and the boys were blowing it. They were cautioned by one of the men about 11 p.m. that the fire was too large and at that time, it was noticed that a small portion of the flue was red hot.

About 1 a.m. the alarm was given that smoke was spreading into the roadways. The cross cut in which the flue ended was found to be on fire. Water was brought and efforts made to extinguish the fire but there was nothing with which to fight a fire, no hoses, extinguishers or buckets. The fire gained control, came out of the travelling dip and all efforts to put it out were abandoned about 2.30 a.m.

At about 2.15 a.m. on the morning of the explosion, James Atherton was sent for by Mr. Thompson and told that the pit was on fire and about 20 minutes before the explosion Thompson came out of the pit in a very excited state and said *‘that the pit was lost and the company ruined’*. He decided to withdraw the horses from the mine and sent the men down telling them to hurry. None of the men refused and Atherton told Thompson that he feared an explosion as he had seen that the fire was gaining. Thompson told the men to hurry and get the horses. The explosion took place before this could be done at a time when there were twenty six men in the pit. None came out alive. The explosion occurred at 3.10 a.m. and there was ample time to get the men out of the pit and evidence came from a fireman named Vickers at the inquiry saying that Thompson had warned of the fire at 12.30 a.m. Both shafts were affected by the blast and probably killing all the men underground as well as injuring men in the cage and at the pit bank.

The manager's son was getting into cage and was blown away from the cage. He later died from his injuries. Another of his sons was in the cage had his leg broken. A man was thrown into winding gear where he lay for about two hours before he was discovered and he later died. Two men in cage were thrown onto the air and fell down shaft and were killed.

Mr. Wynne, the Inspector said when he arrived at the colliery at 12.30 p.m. flames and smoke were coming from the Laura Pit. When the water barrel which was at the bottom of the Institute Pit at the time of the explosion was wound up it was found to contain a body. The general opinion was that no one could have survived the explosion but there were one or two men who wished to go down and see. Before the Inspector would allow this he ordered that the barrel be sent down containing three torches so that the guide ropes could be inspected and if there was anyone alive at the bottom of the pit they would have a light. This was down three times before Mr. Wynne and Charles Lowe got into the barrel and descended. When they were down about 330 yards they saw the flames and smoke were actually crossing the bottom of the pit as if coming from the direction of the lamp cabin. They called out but got no reply and they were brought to the pit bank. Mr. Wynne then gave orders to close the pit about 1.30 p.m.

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At the inquiry, was held before Mr. John Booth, Coroner for North Staffordshire, at the Norton Arms, Norton-in-the-Moors.

James Watson, a collier, who went down the pit at 11 p.m. said-

"I went to the smithy where he saw a boy, William Morton, come in with a piece of oily cotton waste and put it on the hearth. He told another boy to go and get some coal. Breeze

was usually used in the smithy but coal was sometimes used. I saw the boy kindle the flame and went to work where he stayed until 2 a.m. when I was called out and told there was a fire. I went to the pit bottom and found Mr. Thompson who told me to go and fight the fire. Later the men were allowed to go out if they wished. I came up as I was afraid and I did not think there were many in the pit and I did not know if efforts had been made to get them, out of the pit. There was time to get the put before the explosion but after it there was no hope of them being alive.”

William Moss, a wagoner, went to the smithy about 11 p.m. and saw Morton blowing on the fire. He told him to be careful and not to get the pit on fire. He knew there was soot in the flue and it was glowing red hot.

The cause of the explosion was evident to all and the coroner but in the course of the inquiry it became evident that the manager had habitually been guilty of breach of the general rules with respect to shot firing. The manager professed to believe that shots could lawfully be fired at any time unless gas was seen at the actual time of blasting. This practice was stopped by a notice from the Inspector of Mines in January.

The Inspector thought it was the pipe from the smithy that had caused the fire. It would have been full of soot which the sparks from the forge ignited and the pipes on the outside would be loaded with coal dust and with the opening and closing of ventilation doors, this would have directed the gas to the fire. When the manager left the pit the fire was already put of control. The Inspector commented-

“Considering the situation of the fire in the return airway in the immediate fear of the upcast shaft in a fiery mine, it was as clear as anything can be made clear to an intelligent manager that an explosion was imminent and a minute should not be lost in sending every man and boy out of the pit.”

After hearing the evidence and the Coroner’s summing up, the jury returned the following verdict-

“The jury think the smithy was a mistake and great error of judgement. Also we find that M.r Thompson did not take sufficient care of the mine under his charge, by not withdrawing them from the pit and by not preventing Henry Boulton and Samuel Vickers from descending the pit, he knowing the dangerous state of the mine at the time and we found him guilty of culpable negligence, thereby causing the deaths of Samuel Vickers and Henry Boulton. I may say that this is the unanimous verdict of 13 out of 14 of the jury.”

The manager Mr. E. Thompson was committed for trial at the Staffordshire Assizes for manslaughter by both the Coroners jury and the Stipendiary Magistrate. He was tried before Mr. Justice Cave and acquitted after his Lordship advised then that what the manager did was not culpable negligence and they ought not make the prisoner responsible for the men’s deaths. The Jury brought in a verdict of ‘*Not Guilty*’ and the man was discharged.

In order to extinguish the fire the upcast shaft was filled in and the downcast covered. It remained closed for several weeks with the 21 bodies still in the mine. Work was commenced to recover the Institute pit but eight weeks had gone by and there as another severe explosion which caused a lot of damage but fortunately did not injure anyone seriously. The explosion smashed the cage, head gear and guide rods and parts of these were found in adjoining fields. Two men were on duty at the pit bank and one broke his collar bone in falling over making his escape from the pit bank.

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At the inquiry, was held before Mr. John Booth, Coroner for North Staffordshire, at the Norton Arms, Norton-in-the-Moors.

James Watson, a collier, who went down the pit at 11 p.m. said-

"I went to the smithy where he saw a boy, William Morton, come in with a piece of oily cotton waste and put it on the hearth. He told another boy to go and get some coal. Breeze was usually used in the smithy but coal was sometimes used. I saw the boy kindle the flame and went to work where he stayed until 2 a.m. when I was called out and told there was a fire. I went to the pit bottom and found Mr. Thompson who told me to go and fight the fire. Later the men were allowed to go out if they wished. I came up as I was afraid and I did not think there were many in the pit and I did not know if efforts had been made to get them, out of the pit. There was time to get the put before the explosion but after it there was no hope of them being alive."

William Moss, a wagoner, went to the smithy about 11 p.m. and saw Morton blowing on the fire. He told him to be careful and not to get the pit on fire. He knew there was soot in the flue and it was glowing red hot.

The cause of the explosion was evident to all and the coroner but in the course of the inquiry it became evident that the manager had habitually been guilty of breach of the general rules with respect to shot firing. The manager professed to believe that shots could lawfully be fired at any time unless gas was seen at the actual time of blasting. This practice was stopped by a notice from the Inspector of Mines in January.

The Inspector thought it was the pipe from the smithy that had caused the fire. It would have been full of soot which the sparks from the forge ignited and the pipes on the outside would be loaded with coal dust and with the opening and closing of ventilation doors, this would have directed the gas to the fire. When the manager left the pit the fire was already out of control. The Inspector commented-

"Considering the situation of the fire in the return airway in the immediate fear of the upcast shaft in a fiery mine, it was as clear as anything can be made clear to an intelligent manager that an explosion was imminent and a minute should not be lost in sending every man and boy out of the pit."

After hearing the evidence and the Coroner's summing up, the jury returned the following verdict-

“The jury think the smithy was a mistake and great error of judgement. Also we find that M.r Thompson did not take sufficient care of the mine under his charge, by not withdrawing them from the pit and by not preventing Henry Boulton and Samuel Vickers from descending the pit, he knowing the dangerous state of the mine at the time and we find him guilty of culpable negligence, thereby causing the deaths of Samuel Vickers and Henry Boulton. I may say that this is the unanimous verdict of 13 out of 14 of the jury.”

The manager Mr. E. Thompson was committed for trial at the Staffordshire Assizes for manslaughter by both the Coroners jury and the Stipendiary Magistrate. He was tried before Mr. Justice Cave and acquitted after his Lordship advised then that what the manager did was not culpable negligence and they ought not make the prisoner responsible for the men’s deaths. The Jury brought in a verdict of ‘*Not Guilty*’ and the man was discharged.

In order to extinguish the fire the upcast shaft was filled in and the downcast covered. It remained closed for several weeks with the 21 bodies still in the mine. Work was commenced to recover the Institute pit but eight weeks had gone by and there as another severe explosion which caused a lot of damage but fortunately did not injure anyone seriously. The explosion smashed the cage, head gear and guide rods and parts of these were found in adjoining fields. Two men were on duty at the pit bank and one broke his collar bone in falling over making his escape from the pit bank.

LILLYDALE. Hanley, Staffordshire. 3rd.May, 1881.

The colliery was near Hanley and was owned by Mr. Enoch Perrins was acting as the manager of the colliery at the time of the disaster. Mr. Thomas Wynne, the Inspector commented-

“This accident is entirely due to the reckless and disregard for human life for the owner was fully aware of the danger he was incurring. He neglected to take the slightest precautions in allowing his men to drive towards a large accumulation of water. When the water was suddenly tapped, it not only overcame the men who were in the immediate vicinity but drove the gas from the goaf on to naked lights, and explosion being the result in which some more men lost their lives.”

Joseph Biddulph of Abbey Terrace, Leek Road was over the butties at the Lillydale colliery and was in partnership with his brother. They had worked at the pit under instructions from Mr. Perrins, the manager for about three months before the disaster. Biddulph was in the pit at the time of the explosion with Henry Lloyd. It occurred on the north side at about 10.45 a.m. where they had been trying to extinguish what he described as ‘*something like a fire*’.

He had not been round the works that morning further than the top of the dip which was a distance of about 50 yards. There were 13 men in the pit that day besides himself and his brother, a total of 15. The man at the top of the dip was removing dirt and there was a waggoner and a hooker-on. The two Biddulphs were driving on the dip in the direction of some old workings which they had been doing for some weeks before the explosion. They were working under instructions from Perrins who said that the object was to tap water from some old workings on the north level. The water was to be driven out and the coal further on, belonging to Mrs. Wooliscroft, mined.

In the three weeks before the disaster Perrins had been down the pit on three occasions to see how the work was progressing. They were driving three heads and one was referred to as the ‘lower’ and there was one borehole about 5 feet in advance of the work in each of the headings. Biddulph could not say if there was a borehole driven on the day of the disaster. Water had been found at a corner of the lower heading two weeks before the disaster and Perrins said that it was advisable to stop the leek but there were no instructions about borings to see if there was water ahead. The rules of the colliery stated that when approaching old workings they must keep a borehole four or five yards a head and have flank borings but this was not done in this case.

Thirteen men went to work in the Cockshead seam on the day of the disaster. Anthony Hargreaves, a loader was at work at the colliery on the day of the explosion and he took the waste material from Elijah Gratton who drove the boreholes. He went to see the place where the water

was leaking in the lower level on that day but he did not see a borehole. There were other men there including William Biddulph and his son Samuel. When the water broke in he started up the dip and was half way up when the explosion took place, Within a few minutes, the explosion occurred. Hargreaves was found by John Marshall Holiday who was the certificated manager of a neighbouring colliery and was helping with the rescue work about 59 yards from the shaft in water.

Henry Hales, a miner who lived at Milton, was working at the colliery on the day of the explosion and went to the bottom level where the water was being tapped. William Heaton, who was killed was working with him. He told the butty, William Biddulph, that the water was bleeding faster and left the pit at 9 a.m. Biddulph then informed the fireman, Wood. William Tabbiner, the engine tender was 30 to 40 feet below the dip connecting some piping. He had been working for about 20 minutes when the explosion occurred and the flame came from the main dip. He heard the report which he described as like a gun, the door was blown open and he saw a thick fog and before the door could shut again the flame came on him and his workmate. He was burnt about the face but the man who was working with him, Phillips, later died from his burns. Hales was convinced that the flame was not lit by Phillips who carried a lamp.

A short time after the explosion, William Biddle, a pit fettle of Bucknall, descended the shaft and found the body of Edward Clulow about 60 yards down the dip and helped to get his body out of the pit

Those who lost their lives were-

Edward Clewlow, collier,

E. Barlow, collier,

Thomas Plant, loader,

Anthony Barlow, loader,

Elijah Gratton, collier,

Samuel Biddulph, horseman,

William Eaton, collier,

W. Phyllis, engineer and

William Tabiner, engineer.

The inquest into the men's deaths was held at the Red Lion Inn, Bucknall before Mr. John Booth, Coroner for North Staffordshire. It was learned that there had been a fire in some old workings for some months about 10 to 15 yards from the upcast shaft. On the day of the disaster two men and a boy had been employed throwing water on this fire.

After hearing all the evidence and listening to the Coroner's summing up, the jury brought in a verdict of manslaughter against the manager, Mr. Perrins. The case was heard at Stafford Assizes and Perrins was acquitted on the direction of the judge.

ABRAM. Wigan, Lancashire. 19th. December, 1881.

The explosion occurred in the No.4 pit of the Abram Coal Company at Abram, Lancashire, a small village outside Wigan. There were two seams worked at the colliery, the Yard Seam and the Lower Arley Seam. The Yard Seam, in which the explosion took place, was divided into an east and a west district. The Yard seam was reached by two shafts 18 feet in diameter at a depth of 520 yards. The coal was worked on the longwall system with the men using safety lamps and blasting was forbidden. The workings in the seam were not very extensive and had been reached about three years before the disaster. The workings on the west side extended about 220 yards and those of the east 400 yards. The mine was ventilated by a Guibal fan, 46 feet in diameter which ran at 37 revolutions per minute and at the time of the explosion was stated to be delivering 79,590 cubic feet of air per minute.

The mine was worked with locked lamps with the exception of the bottom of the downcast shaft where there were a few gas lights in the main intake. The mine was considered safe and the

proprietors had done everything they could for the safety of the men. The men's lamps were tested and checked that they were locked before they went to work and an unlocked lamp had never been found.

Two hundred and twenty men and boys descended the pit that morning and at three minutes past noon there was a very loud report which could be heard up to three miles away. This was followed by a discharge of a large volume of dust and smoke from the pit. Relatives of the men rushed to the pit head anxious for the safety of the men. It was established that there were one hundred and fifty in the Lower Arley Mine at a depth of 650 yards and seventy in the Yard Mine at a depth 530 yards.

The Certificated Manager of the colliery, Mr. Thomas Taylor, had only just returned from a routine underground inspection of the workings which had revealed nothing amiss. He was at the colliery when the explosion took place and immediately took control of the rescue operations and two partners of the Abram Coal Company, Mr. J.H. Johnson and Mr. W. Hayes were present in the colliery office.

The cage in the downcast shaft was jammed by the force of the explosion and could not be moved but there was little damage to the upcast shaft and to the ventilation fan which was functioning fully. Once the cage had been repaired Mr. Taylor and two men descended at 3 p.m. to find that the mouth of the Yard Mine had been smashed and further descent was impossible. It was clear that the source of the explosion had been the Yard Mine. Fires were raging and it was necessary to borrow a large number of fire extinguishers from the neighbouring collieries.

As news of the disaster spread, the scene on the pit bank was harrowing. Many hundreds of people had congregated round the top of the pit shaft. Up to about 4 o'clock, it was not definitely known whether the one hundred and fifty men in the Arley Mine were safe or not. By 5 p.m. the cage had been repaired and the descent into the Arley Mine was possible. The rescuers discovered two or three injured men near the mouthing but to their great relief the rest of the men in the Arley were safe.

Mr. Green, the underlooker, had kept the men near the mouthing after the explosion to keep them cool as there was a strong current of air there. Apart from the lack of light when the explosion had blown most of the lamps out and some concussion from being thrown against the sides, most of the men were none the worse for the experience.

The work of bringing the men out of the Yard Mine was slow and difficult. By 9.30 p.m. twenty six men had been rescued alive, though some were horrible disfigured and affected by the afterdamp and required artificial respiration. They were taken immediately to Wigan Infirmary but there was little hope for them to recover. By midnight twelve bodies had been recovered, all shockingly burnt, making identification difficult. A most tragic case was that of the death of the underlooker, Mr. R.J. Cronshaw, son of the Vicar of St Thomas's, Wigan. and he was a most promising young man.

The rescue continued through the night until Tuesday morning. Miraculously a man was brought out of the Yard Mine alive, thirteen hours after the explosion but all those found after this were dead. By 6 a.m. all the fires had been extinguished and a further fifteen bodies recovered making a death toll of twenty seven.

The work of cleaning up the rubble continued all that week until the last body was discovered on Sunday 31st. December. A total of 15 tons of debris had to be wound out of the dib hole and during the last stages the head of a man was found in the falls of dirt. His body had already been buried so it was necessary for another interment to take place in Lowton Churchyard.

Those who died-

Richard James Cronshaw, aged 49 years, underlooker.

William Ball, aged 49 years, fireman.

Thomas Livesley, aged 44 years, fireman.

Joseph Westhead, aged 29 years, hooker-on.

Thomas Plant aged 21 years, collier.

Joseph Johnson aged 27 years, collier.

James Ashton aged 32 years, collier.
William Barton aged 31 years, collier.
William Bailey aged 21 years, collier.
Joseph Eckersley aged 31 years collier.
James Taylor aged 27 years, collier.
William Phillips aged 32 years, collier.
Christopher Armfield aged 36 years, collier.
John Seddon aged 24 years, collier.
William Ashton aged 39 years, collier.
Thomas Bromilow aged 44 years, collier.
William Hindley aged 25 years, collier.
David Aldred aged 36 years, collier.
Johnathan Baines aged 51 years, collier.
John Rigley aged 33 years, collier.
George Baines aged 20 years, collier.
H. Morris aged 24 years, collier.
William Wadsworth aged 20 years, collier.
John Marsh aged 19 years, collier.
Thomas Marsh aged 19 years, collier.
William Lea aged 42 years, collier.
Edward Potts aged 23 years, collier.
James Bent aged 27 years, collier.
John Shovelton, collier.
Daniel Garvin aged 37 years, collier.
John Bromilow aged 44 years, collier.
George Nixon aged 17 years, drawer.
John Marsh aged 17 years, drawer.
George Allen aged 13 years, waydrawer.
George Pass aged 13 years, waydrawer.
William Henry Mather aged 17 years, dataller.
John Edward Jones aged 26 years, dataller.
Robert Johnson aged 15 years, dataller.
Benjamin Mayers aged 38 years, dataller.
Robert Johnson aged 49 years, dataller.
William Baines aged 25 years, dataller.
Joseph Mather aged 18 years, dataller.
John Mee aged 51 years, dataller.
Thomas Fletcher aged 53 years, dataller.
Charles Stott aged 36 years, dataller.
Robert Jones aged 29 years, dataller.
Edward Potts aged 31 years, dataller.
Peter Wailing aged 48 years, dataller.

Those who died after being brought out-

James Bent.,
Thomas Bromilow,
Charles Stott,
W. Phillips and
John Rigby.

The total number of bodies brought out of the pit was forty one and of those brought out of the pit alive seven subsequently died from their injuries which brought the final toll to forty eight of

which over half were men under 30 years of age mostly from the Park Lane and Westleigh areas. The disaster left 25 widows and 73 children fatherless.

One man, James Shovelton was reported missing but no trace was found of him in the workings. One family lost a father and two brothers, the youngest aged 16 years had started work in the mine that day. The whole workforce of the Abram Colliery were members of the Lancashire and Cheshire Miners Permanent Relief Society and in addition the employers, had a scheme according to the Employers Liability Act. The scale of relief was as follows, disabled men to receive 10/- a week and medical assistance. Relatives of the deceased married men funeral grant of £5, 5/- a week for a widow and 2/6 for each child. Relatives of deceased single men: Funeral grant of £20.

As well as these payments there were those who had taken put special life insurance policies with companies such as the prudential Assurance company who were generous in their bestowal of funds for the bereaved families. Immediately after the disaster their Superintendent of the Manchester District sent a telegram of condolence with a promise to pay up on all claims as soon as they were submitted. Mrs Moon who lost her husband in the explosion received a cheque for £14 2s. 0d from them.

The family of Thomas Fletcher was especially fortunate. This collier stopped his weekly contributions to the company thinking it a waste of money from which he would never derive any benefit. Only the week before the disaster the Local Insurance Agent visited the family and persuaded Fletcher to pay up on the policy and continue his membership. The following Monday he descended the mine and met his death with his fellow workmen in the Yard Mine. By his wise decision the family were thus financially secure from the cruel blow that fate dealt them.

The cause of the explosion was far from clear. It could have been the result of a fall of roof creating a build up of gas which was ignited by a broken lamp which was broken in the fall. Or it could have been the result of faulty ventilation and the flame driven through the gauze of a Davy lamp by a sudden current of air. It was these question that they hoped would be answered at the inquest into the explosion.

The first two inquests were held on the 22nd. and the 28th. December at the Forrester Arms Inn at Abram and did noting but hear the formal evidence of identification of the victims. By Wednesday all the bodies had been identified except one and the procedure had proved difficult. One was recognised by his clothing that was shown to his widow. She testified that her husband wore red flannel drawers, clogs and stockings which she knew to be his. At the second sitting of the inquiry the Lancashire and Cheshire Miners Relief Society complained that the law of the land meant that they had infringed it by paying all the funeral money once the bodies had been identified and not waiting for a certificate of the cause of death from the registrar as was stipulated in the Friendly Societies Act. They called for an amendment of the latter to ease the burdens of the bereaved.

The major inquest was held on Friday 24th. February before Coroner Baker at the school built by the Colliery Company in Bickershaw Lane. It aroused considerable attention. In official sources it is played down in that little actual evidence revealed. Over eighty witnesses were heard comprising miners who testified as to the state of the mine before the explosion and scientific witnesses giving evidence on the result and probable causes of the explosion. The evidence presented to the jury pointed to the ventilation being sufficient, so much so that some men had to work with their shirts on, but the presence of some accumulations of gas brought into question whether it was sufficiently distributed.

William Seddon, collier who had worked in this pit for four years said that he had never found gas in the workings and he thought the pit '*as safe as being at home.*' When his light went out he went to the pit eye to have it re-lighted and locked. He had always had to show it to West or Morgan before he went back to work.

John Stead, dataller was in the pit when it exploded and James Lloyd was in the Yard Mine at the time and rendered unconscious by the afterdamp but managed to get to the pit eye when he came round. he told the court that the ventilation was so good that he had difficulty in keeping him self warm and he had been visited four of five times each day by the underlooker of fireman.

John Lewis who had been a collier for sixteen years and had worked for six months in the Yard Mine said that two colliers, Aspinall and Claire had picked up a lamp before the explosion belonging to Cronshaw who was killed. The lamp was not locked. On the Friday before the disaster Cronshaw and Livesley came to his place with the tops off their lamps. He could not explain why they did this.

After a lengthy two and a half hours of deliberation the jury brought in the following verdict:-

“We are of the opinion that a sudden outburst of gas took place in the westerly wideworks and was ignited between the entrances of the top cut through of the westerly upbrow and the pace where Baines and Armstrong were working viz., in the most easterly of the westerly upbrows, but how ignited we have not sufficient evidence to show. We were also of the opinion that there ought to be an air crossing in the south-west jig brow and also one the north-east jig brow. We consider that there is sufficient air passing through the workings, but that it is considerably impeded in several places by gobbing up the dirt behind the brattice. We also recommend that brick stoppings should be used in front of dirt stoppings in future. We are also of the opinion that there has been great laxity of discipline in relighting and relocking the lamps. We would recommend that the key be accessible only through the fireman or some duly appointed person, and also think Mr. Taylor, the certificated manager, gave his evidence most unsatisfactorily. We also recommend a better system for locking lamps.”

There was high feeling in the area over the verdict and despite the lack of a criminal prosecution, there was by implication some culpable negligence on the part of the colliery owners. In ‘*A Critical examination of the Inquest of the Abram Colliery Explosion*’ published by George Roby a Wigan Radical in 1883 these doubts and criticisms were brought out in the open. He forthrightly denounced the collusion between the owners and managers, the lawyers and Government Inspectors in glossing over the facts of the case, and burying the negligence of the owners in a morass of legal jargon. Led by Mr. Greenwall the consulting engineer and Mr. Peace, solicitor for the Company, the evidence presented to the Coroner had been slanted in their favour. The refusal to allow the right of the miners to have agents acting on their behalf at the inquest further aggravated the position. For the colliers themselves were ‘*afraid to speak unless they are prepared to burn their boats behind them and leave the district*’. He strongly urged the need for a body of examiners appointed not by the Government but chosen by the miners from their own ranks.

Moreover he disputed the blown out shot theory which was half-heartedly put forwards as the cause of the explosion by the officials. The evidence of the colliers refuted this. Samuel Aspinall testified that his working place was not safe on the Wednesday before the explosion and that the ventilation was not working on Friday. James Bradley stated that gas was definitely present on Friday and on Monday he was short of air. Yet despite their complaints, the colliers were ordered to continue working by the fireman and the foreman. Roby claimed that these witnesses were far more reliable than the Governments scientific experts yet they were ignored. The only witness regarded by the Coroner as certain to give positive evidence were all dead. ‘The evidence had all been burnt out of the record and the mouths of the witnesses stopped by the stony hand of death’.

The report on the explosion was presented to both Houses of Parliament by command of Her Majesty. There were several letters to the Secretary of State about the verdict.

“11, Old Square,
Lincoln’s Inn,
February 25th. 1882.

Sir,

Acting on the instructions of Her Majesty’s Treasury, I attended the adjourned inquest in the above matter upon the 7th., 8th., and 9th, and again on the 15th., 16th., and 17th days of this month. I watched the proceedings in concert with Mr. Henry hall, Her Majesty’s Inspector of

Mines for the district and took part in the examination and cross-examination of 46 witnesses with the view of eliciting the real facts of the case and the true cause of the accident. The jury returned a special verdict in writing, a copy of which I enclose herewith.

In my opinion it was conclusively proved that the explosion arose from the ignition of a quantity of gas which had been given off as a direct result of weighting or crush, and that nothing could have been done on the part of the owners to prevent the gas being given off. The jury came to the conclusion that there was not enough evidence to show how the gas was ignited. There was, however, a body of evidence to the effect that, in a well-ventilated colliery such as this was, the gas would be carried along with the air, and the air playing upon an ordinary unprotected Davy lamp and would blow the flame upon the gauze raise it to white heat in a few seconds and thereby at once ignite the gas. As a matter of fact the body of a boy with a securely locked Davy lamp was found at the spot fixed by the jury, and the mining engineers, and Her Majesty's Inspector, Mr. Hall, as being the place where the gas as ignited.

Sitting as a jurymen I should have arrived at the conclusion that the gas was ignited against the current of air. Assuming this theory to be the correct one, it follows that, to prevent the recurrence of a like disaster, the ventilation must be reduced or a more perfect lamp adopted. I think the jury were averse to adopting this theory as to the cause of the ignition for two reasons: (1) their thorough belief in the efficiency of the Davy lamp which is in general use in the district, and (2) a desire to say nothing that might tend to lessen the amount of ventilation in a colliery. It is very probable that, had there been less ventilation in this colliery, the explosion would never have taken place. Having heard the whole evidence I feel I am bound to state that in my opinion a similar explosion may occur again at any time and will occur almost certainly if another outburst of gas takes place when the men are at work. I quite concur with the jury as to the unsatisfactory character of the regulations at the colliery in question with regard to the lamps generally, and especially in question to the relighting of lamps which have been accidentally extinguished.

I am, Sir,
Your obedient servant,
A. YOUNG."

"The Right Hon. Sir William Vernon Harcourt, M.P.,
Her Majesty's Secretary of State for the Home Department

11, Old Square,
Lincoln's Inn,
March 8th. 1882.

Sir,

I have the honour to forward herewith the shorthand writer's notes of the evidence given at the inquest at the Abram Colliery, and also of the evidence taken at the Wigan borough coroner on the bodies of the men injured by the explosion, who subsequently died in the Wigan Hospital.

It will be noticed that the two juries concur as to the accidental nature of the accident of the explosion and the necessity of a safer lamp being introduced into the Wigan district, than the Davy lamp which is in common use.

It was, I think, clearly proved that the gas was ignited in the west workings but unfortunately for the purposes of the inquiry almost every man in the west workings was killed.

At the inquest witnesses were called in classes first, men who were in the pit at the time secondly, mining engineers and lastly, the Government Inspectors.

The evidence of a witnesses, William Westhead indicated that a severe weighting of the roof had occurred about an hour before the explosion. This took place in the westerly wideworks, where he was employed. The weighting was so severe that it drove several miners out of their working places. The alarm passed and the men returned to their work and were killed.

The fireman's attention had been called to the weighting, and that he had immediately before the explosion left west side, remarking that he had never known the roof to take weight before. Mr. Westhead saw no gas during the continuance of the weighting, but as the air was going past him into the wideworks, it is obvious that any gas given off in consequence of the weighting would be carried away from him.

Mr. Westhead's was the only direct evidence of a weight having taken place, but it is clear that a considerable fall of the roof took place in the west wideworks.

Another witness, Mr. Speakman, who was near Westhead at the time of the explosion confirms what he had to say and he said that two colliers, for whom he was drawer, at left their workings for some reason which he could not explain. Mr. Speakman said that he hear no weight at all, but appears to have given different evidence at the Wigan Borough inquest, as the jury there, in their verdict, attribute the explosion to a sudden outburst of gas given off by weighting in the roof, as explained by the witness Westhead and Speakman.

The scientific evidence, was presented by Mr. Higson, a mining engineer totally unconnected with the colliery. He just happened to be close by at the time of the explosion and was of the opinion that a weighting or fall did take place in the west wideworks, and this resulted in a sudden outburst of gas. Mr. Greenwell, another independent engineer, was of exactly that same opinion and similar evidence was also given by Mr. Hedley, Assistant Inspector of Mines, and by Mr. Hall, Her Majesty's Inspector. This evidence was quite convincing and the gas would travel with the air in the direction of the upcast shaft.

Judging from the places where their bodies were found, that several miners who were nearest the seat of the outburst of gas, were alarmed at noticing the gas in the air and were making for the downcast shaft when the explosion took place.

The scientific witnesses and Her Majesty's Inspectors were unanimous as to the exact spot where the ignition took place, and in my opinion, the jury might well have come to the conclusion that the gas was ignited by a properly locked lamp of a boy named Baines, who had noticed the presence of the gas in the air and was making his way as quickly as possible for the downcast shaft. That gas mixed with air may be exploded by a securely locked Davy lamp was. I think, proved, and the greater the ventilation the greater the risk of an explosion when gas breaks out.

On the whole evidence, I came to the and remain of the opinion that the explosion was result of an accident and that no one was responsible for it. I also repeat that in my judgement another explosion may occur again at any time, and will certainly occur again under the same circumstances.

I enclose herewith a copy of the Special Rules in force at the Abram Colliery. They are posted up at the pithead in accordance with the Act of Parliament, but are not otherwise published.

The great majority of the colliers examined at the inquest were illiterate, and it appears that no steps whatever are taken to bring the Rules to their notice. Mr. Taylor, the certificated manager, admitted that a new collier coming into the pit was never asked whether he could read or not. One great objection to the special rules in question is that they are not especially adapted to the '*particular state and circumstances*' of this mine, but are merely a common form in use in the district. It further appears to me to be wrong that the manager (Special Rule 1), the under officials (Special Rules 6), and the miners (Special Rule 25) should be told that it is their duty to comply with the "Coal Mines Regulation Act, 1872," only so far as this is, '*reasonably practicable*'. I further that in a colliery such as this is, where gas is known to

exist, the use of locked safety lamps should be compulsory, and should not be in the direction of the manager, as it is by the Special Rule 12.

The jury found that there was 'great laxity of discipline in the relighting and relocking of lamps,' and recommended that the key should only be accessible through the fireman or some duly appointed person.

The rules referring to the lamps are General Rule 7 and Special Rules 12 and 32. It appears from the evidence that no person was appointed under the Special Rule 3 a "lampman" but the two firemen and the hooker-on were appointed to attend to the lamps, the fireman being supposed to attend to the lamps in the morning and the hooker-on to the relighting of lamps which were accidentally extinguished during the day.

A lamp key was hung by a chain at the bottom of the downcast shaft, and it was made clear by the evidence that a miner whose lamp had been extinguished could unlock, relight, and relock his lamp if he were so minded. Several colliers swore that when they did so they handed their lamps to the hooker-on to be tried, and several swore that they returned to their work without any trial of the lamps, on the ground that the hooker-on had other duties to attend to.

On the whole I was satisfied that Special Rule 32 was not carried out strictly, and I should recommend that a "special officer" should be appointed within the meaning of that rule, whose sole duties should be to attend to the lamps. I do not think any person was culpable in the matter to such an extent as to justify a prosecution under the Act. To sum up, I think that the Special Rules are bad as a whole, that some of them should be compulsory which are now at the discretion of the manager, and that others are too vague to be capable of being given effect to.

The colliery owners had, I think, acted to the best of their judgement, and had spared no expense in providing for the proper ventilation of the workings and the safety of the colliers. That the lamps were not perfectly safe, though in common use in the district, was known to the owners, as is provided by the fact that very shortly before the explosion they were in correspondence with Mr. Hall, Her Majesty's Inspector on the subject.

I think some immediate steps should be taken to enforce the adoption of a safer lamp than the ordinary Davy lamp into what Mr. hall speaks of as 'fiery' collieries. Until a safer lamp is introduced there will, in my opinion, always be the chance, and that not a remote one, of a repetition of the sad disaster which occurred at the Abram Colliery.

I am, Sir,
Your obedient servant,
A. YOUNG."

The explosion brought into focus all the elements of a mining disaster the appalling risks of the workforce below the surface and the dependence of the relatives on relief the uncertainties as to the cause of the explosion and the clear interest between the workers and the management with fear and suspicion the foundation of working conditions.