SOUTH KIRKBY Yorkshire 28th August 1935
Several men were building stoppings to seal off a area in the Barnsley Sean where ther had been an explosion of firedamp when there was an explosion within the sealed off area. Rescue operations were started at once when there was a further explosion at 5.50pm which burned the party carrying out the last casualty Frank Dale. 10 killed and 2 injured in first explosion and 5 injured in second.

Those who died were:-
DALE F 44 Asst Superintendent Rescue Brigade
WALSTOW A 54 Dataller
BAUGH FT 33 Coal hewer
JEFFERSON 59 Deputy
GOODWINJ 26 Dataller
NEWTON J 25 Dataller
BANNISTER 54 Collier
HAMES JT 26 Dataller
WOODALL W 26 Corporal
STEVENSON 24 Collier

NORTH GAWBER (Lidgett). Barnsley, Yorkshire. 12th. September, 1935.

The colliery was owned by Messrs. Fountain and Burnley, Limited and an explosion took pace in the Nos. 3 and 4 South Districts of the mine about 2.45 p.m. on Thursday, 12th. September, 1935 by which 19 men lost their lives. Mr. S. Lawrence was the manager and Mr. C. Weaver the undermanager. They visited the workings of the mine daily and there was a deputy for each district on each of the three shifts. In addition there was an overman on each shift.

These three districts were about 1,600 yards from the shafts by way of the Main Haulage Plane which was also the main intake airway. The Lidgett Seam in these districts was about 2 feet 6 inches thick and dipped 1 in 11 to the North East. It was a gassy seam and firedamp soon collected if the ventilation was interrupted.

The coal was undercut by electrically driven machines during the afternoon shift, brought down by shots fired on the night shift and filled on to electrically driven conveyors during the day shift. The total number of men employed underground was 200 of the day shift, 120 on the afternoon shift and 80- on the night shift. The mine produced about 650 tons per day which was raised between 6 a.m. to 3 p.m.

The Nos. 3 and 4 South District were ventilated by three splits taken off the main intake along Nos. 1, 2 and 4 South Levels. When measured in August, these splits contained 4,050, 3,960 and 4,340 cubic feet per minute respectively.

The officials and some of the workmen used Teale's Protector Type flame safety lamps and other workmen used Ceag electric safety lamps. Shots were fired in the coal during the night shift by the deputies and shotfirers. If further shots were required in the coal during the day shift, they were fired by the shotfirer. Shots in the ripping of the levels were fired by deputies during the afternoon shift. Bellite No 1A was used in the rippings and Lodensite in the coal. Stone dusting of the roads was done during the night shift.

Signalling o the mechanical haulage roads was done by means of electric bells. Twenty per cent of the men on each shift were searched at the pit bottom.

Prior to the explosion the work on the No.3 South face were filling the coal that had been undercut and brought down on the previous two shifts, on to the electrically driven conveyor. The coal was being delivered by the conveyor to an electrically drive gate loader, fixed near the face of the No.3 South Level and then into tubs.

The young men attending the loader and the moving of the empty and full tubs and those taking the loaded tubs to the passbye and bringing back empty ones from there to the loader were at their respective posts.

The deputy of the No.3 face, William Brant, was at the top end of that face. According to the evidence of Friend Clayton, the shotfirer visited the No.4 face about 12.20 p.m. and discussed with George Wroe and Jacob Fallis, both rippers in the Top Airway Gate whether a shot was required in the ripping of that gate. He told them that if hey could not get it down by hand then they could send for him to fire a shot. He then returned to No.3 face, where he fired a shot in the coal. Shots were rarely fired in the ripping of the No.4 Top Airway gate. Clayton, who had been the shotfirer in the district for only two weeks, and had fired one several days before but before this no shots had been fired in the ripping for several months.

Between 1 and 1.30 p.m., according to Clayton, one of rippers came from No.3 face, and they returned to the No.4 face Top Airway Gate where Clayton charged a hole which the two rippers had bored with four cartridges of Bellite No 1A which were handed to him loose by Jacob Fallis. The shot hole was four and half feet deep, about two and a half feet from left hand side of gate, ten inches to a foot from roof, level and running more or less parallel to the gate. Prior to charging the hole he examined it for breaks with a special break detector, the *'Rothwell-Haigh'*, but did not find any nor did not see any breaks in roof but he said that there were breaks in roof about 12 to 14 yards back from gate.

He fired this shot about 1.40 p.m. and after spending a short time in the No.3 South Level, he went back to No.3 South Face where he fired two more shots in coal near the middle gate of the face. He made an examination after firing these two shots and found everything all right. About five minutes later he fired the second shot when a sudden rush of wind and dust came *up* the No.3 face from low side.

Evidence of what was being done on the No.4 face shortly before the explosion was given by John Thomas Walley, a coal cutting machine man, who was with his crew, his brother George Arthur Walley, Clifford Walker and Richard Hurrell. They went down pit between 1.45 and 2 p.m. and passed the time of day with two colliers, Jack Howard and Ernest Senior, in the ravelling road at a point about 10 to 15 minutes walk from No.4 South Top Airway Gate at which they arrived at about 2.35 p.m. Walley left his three mates in the airway gate where there two panmen, Thomas Roberts and Leo Bunting who worked with Jacob Fallis, the ripper. They were putting away ripping dirt that had been brought down by shot in airway gate and sending it to face where George Wroe, having broken the pans, was casting it into the goaf.

In the centre of the airway gate there was a tub and a half of ripping dirt to be shifted when Walley passed into the face of that gate. The top side of the gate had been right up to the face but on the low side of the gate, the side was hanging over the breaking-off bar. In his opinion this was likely to fall but he did not think that, even if it had fallen on the tubs at the centre of the gate, that it would have stopped the ventilation.

On the left hand side of the gate, going inbye, there was a pack which had been built four yards from the coal face. On the right hand side was the old settling gate which had fallen for the most part and in which, old timber could be seen.

The coal cutting machine was stabled in the middle gate and Walley, having to fit it with new packs, went down the face to that gate passing first Joe Washington and then George Wroe. He saw no one else but there were two lights about 19 yards further down the face.

Of his three mates he said two, Clifford Walker and Richard Hurrell, would attend to the timber and his brother George Arthur Walley, would see that the electricity was witched off at the switch box in the airway gate from the conveyor motor and then, having taken the pummel off the motor, he would take that and the cable up to the top

of the face and then bring it down the new track to the coal cutting machine. there was only one cable.

On arriving at the middle gate Walley found that his hammer was missing. He went back a few yards along the gate to borrow one from the four rippers, Clement Gladstone Moores, Gladstone Ledger, Ernest Stephenson and Patrick Harrison who were stripping off their clothes ready for work. These rippers had came inbye a short way along the No.3 South Level and then through the manhole door in the slit leading to the No.4 middle gate and then along the gate to 50 yards from their working place in the ripping of that gate.

Walley got his hammer and returned to the machine. He then examined the switch handle, looked to see that the clutch was out, saw that the pummel casing was clear and no dirt in it and knelt down to start changing the picks with Patrick Harrison, who had come outbye, watching him. He had changed only one pick when there was blast which came *down* the face. He was blown over the machine and the whole place became filled with dense smoke and dust but he did not see any flame. He heard Harrison groaning and Moores shouting they wee to lie down. Moores also asked where Harrison was and Walley answered that he was there but he could not find him. Moores came and got Harrison and they, with Ledger and Stephenson, made their way out of the middle gate and eventually came through the manhole door into No.3 South Level. That door was shut when they got to it and there was brattice sheet fastened on the door frame.

Walley said that the explosion occurred not more than 10 to 15 minutes after he left the airway gate. He felt no slackening of the ventilation and Harrison said there was plenty of air. he saw no flash or spark.

About 16 yards on the low side of the No.4 middle gate, John Williams was boring a shot hole and another borer, Amos Dransfield, was 40 yards further down the face. Two panshifters, James Nixon and George Betton Whewall were also at work on this face. Williams was killed and Whewall so badly injured that he died in hospital the same day but Dransfield gave evidence that he was looking down the face towards No.4 South level when a big gush of hot air came behind him and lifted him about three yards down the face. He also stated that there was nothing wrong with the ventilation before the explosion.

Just before the explosion four youths, James Crowe, Robert Chatterton, Sydney Hunter and George Bowen, were at work at the inner end of the No.3 South Level. Crowe and Chatterton were at the loader, Hunter was s10 yards further outbye and Bowen three yards on the inbye side of the haulage return wheel. Another youth, William Boydell, was in the No.3 face about three yards up above the end of the level.

In evidence Crow said that just before the explosion he was at the loader looking outbye along the No.3 South Level. He could not see the lights of the two pony drivers, Hubert Kelly and Claud Ackroyd and those of Albert Smith, corporal, Robert Brant, James Senior and Thomas Poyser, colliers, all of whom were 30 to 40 yards outbye from him. Brant, Senior and Poyser, had been filling on the No.3 face, and having finished their work and were on their way outbye.

Suddenly Crowe saw a flash at the top of the innermost slit connecting No.3 South level with the settling gate and he was thrown down. Immediately after that, the smoke came towards him. There was no noise but plenty of dust. Kelly was shouting so he went towards him and found him at the top of the settling gate where Walter Riley, a collier, and Ackroyd were. The clothes of all three men were on fire. He suggested that they go outbye along the level but their path was barred because of the dense smoke. They then turned inbye and on reaching the loader Crowe shouted to the borer, Tom Smith, who was working on the face at the low side of the level to get help with the burned lads. He saw Smith cross the face of the level and go up the face and heard him shout, repeating Crowe's call for help but he never saw him again.

They then went up the No.3 face. Crowe said-

> "Kelly and Riley went in front with Hunter and Chatterton and I told Ackroyd to cling on me at the back and I went up the face."

The air was thick until they reached the middle gate. Above that, it was clear. They got assistance at the middle gate from Friend Clayton helped them to the top of the face. When Crowe was at the top of the settling gate immediately after the explosion, he heard Albert Ibberson, a collier, shouting, '*Save me. My head is burning.'*

George Bowen, who worked tramming between the passbye and the loader, gave evidence that he was about three yards inbye of the haulage wheel and near to Kelly and Ackroyd at the time of the explosion. Kelly was at the top of the settling gate and Riley came running out of that gate. At the time of the explosion, Bowen was looking inbye when there was gust of wind followed by a reek from behind him which knocked him down. He got up and rushed inbye towards the loader, then he, Robert Chatterton, Jim Crowe and Sydney Hunter went outbye along the level towards the top of the settling gate. He saw Riley, who came running out of the settling gate and Kelly at the haulage return wheel but he did not see Ackroyd. They tried to go outbye along the level but were beaten back because of smoke, so they went up the face and out by No.1 South Level. He lost his light in the explosion.

Sydney Hunter was about five tub lengths from the loader, which was running as was the conveyor. The haulage was not running but it had been up to a minute before the explosion. he was looking towards the face when he was suddenly knocked down on his face as if something had hit him in the back. The level the became filled with smoke. He went towards the haulage return wheel and saw Kelly, Ackroyd and Riley and helped them up the face to the middle gate.

At the time of the blast, William Boydell was on the No.3 South face about three yards up the level throwing bars up the face. He saw a burning flame lamp hung on a bar. He felt a gust of wind which blew him *up* the face and about a minute later here was smoke. He turned round and went towards the haulage wheel but could not see anything. He heard Crowe shouting to switch off the pans, so he went back to the face but found they were off. He found an electric lamp under the loader and went up the face where he saw Friend Clayton who told him some lads had been hurt and he had better go and help them. Boydell then went along the middle gate and then outbye. Above the middle gate the air was quite clear but below it was all smoke.

Sir Henry Walker in his report said-

> "I have given the evidence of these youths more fully perhaps than is strictly necessary. To have done less would have been to do less than justice to their indomitable spirit."

The two pony boys, Claud Ackroyd and Hubert Kelly and the collier, Walter Riley died from their inures in hospital and Albert Smith, corporal, Robert Brant, James Senior, Thomas Poyser, Albert Ibberson, all colliers, and Tom Smith, borer, lost their lives in the explosion. Smith seemed to have lost his life looking for Ibberson who was working at the face of the settling gate and so lower down than Smith. Crowe had seen Smith and heard him repeat his for help. After that no one saw Smith but his body was found later unburned and uninjured in the settling gate close to that of Ibberson. Both had been poisoned by afterdamp. The other men on the No.3 South face were unharmed.

On the No.4 South Level, Benjamin Sanderson, the afternoon shift deputy, went down the pit about 1.55 p.m. and sent his men off to work. Walley and his party to cut the face, Clem Moores and his mates to rip the middle gate, Tommy Roberts and Leo Bunting to pan the top end, Jim Nixon and George Betton Whewall to pan the bottom end. Three rippers in the No.4 South Level and two in the No.4 settling gate at the low end of the face.

On his way inbye he met the day shift deputy, Davis Townsend, at No.3 South level way-end and after conferring with him, he went inbye. He was approaching the ripping

edge in No.4 South Level when there was a sudden gust of wind and bits of coal hit him on the face and hands that made him stumble backwards. His lamp was not extinguished and he sent man to tell the manager and overman that something had happened. Putting his handkerchief over his mouth and face and set off up the face. He tested for firedamp but found none but did not test on the face because of the smoke.

Nixon came out of the face and passed him in the 'dint' of the level where he met Whewall near the low side of the No.4 middle gate. Whewall had been badly inured so he got the men who were left in No.4 South Level to come in and take him down on that hat level. Someone above the middle gate called out and he tried to get back up the face but had to retreat from the black smoke at the top end. He then made his way put of the middle gate to the No. 3 South Level and along that level to the outbye end where he told some men who were there to go into the No.4 south level to attend to Whewall and that they would need a stretcher.

Everyone in the two districts were going about their usual work and nothing out of the ordinary happened except the firing of the shot in No.4 Top Airway Gate by Friend Clayton.

When he had dispatched the men from the No.3 South level to No. 4 South level to attend to Whewall, Sanderson went inbye along. He was followed shortly after by William Brant, the deputy from the No.3 South District, who had come form the top of No.3 South face by way of the No. 3 South Level way-end by way of No. 2 South Level and the Main Engine Plane. Brant got as far as the hauling engine house but then returned to the way-end. He then went inbye again accompanied by John Thomas Walley, Clem Moores, Gladstone Ledger, Walter and Alex Street and followed by the haulage engine man, Albert Truelove. About 200 yards along the level they found Sanderson and he and they moved off inbye. They came across the body of Thomas Poyse, about 30 yards on the entrance on the outbye side of the entrance to the No.4 Top Airway Gate. Brant then went back to the way-end, and there asked George Williams, afternoon shift overman to help with Whewall. Brant had been affected by the afterdamp and was later sent to hospital where he recovered.

Truelove went outbye for a stretcher and Williams went inbye with Sanderson and the men already mentioned and moved forward to the entrance to the No.4 Top Airway Gate. Sanderson, , Moores and others went into this gate as far as the bend, where they found the body of Jacob Fallis. The air was very foul and they returned to the level where they met the day shift overman, George William Poxon and the undermanager, Cyril Weaver. The bodies of Robert Brant and James Senior were then reached and a little later that of Albert Smith was found.

The undermanager, overman and Poxon were concerned with the pony drivers and youths who worked at the loader but was unaware that they had already gone out so they persisted with their attempts and found two dead ponies. The afterdamp was having an effect on these men and Williams, Poxon and David Townsend, had to be take out of the mine. Brant, Poxon and Townsend were so seriously affected that they had to be taken to hospital.

The manager, S. Laurence, had come in and a Rescue Brigade arrived at the pit about 4.30 p.m. and went to No. 4 Top Airway Gate. A fall blocked the airway at the face and the brigade started to remove this under the direction of their captain, William Mansfield. As soon as the fall was moved, the air started to pass down the face and the atmosphere became good enough to allow person not wearing breathing apparatus down the face. The bodies of Jacob Fallis, Leo Bunting and Thomas Roberts, George Wroe, Joseph S. Washington, Richard Hurrell, Clifford C. Walker, George Arthur Walley and John Williams were found and recovered. The bodies found in the level were recovered by a second Rescue Brigade.

Those who died were-

John Williams, borer,
Amos Dransfield, borer,
Thomas Smith, borer,
Claud Ackroyd, pony boy,
Hubert Kelly, pony boy,
Walter Riley, collier,
Albert Smith, corporal,
Robert Brant, collier,
James Senior, collier,
Thomas Poyser, collier,
Albert Ibberson, collier,
Jacob Fallis, panman,
Leo Bunting, panman,
Thomas Roberts, panman,
George Wroe, ripper,
Joseph S. Washington, machineman,
Richard Hurrell, machineman,
Clifford C. Walker, machineman and
George Arthur Walley machineman..

The inquiry into the disaster was conducted by Sir Henry Walker, H.M. Chief Inspector of Mines at the Town Hall, Barnsley from the 22nd. October to the 2nd. November when all interested parties were represented.

Following the disaster, Mr. H. J. Humphrys, Divisional Inspector of mines was told by telephone at 4.30 p.m.. by Mr. S. Diggle, the agent. He went straight to the colliery after sending a copy of the Report, '*Medical Treatment of Persons Burned in Colliery Explosions'* to the Beckett Hospital, Barnsley. On arriving at the pit he immediately went below ground where he met Mr. Diggle and made a full inspection of the explosion area.

In the Report, a section under the title, '*CAUSE OF THE EXPLOSION*', stated-

> "Taking those witnesses who were asked their opinion as to what had caused the explosion in order in which they were called, the shotfirer Friend Clayton said that the had not the faintest idea what was the cause. Joseph Brook, deputy, said he had not formed any opinion. Mr. William Hibbert, representing the North Gawber Branch of he Yorkshire Mineworkers' Association, who was present at the examination and test of the lamps, said he did not think they had been the cause. In regard to electricity having been the cause, Mr. Land, chief electrician at the North Gawber and Darton Collieries said that his examination of the electrical plant after the explosion, he was satisfied electricity had not been the cause. Mr. Cowan. Junior Electrical Inspector, said that, in spite of detailed examinations of the electrical plant, he found nothing to which the explosion could be attributed and Mr. Horsley, Chief Electrical Inspector, was satisfied that the explosion was not due to electricity. Mr. Stone, Sub-Inspector, said he had come to no definite conclusions about the cause."

The inquiry then looked at the firing of shots in the mine and Sir Henry stated-

> "Having inspected the area covered by the explosion and having heard the evidence, I am of the opinion that the shot fired by Friend Clayton in the No.4 South Top Airway Gate was the originating cause of the explosion. That opinion is not capable of proof, but is based on experience and not on speculation.
>
> There can be no doubt that this shot should not have been fired. The conditions surrounding the ripping in that gate would be more difficult to keep up than take down. Three shots had been fired in this ripping in six months, and it is significant that two of them had been fired within seven days of the explosion by the same

man, Friend Clayton, who had only been employed of the day shift, when the ripping was done, for a fortnight.
In my opinion, to fire a shot so close to an abandoned unventilated road, the settling gate, was extremely foolish and not the action of a thoughtful pitman. It is only fair to add that Clayton's judgement was no poorer than that of the manager and undermanager, who both said there was nothing to indicate to their minds that it would be risky to fire a shot."

BARDYKES Glasgow, Lanark. 21st March 1936

Scottish Pit Accident
Five men killed by fall of roof - rescue party's danger

Five men lost their lives in a pit disaster near Glasgow last night, and rescue parties worked unceasingly for about 15 hours in imminent peril from a dangerous roof to recover the bodies from the debris.

The accident occurred in a section of Bardykes Colliery, which lies between Blantyre and Cambuslang. Seven brushers were engaged in section, which is 9 ft high and about 12 ft broad, preparing it for the miners, when part of the roof collapsed, practically without warning. Five of the men were entombed, and the other two had amazing escapes. A rescue party was at once organised, and the body of one of the victims was recovered almost immediately, but the remainder were not found until this morning. The accident occurred about 7.30 last night, but it was almost noon today before the body of the last victim was recovered, and only after the rescue party itself had been almost entombed by another heavy fall from the roof.

The victims are: -
George Kirk of Church Street Cambuslang, married, with a family of four
Thomas Coulter, Bothwell Street, Cambuslang, married, with four children
James Conlin, Glasgow Road Blantyre, married, with four children
Robert Dawson, Church Street, Cambuslang, married, with five children
Gilbert Roy, Hamilton Road, Flemington, married, with three children

Dawson's wife is expecting another baby very soon. "It's just the life of a miner's wife," she said, when she was told of her loss. "You see them go out in the morning in their pit clothes and you never know if they will come back alive."

News of the accident quickly spread round the district and large crowds gathered at the pit head, including women relatives of the entombed men. Regardless of the risk to themselves miners in the rescue party worked gallantly all through the night to free their mates from the pile of debris that enveloped them. About 2.15 this morning another heavy fall threatened to involve several of the rescue party, and it took them fully seven hours to regain the ground they had lost.

Campbell Hawthorn, who was working at the very edge of the fall, said: -
"Suddenly there was a crack. I sensed what was happening, and threw myself to the side of the road. I was struck by a piece of wood or rock which knocked me out for a while. When I recovered consciousness everything was pitch dark, but I could hear stuff falling all round me. Some of it fell on top of me. I crawled forward as well as I could and ultimately got clear. All I could hear in the darkness was the groaning of the horse, which was injured. Evans, though injured, rushed down the road and returned with a lamp. By this time we could hear some of the men who had been caught in the fall.

Evans shouted "Where are you, lads?" and Coulter replied, "I am here. I am on the left side" I shouted "Can you see us or our lights ?" and he replied "My face is covered." His voice became weaker, and finally he said "I am done for." I was practically powerless on account of the knock I had received on my back, and it was maddening to be so near my pals and yet to be so helpless. Evans made a frantic effort to clear the way to Coulter, but such a huge quantity of debris had fallen that he was able to make very little progress. In about five minutes the first party of rescuers came along and took charge." *[Times 22 March 1936*]

LOVESTON, Pembroke. 26th. May 1936.

William Jenkins 26/05/1936 42 Collier Loveston Pembroke Sudden inrush of water from old workings. 7 drowned.
R George Williams 26/05/1936 42 Collier Loveston Pembroke Sudden inrush of water from old workings. 7 drowned.
Thomas Lloyd 26/05/1936 30 Collier Loveston Pembroke Sudden inrush of water from old workings. 7 drowned.
Ernest Phillips 26/05/1936 21 Collier Loveston Pembroke Sudden inrush of water from old workings. 7 drowned.
John Milling 26/05/1936 26 Collier Loveston Pembroke Sudden inrush of water from old workings. 7 drowned.
Fredrick Beyman 26/05/1936 40 Collier Loveston Pembroke Sudden inrush of water from old workings. 7 drowned.
Joseph Phillips 26/05/1936 25 Collier Loveston Pembroke Sudden inrush of water from old workings. 7 drowned.

WHARNCLIFFE WOODMORE. Nos.1, 2 and 3. Barnsley, Yorkshire. 6th. August, 1936.

The Colliery was about 2 miles to the north west of Barnsley and was joined to the North Gawber (Lidgett) Colliery where there was an explosion in September, 19335. Both collieries were under the same control and the explosion occurred in the Lidgett Seam which was about two feet four inches thick and was reached by drifts from the Haigh Moor Seam which was 34 yards above. The Haigh Moor was 280 yards from the surface. The explosion was in the North East section. The districts in this section were developed from the North East bord which was driven to the full dip of the seam which was 1 in 11. The distance from the haulage enginehouse at the top of the North East bird to the face at the bottom was 1,600 yards at the time of the disaster.

The coal in the four districts, 18's, 9's, 2's of Blackett's and 1's was undercut by machines and filled onto conveyors which delivered on to loaders at the inbye ends of 18's, 9's and 1's levels and the middle of the Blackett face. All the machinery was electrically driven as was the haulage which was by endless rope on the North East bord and along 18's, 9's and 1's levels by main and tail rope. With the exception of 18's level, all mechanical haulage roads were intake roadways and all were traversed by the explosion with the exception of 18's.

Richard parry was in charge of stonedusting the roads and the manager stated that during the first seven months of the year, 201 tons of limestone dust had been sent into the pit. In the Lidgett Seam, 3.6 lbs. per ton of output were used. The attendant at the haulage gear at the top of the North East bord was the only man brought out alive and he died five days later in hospital but within 48 hours of the explosion, the whole of the workings had been explored and evidence gathered as to the cause of the explosion.

Those who died were-
Walter Smith.
John Bullingham.
Arthur Bird.
Alexander Thompson.
George Thompson.
Cecil Chapman.
Irvin Foster.
John Fletcher, deputy.
Harold Row.
Joseph William Abbott.
John Jackson.
Joseph Thomas Smith.
Victor Clarkson.
Samuel Brown.
James Green.
J.W. Poole.
Richard Brook Grimshaw.
A. Haigh.
James Robert Muller, overman.
Henry Birkhead.
Herbert Hall, dataller.
Enoch Houlson, assistant bricklayer.
George Farmery.
William Brekley.
William Alfred Tompkins .
Harry Hatfield.
Charles Edward Ismay.
John David Jones.
Joseph Edward Hope, deputy.
John Roscoe.
Ernest Dalby.
Frank Hadfield.
Lewis Boyd.
George Wilson.
Benjamin Hodgson.
William Henry Senior.
Archie White.
H Travis .
Arthur Bateman.
Henry Lee.
Owen Owens, machineman.
William Proctor.
Charles Parkin.
Jonn Donnelly.
William Alfred Ellis.
John Waugh.
Walter Allott.
Samuel Kirk.
Henry Wright.
John Brown.
Richard Wright, ripper.
Frederick Cooper, ripper.

Horace Hepworth.
Ernest Scargill.
Walter Duerden.
Charles Bailey.
William Whiteley.

The inquiry into the explosion took place in the Town Hall, Barnsley and occupied six days. All interested parties were represented and the Report was presented to captain harry Crookshank, M.P., Secretary for Mines. In the judgement of Sir Henry Walker, the crucial parts of the evidence were that the two doors separating the intake airway which was known as 1's level from the main return airway were found undamaged and wide open. That shots were not fired on 1's face during the night shift of 5th-6th. August and the commutator cover of the motor of the loader near the inbye end of 1's level was found on the floor and the cover of the starting switch of this motor was found to be loose. As to why the doors were opened, Sir Henry thought two men were clearing 1's top return airway. To do this they had to take empty tubs from 1's level, push them through the doors, fill them with rubbish in 1's top airway and then push them back to 1's level. The doors would have been a hindrance to them and they spragged each of them wide open by putting a prick between the rail and the door. The Report comments that *'there was some demure on the part of the representatives of the Yorkshire Mineworkers' Association in accepting this evidence'* but Sir Henry thought it was conclusive. How long the doors had been opened could not be ascertained. There was evidenc3 from Redman that sometime between 11.30 p.m. and midnight on Wednesday , they were closed.

The effect of these doors being opened would have been that most of the ventilation reaching 1's level would pass straight into the main return and little, if any, would go to 1's face. It was intended to fired shots of 1's face on the night of the 5th.-6th. August. Abut twenty shotholes had been drilled in the face ready for charging and firing and Farmery was to fire them but for some reason this had not been done before the explosion occurred. After the blast, the lamp, shot firing battery, cable, stemmer and explosives canister were found on the inbye end of the 1's low side return airway.

Reasons for Farmery not firing the shots, but no one knew for certain. The deputy in 1's district, William Henry Ashton, made his inspection between 8 and 10 p.m. on the 5th. August and he had found no gas. He also found the ventilation good and the roof and sides safe, but he had reported a fall. The clearence of this fall would have been Farmery's first job when he came to work.

At the inquiry, evidence was then take concerning the loader motor. The electrician had been instructed to make a general overhaul of the electrical apparatus in 1's district which meant that he would remove the covers and examine the commutator and the starter of each unit. His instructions were that before he removed the covers at the loader motor he would see that the gate end switch was out and the cable between it and the starting switch was disconnected and that he would not run the motors with these covers off. After the explosion the starter switch was found in the off position and the gate end switch had been cut off at the surface. Mr. Thomas Storrs, the chief electrician said he had been present on many occasions when the motors had been opened up and this was the first instance in which he had found a cover off a motor when the cable was connected. Mr. G. Cook, Senior Inspector, was present when the body of the loader was found between the loader and the left side of the gate pack, close to the commutator. This was on the other side from the switch but it was possible for him to reach the switch. The evidence seemed to point to the explosion being caused by a spark from the switch or the commutator of the loader motor but there was no absolute proof.

There was common agreement that the explosion spread to all districts of the North East section, travelling into the face in each case by way of the haulage road and outbye as far as the North level by way of the main haulage road. In spreading along roads over which coal had been hauled, the explosion resembled those which had occurred in mines before stonedusting became compulsory on the 1st. January, 1921.

Richard Parry was in charge of the dusting working the mine and he gave evidence to the court of the system of sampling that was used. The manager said that in the first seven months of the year, 201 tons of limestone dust had been sent into the pit. In the Lidgett Seam 3.6lbs. per ton of output had been used. After the explosion, Mr. Cook found that a number of patches of stonedust had been undisturbed.

MARKHAM. Markham, Derbyshire. 21st. January, 1937.

The colliery was one of three owned by the Staveley Coal and Iron Company Limited and was five miles from Chesterfield. Mr. John Hunter was the General Manager for the Companies collieries, Mr. R. Ringham was the Agent and Mr. L.W. Limb was the Manager of the Markham Colliery. There were four shafts at the colliery, Nos 1 and 2 were the downcast and Nos. 3 and 4 were the upcasts. Four seams were worked and the coal from the Blackshale in which the explosion occurred was wound at the No.1 shaft. The colliery employed 1,828 people below ground and 410 on the surface. The ventilation was produced by two Waddle Fans, one at the top of the No.3 shaft and the other at the No.4 shaft. The last recorded readings prior to the disaster was 189,500 cubic feet per minute of air circulating in all the seams and for the Blackshale Seam there were 66,200 cubic feet per minute. Safety lamps were used throughout the mine and at the face electric hand lamps wee used and in accordance with the General regulations (Firedamp Detectors) of 1st. May 1935 a proportion of the men were provided with lamps and ‘Ringrose’ automatic firedamp detectors. The colliery was fully mechanised with the coal cutters and conveyors were driven by electricity. Shotholes were drilled by compressed air machines.

The Blackshale Seam was in the No.2 Development Unit, South-East District in which the explosion took place. The seam was 700 yards below the surface and was 4 feet 3 inches thick with an over lying dirt band or ‘flamper’ eight inches thick. The No.2 unit was a longwall face 192 yards long. There were 72 yards on the left hand side of the main loader and haulage gate and 120 yards on the right of that gate. In each bank there was a belt conveyor which delivered to a gate loader in the centre gate. The loader gate was in the main intake and on reaching the face the air split right and left. The right split returned down the right tail gate and the left split travelled partly by way of the left tail gate and partly by way of the No.9’s face and these two air currents joined in the No.2 return gate outbye of the No.9 left hand airway. Two hurdle sheets were placed in the left tailgate and regulated the quantity of air passing down that gate and directed the air up into the ripping lip. No.9 conveyor face had not been worked for six weeks prior to the explosion. The width of the loader gate between the packs was 12 feet and the tail gates were 10 feet wide. A face ripping six feet thick was being carried in the former and the latter five feet thick.

The rate of advance of the face was about 25 feet per week, the depth of the undercut being five feet and the cutting on this face done by two machines. The sequence of operation was that the day shift filled coal, the afternoon shift cut and filled holings and the night shift ripped, packed, turned over and drew timber. Shots were fired in both coal and rippings and the average number of shots fired per day was 26 in the coal and 12 in the rippings. Coal shot were fired on the day shift and ripping shots at night. On the No.2 face 37 people were employed on the day shift and 32 on the night shift. There was a deputy on each shift and one shotfirer on the day shift.

The quantity of air passing through the district was recorded on the 8th. January as 11,600 cubic feet per minute and on the same day the measurement in the tail gate was 2,800 cubic feet per minute. No measurement was taken in the left tail gate or on the No.9 face. At the inquest the head surveyor said that these were the actual velocities and no allowance had been made for friction and when adjusted the readings would have been 11,890 and 3,310 respectively. Small amounts of firedamp had been reported from November 1936 to January 1937 and on the 11th. November, Thomas Barley, a stallman working at the top end of the face found a small percentage of firedamp in a pot hole near the corner when he inspected at the beginning of his shift but it was cleared as stated in the deputies report. In the general body of the air on the face no firedamp had ever been found.

On the day of the explosion the day shift men were engaged in filling off the undercut coal and timbering up the face with steel props and bars. There were 11 colliers and three contractors on the left bank. The three contractors, one of whom was Frank Mansell were normally employed in the 9's gate scouring a road through from the loader gate to the left tail gate but they had been sent to the left bank to deal with a 'roll' which at the time was crossing the face. This roll partially cut the seam and restricted the height in the bank and they were engaged in enlarging the area.

Leslie Stevens, the regular day shift deputy had gone to the Central Rescue Station for his quarterly practice and Willis Fish, a shotfirer and spare deputy was in charge of the No.2 unit on the day of the accident. He arrived at the face about 7 a.m. and first examined the left bank and then the right bank. he tested for firedamp in many places and found none. At the time he noticed a break over the coal cutter, in the top corner but it was not giving off gas. At about 9.30 a.m. he attended to some matters in the loader gate and then went to the face by way of the 7's main gate and the 2's left tail gate. The two regulator cloths in this gate were seen to be in good order. From the tail gate he then went to the top corner and travelled the whole of the 9's face, returning the same way to the 2's face and along the left bank of that face to the loader gate. There was then no fall on 9's face and no gas was found.

The right bank was inspected again later as was the right side of 6's main gate and he then went up the loader gate to the face and spent some time with John Dowds the shotfirer. There were eight 'Ringrose' automatic gas detectors of the face, tow in the left bank and six in the right bank. Tow of the latter had been taken in by men who had been moved from other faces. There were also a number of flame safety lamps used as detector lamps on the face and at least four of these were on the left bank. Having again examined the right and left banks he started an inspection from the loader gate about 1 p.m. This examination extended to the top corner and 20 yards down 9's face and all was found to be normal with the ventilation taking it's normal course but the break at the 2's face was a little more pronounced.

The deputy estimated he left the top corner at about 1.35 p.m. and Edmund Smith was the only man working there setting supports. He had a 'Ringrose' detector with him which was hung on a bar within five yards of the corner over the belt race. The coal in the top stints had been filled out, four men including two who lost their lives, were moved down near the roll to assist in filling off some of the remaining coal that was there. The deputy again went into the right bank and on his way he saw the let bank coal cutter men in the loading gate getting their trailing cable ready, after which he returned to the men near the roll and finally left them completing timbering preparatory to going home.

Fish again went down the right bank to see that everything was in good order at the end of the shift and was about 40 yards from the loader gate when he felt a rush of air and heat, an interruption of the ventilation followed by smoke and dust. He saw no flame and heard no report.

John Dowds, the shotfirer on the No.2 face had fired 22 shots between 6.45 and 11.30 a.m. on the day of the accident which included three shots in the roll on the left bank at about 9 a.m.. In no case did he detect any firedamp before or after firing any of these shots. The nearest shot to the left tail gate was about 24 yards lower down the face and this was fired at 8 a.m.. In the course of his shift he had no reason to go into the top corner nor the left tail gate. When the explosion occurred Dowds was in the right hand bank about 25 yards below the loader gate. He felt a rush of wind down the face but was not injured in any way. In his evidence at the inquiry Dowds dismissed any possibility of a shot causing the explosion.

During the morning Dowds had been visited by the shift overman Albert Edward Brown who started at the loader gate at about 10 o'clock and travelled up the left bank as far as the top corner testing for gas and found none. at the time the ventilation appeared to be satisfactory and he noticed a 'Ringrose' detector hung up about eight feet from the top corner and a flame safety lamp between the corner and the tail gate. After spending some time on the rods the overman returned to the pit bottom which he reached about 1 p.m.

The last men to leave the top end of the left bank before the explosion was Herbert Smith, a stallman on the day shift. He worked in the third stint from the top almost opposite the left tail gate. He had a flame safety lamp as well as an electric lamp, and he had hung the flame lamp on a bar near to where he was working. By 1 p.m. he had filled out his stint and the deputy asked him to give Slater a hand to the men below him. He stayed with Slater until about 2.30 p.m. Meanwhile the cutter men F. Roddy and L. Cadywould arrived at about 1.45 p.m. and Smith helped them to get the trailing cable along the face up to the machine. About a quarter of an hour later when Smith was looking along the face towards the top end he saw a flash and heard a crack from the machine which appeared to come from the pommel end. Shortly afterwards Roddy came down the face and as he passed Smith he was asked what was going on. Roddy replied, "The machine has bust". After being away some little time Roddy returned and Smith asked him what he was going to do to which Roddy replied, 'Try it again.'. A similar conversation took place between Walter Frost, who was on the face and Roddy.

Frank Mansell, the contractor who was working on the roll, has seen what had happened and he said that Roddy and Cadywould arrived at the face about 1.30 p.m. and the contractors helped them to get the cable along the face. Cadywould later came and asked the contractors to leave him a shovel when they left. This they forgot to do but as they were dressing in the 9's scouring just after 2.30 p.m. Cadywould came for the shovel and before he left said, "We have had a blue flame flash out of the side of the cutter." and Mansell told him to leave the cutter until someone had attended to it. W. Hardwick, a fitter, also heard the remark and told him to get an electrician to the machine. There was in fact an electrician at the sub-station about 300 yards away. Cadywould made no reply and left with the shovel.

Herbert Smith finished his work at the tail gate where he had left his clothes, dressed and proceeded outbye by hat gate. he arrived at the [pit bottom without knowing of the explosion which occurred about 10 minutes after he had left the face. when he passed through the sheets at the tail gate they were in order and he said he left them undisturbed.

While he was working his stint, Smith had noticed a 'Ringrose' hanging over the belt race towards the top corner and this did not come into action during the shift. The detector was in the charge of Edmund Smith who worked at the to of the stint but according to Herbert Smith Edmund wen down the bank to give someone else a hand at about 2.15 p.m.. he took his clothes but whether he took the 'Ringrose' Herbert was unable to say.

The coal cuttermen descended about 1 p.m. and wee seen at the pit bottom by Brown the overman who learned that of the three man team one, A. Pitchford had not

turned up and in consequence they had no ‘Ringrose’ with them. Brown told Roddy to use the ‘Ringrose’ already o the face in the charge of E., Smith until a third man Charles Moreton would be sent to them with a detector. No flame safety lamp was taken by the cutter men. Moreton went inbye with Sydney Smith the grummer for the right bank cutter and they travelled together up No.6’s main gate and into 2’s right had tail gate and undressed about 200 yards from the face. Moreton then had a ‘Ringrose’ as he left Smith and went to the face carrying it. For some reason the detector never arrived at the left bank and was taken out after the explosion by Walter Bray who found it hung on a bar at the face almost opposite the right tail gate. Moreton was found dead near the machine along with the two cutter men and he could not have been in the vicinity of the machine for more than a few minutes when the disaster occurred.

Walter Frost who had been working just above the roll in the left bank had finished work, and at about 2.40 p.m. was putting clothes on alongside the conveyor about 17 yards above the loader gate when there was a ‘crack like a shot out of a gun’ accompanied by ‘a blue flame surging round my neck, my face and my legs’ then a cloud of smoke and he was knocked over. he was severely burned but managed to crawl down the face to the gate end, then over the loader end and down the main gate as best he could where he was found by men from the right bank who helped him outbye. He received attention and then was taken to hospital on a stretcher. Frost said the flame appeared to come down the face from the top end where the coal cutter was.

Fred Bassett had also finished work and was in the loader gate when there was a bang and a rush of hot air which burned the left side of his neck and arm. The rush came from the left bank. Of those who survived the explosion these two men were the nearest to the scene of the disaster and they were both able to give evidence at the inquest.

The deputy, Willis Fish was on the right bank about 35 to 40 yards below the loader gate when he felt the rush of air come from the left side followed by dust and heat. a number of men were working in the right bank and he took them out at once along the right tail gate and up the No.6’s main gate on the main plane. Afterwards he went to the loader gate and onto the face again where he joined the shotfirer John Dowds. On the Main Plane he met R. Warner, an afternoon deputy from a adjoining district who told him he had already telephoned to notify the manager.

The shot firer was about 25 yards down the right bank at the time of the explosion and accompanied by others went down the loading gate where he saw an oil lamp still burning and then gave first aid to Frost and Bassett. Just beyond the roll Baggaley was found alive partly buried under a fall and was removed and sent out on a stretcher. Close to him was the body of Furniss. After setting some temporary supports in place of those which had been blown out and turning on the compressed air to help with the ventilation, another body as found a little further up the bank. By this time the Rescue Brigade had arrived at the face. In the bank near the dead men the shotfirer noticed two extinguished flame safety lamps.

The overman Brown, had left the pit but as he arrived home he was informed of the disaster by telephone and immediately went to the pit and proceeded below ground. He met Mr. Limb, the manager on the main plane near No.7’s main gate. The two men went alone the main gate and 26 left tail gate to within six yards of the 7’s right hand airway where they met afterdamp and had to go back. They then went up the loader gate where they found two stretcher case being treated and then went up the left bank to join Dowds, Warner and others just before the Rescue Brigade arrived.

The Chesterfield Rescue Station received the call at 3.21 p.m. which they immediately answered and arrived at the coal face in No.2’s loader gate at 4.30 p.m. They went up the left bank and found two more bodies about ten yards beyond the others. This team got as far as the tail gate but as nearly all the timber had been knocked out and the roof showed signs of breaking they deemed it wise to withdraw for

a consultation at the loader gate. At this point they were joined by the Manger of the Rescue stations, Mr. G.L. Brown and the Mansfield Station Brigade who had arrived at the colliery shortly after the Chesterfield Brigade.

Three cutter men were still missing and as they were believed to be near the machine at the top corner, it was decided to approach the face by the left tail gate. At No.7's right had airway carbon monoxide and firedamp was encountered and between 9's left had airway and 9's top slit, a prop with some brattice attached to it was found to be on fire and extinguished. The Mansfield Team was set to travel to the top corner of 2' left bank by 9's face but they were unable to do so because of a large fall. Air was passing over the fall but the men were unable to get through wearing their breathing apparatus. Mr. Brown and the Superintendent then travelled the tail gate alone right to the face, and in going up into the top corner they found the bodies of the remaining three men lying close together close to the face at the back end of the cutter. There were three electric lamps near them but there was not a 'Ringrose' detector nearby. The detector that was taken in by E. Smith, whose body was found ten yards above the roll, was found lying close to the opposite face but slightly on the low side of the tail gate.

Mr. J. Hall, Senior Inspector of Mines went to the colliery when he was told of the disaster and went below ground to the fresh air base in the No.2's airway at 6.10 p.m. where he met Mr. John Hunter, the General Manager and together they went up the tail gate to the face. They arrived just as the bodies of the three cuttermen had been removed. A sample of the air was taken eight feet from the machine and showed one per cent firedamp but the top corner was foul and over the machine there was an explosion mixture. A good current of air was organised to clear this.

Mr. Felton arrived at the colliery and found Mr. F.H. Wynne, H.M. Deputy Chief Inspector already at the colliery. These men and others made an inspection of the explosion area and found that firedamp was still present over the cutter and it was coming from a break in the roof. The mine was inspected again on the 23rd, January and the coal cutter examined by Mr. Cowan on the night of the explosion and removed to the surface for a detailed examination.

Those who lost their lives were-
Ralph Marsden aged 41 years a stallman,
Edward Baggaley aged 34 years a stallman,
Charles Moreton aged 29 years a cutterman,
Frank Roddy aged 25 years a cutterman,
Leonard Cadywould aged 21 years a cutterman,
Joseph Furiss aged 28 years a stallman,
William Caulwell aged 48 years a stallman,
Edmund Smith aged 29 years a stallman and
Wilfred E. Slater aged 30 years a stallman.

All the victims were burned and some had injuries but the cause of death of all of them was carbon monoxide poisoning.

The inquest into the deaths of the nine men was held at the County Police Court, Chesterfield before H.M. Coroner Dr. R.A. McRea and a jury on the 18th. and 19th. February 1937. The jury brought in the following verdict-

> "The deaths were accident caused by an unforeseen combination of abnormal conditions, that is, an accumulation of gas which was exploded by a flame which escaped from a cutting machine box caused by a faulty replacement of the cover plate. The jury is satisfied that every precaution and provision has been and is taken by the Staveley Coal and Iron Co. Ltd. to ensure the safety of the men working in their mines."

The inquiry into the causes of and the circumstances attending the explosion was carried out at the same time and the report presented to Captain Harry Crookshank, M.P., Secretary for Mines.

The evidence fixed the point of the explosion in the left bank and it travelled towards the loader gate with the flame extending as far as the roll across the face. Evidence of the violence of the blast in the bank was shown by the displaced roof supports, articles of clothing and lamps. In the left tail gate the hurdle sheets were blown down at the ripping, some bars were displaced and props set on fire. It was purely an explosion of firedamp and coal dust played no part in it.

As to the source of ignition, all the lamps that were recovered were examined and found in the main to be serviceable. Attention was focused on the coal cutter and it was found that there was a small gap in the controller compartment and some coal dust was trapped in there and it was thought that a spark ignited the firedamp.

There had been a fall and in the opinion of the inquiry the break in the top corner and evidence of weighting in the roof was accompanied by an emission of gas which in all probability developed in the time between the deputy's last visit and the explosion. With an emission of gas in a colliery where there had been very little gas for a very long time and the faulty electrical system on the coal cutter these were the ingredients that were the cause of the explosion.

SOUTH NORMANTON, Alfreton, Derbyshire, 15th. February, 1937.

The mine belonged to the South Normanton Colliery Company and there was an explosion in the Waterloo Seam of the Winterbank Pit shortly after 9 p.m. on a Monday which claimed eight lives. There were three seams in the pit which employed about 460 men. The first was the Top Hard Seam, the middle seam was not being worked and the bottom seam, the Waterloo, was at 180 yards deep. The coal face was about two miles from the pit shaft.

Mr. J.G. Mein had been the manager of the colliery since 1921 and he introduced safety lamps into the pit about 1934. They were put in as a precautionary measure when they encountered some faulty ground. Previously candles had been used but smoking was never allowed because of the danger of fire. Even so, tobacco smoke had been reported on the face about twelve months before the accident.

A number of men descended about 2 p.m. and these where the ones that caught the full force of the explosion. Shortly before 9 p.m. another 47 arrived near the coal face and started work. The majority of these men heard a rumble and a prop flew out and the roof began to sag. Then there was flash and a great cloud of dust and the men ran for their lives.

W.E. Truswell, deputy, said that a few minutes after 9 p.m. when he was about to leave there was a hurricane of wind with bits of coal and dust flying about and a choking dust so that he could not see anything. He went back about 50 yards and met a ganger who told him that the men were rushing to the turnout. After sending back two men who were hurt, he found P. Ansell sitting badly burned.

He went forwards again but the conditions were very bad due to the gas. He said to the men with him, *'All of you clear put. Get to the turn out as soon as you can.'* Then there was another explosion. This was about 20 to 30 minutes after the first. Truswell said that he did not see flames and between 8 o'clock and the time of the explosion, no shots had been fired so he thought neither of the explosions was caused by shotfiring.

L. Adnitt had the duty of searching the men before they went down. He searched a few on them every other night and made a general search periodically but had never found anything. On this particular shift he did not make a search and had never seen anyone smoking in the pit.

When C.L. Dye, a contractor, went into the e pit in charge of 11 men he noticed an unusual weight bump and ordered his men out at once. The weight increased rapidly in the roof as well as the floor. he shouted to the men nearest to switch off the power. Them came the wind which was enough to knock him down. he got up and ordered the men to fetch stretchers and tubs to get the injured men to safety. He said the second explosion was about ten times worse than the first. Thornley, one of the injured men, was coming out and he told Dye that he ad never seen so many flames before. Dye and another man Waltho, went about 25 yards up the left bank with the idea of reaching the men there and made a brave and risky attempt to get the cutter men out.

The Mansfield Rescue Team arrived a little before 10 p.m. and a few minutes later they were joined by the Chesterfield Team. On Tuesday morning the Teams were relived by teams of employees working in relays.

Leslie Ottewell was one of the 47 men who had just arrived on the face and later went down in the rescue attempts. He told the Press:-

> "Everything looked normal. You could not tell there was a thing out of place. I had the surprise of my life. We were just going to the bank to start work, having got undressed, when I heard a prop in the roof fly out and the roof started weighting. The whole place rocked. I shouted, *'For God's sake, men let's get going.'* There there was a cloud of dust came and we all ran as far as we could."

A crowd had gathered at the pit head and the reporter from the *'Derbyshire Times'* captured the scene in a paragraph 'WAITING FOR NEWS':-

> "In a little brick building near the pit head I found four men sitting before a roaring fire. They were L. Creswell, (brother-in-law to Vardy), T. Richards, (also brother-in-law to Vardy), William Smith (brother-in-law of Pride) and Frederick Pride snr., (Pride's father). They were silent, these men ,as they starred at the fire. They were thinking of their relatives who still laid buried in the pit, and whose bodies rescue parties were working hard to fond amidst the debris. They had volunteered to go down to help in the work but they had been refused permission, and all they could do was wait."

The men who died were:-
Edwin Samuel Hill aged 19 years, of 25, Albert Street, single,
John Marriott aged 38 years, of Spion Kop Cottages, married,
Willis Lambert aged 45 years, of 68, Church Street, married,
Henry Willis aged 59 years, Oakleigh Villa, Sutton-in-Ashfield, married,
Everett Rees aged 54 years of 134, Main Street, Hulthwaite, married,
John Vardy aged 25 years, of 1, South Street, single and
Frederick Pride aged 30 years, of West End, Sutton-in-Ashfield, married.

Those severely burned and take to Mansfield General Hospital were:-
Isaac W. Petts aged 69 of 8, North Street, married,
John Samuel Thornley aged 27 years of 37, Albert Street, married,
John Johnson aged 30 years, of 31, Sherwood Street, Sutton-in-Ashfield and
Percy Ansell of 45 South Street, single.

While in Hospital, Thornley told his story:-

> "The coal cutter was at work at the face just after nine o'clock, three quarters of an hour before the shift was due to finish. I them heard a sudden rumble over the coal face. It did not seem to be very distant, in fact, it was quite near. As soon as the weight had got settled there was a flash and I saw nothing but fire and smoke and swirling clouds of dust. we were flung in all directions and did not know which way to turn. we did not at first realise what had happened.

I could not seen any of my palls because for the thickness of the air. I put my arms up to try and gasp for breath, and my face felt just as it had been skinned. I struggled along towards the gate end but I had not got very far when there came another explosion, this time not so terrific but the air seemed to reverse and there were more clouds of swirling dust. After that I remember nothing more until they put me in a tub to take me to the bottom of the shaft."

The inquest into the disaster was held at Alfreton before Dr. R.A. McCrea Coroner for the Scarsdale District. W.E. Truswell, deputy in charge of the district in which the explosion occurred, said that he had made careful examinations for gas but had found none. he gave his account of the conditions underground and the Coroner asked him if he thought the a heavy fall would account for what he thought was a second explosion. The witness said it could be but he thought it was an explosion. He stated that he had not found gas in the district for over twelve months and them only a small amount. The men on the face had flame lamps and electric lamps and he had never seen men in the pit with cigarettes or matches.

Mr. J. Cowan, Electrical Inspector of Mines, told the court that he was perfectly satisfied that the coal cutter could not have been the cause of the explosion but he could not speak regarding the portion of the trailing cable that was buried.

Police Constable Tansley said that he found cigarettes and matches on the bodies of some of the men. In Marriott's pocket were two cigarettes in a metal case, and eight live matches. In Willis's a tin tied round with tape containing three cigarettes, but no matches. In Pride's, a tin containing one cigarette and nine live matches, with four loose matches in his pockets and Vardy had a tin containing one cigarette, six live and one spent match. Nothing had been found on the other bodies. All the cigarettes were whole and none had been lit.

Mr. Mein, the manager, issued warrants to certain men and had every reason to believe that the searches were carried out satisfactorily but the evidence of the Constable indicated that the searches were not as effective as he thought. The manager explained the fall by saying that the floor had given way. He explained that there were three seams underneath, two of them being worked by other companies and he had no previous knowledge of these workings. He thought that breaks in the floor caused by the working of these seams had allowed the gas to come in but the two seams that were worked were not in the exact spot where the fall occurred.

Mr. T.E. Pickering, Inspector of Mines, said that he had known the Colliery for seven years and with regard to ventilation and gas, he regarded it as a perfectly safe pit. The roadways were in a good condition and were in good condition.

On the day of the explosion he reached the mine about 11 p.m. and was taken as far as the loader end on the No.11's stall and, with the manager, he investigated the left bank. He found a certain amount of timber run out and could not get past the coal cutter because of a fall. He was with the party that recovered three bodies. He thought the point of the explosion was near the coal cutter and that there was a second explosion in the neighbourhood of the first which was very violent. The cause of the second was thought to be gas coming from the floor ignited by some flame or other.

Mr. Pickering said that they came across Willis's body about 8 yards from the coal face and under his cap, who was about a yard away from the body, they found three parts of a cigarette. they found two electric lamps near the coal cutter and one flame lamp near the loader gate. All the lamps were tested and found to be in good order.

He suggested that the explosion was caused by someone smoking or striking a match to smoke in the left bank. When men stroke matches on the surface they throw the dead match down, but in this case if a match had been struck which he did not want to be found, it was usually replaced in a tin. There was some unusual weighting above

and below the seam which they were working and the Bentink seams of coal were being worked under the South Normanton Waterloo seam. He said-

> "It would have been advisable and a very wise thing to do for colliery companies working in close proximity and underneath each other to consult their respective plans but there is nothing of an obligatory character in the Act of Parliament making such mutual inspection of the plans if necessary. Such a point was now under consideration by a Royal Commission."

After the verdict had been delivered the Coroner commended the bravery of two men Guy and Waltho for their bravery and Mr. W.H. Mein, the managing director of the colliery company, expressed the company's appreciation of the gallant efforts made by the workmen, rescue brigades, , doctors and nurses.

HOLDITCH. Newcastle-under-Lyme, Staffordshire. 2nd. July, 1937.

The Holditch Colliery was known locally as the Brymbo Pit and was about two miles to the north west of Newcastle-under-Lyme, Staffordshire. The mine was the property of Messrs.. Holditch Mines, Limited and Mr. J.O. Davies was the manager. There was no undermanager officially appointed under the Coal Mines Act, 1911 but Mr. H.L. Adkins held the position but was called the head overman. Besides him there were two other overmen. Since the previous 2nd. May, Mr. L. Whitfield who held a First Class Certificate of Competency had been employed at the mine to supervise the mechanisation of the working of the Four Feet Seam. he had no responsibilities under the Coal Mines Act, 1911 and acted only in an advisory capacity to the manager. there were also eight firemen in the Four Feet Seam., three on the day and afternoon shift and two on the night shift. The three overmen were distributed over the three shifts. The number of men employed in the district on each of the three shifts was between 60 and 70 in average and the mine produced about 350 tons per day.

There were two shafts, No.2 sunk in 192 and No.1 sunk in 1916 both of which were about 2,000 feet deep to the stone drifts from which there were two working seams, the Great Row and the Four Feet. The Great Row Seam was not involved in the disaster. From the shafts two parallel stone drifts of 'cruts' had been driven, dipping to the south west to tap the Four Feet Seam through the Apedale fault with an estimated 700 yards upthrow. The intake crut was level for 125 yards from the downcast shaft, and continued in a straight line for half a mile dipping at 1 in 11 to and through the Apedale fault. at this point it became evident that the Four Feet Seam was at a lower horizon than was estimated and the gradient was increased, at first to 1 in 4 and later to 1 in 3 until the seam was reached at 1,100 yards from the shaft. From that point the roadway continued in a direct line in the seam dipping at 1 in 22. at the date of the explosion this had progressed 200 yards from where the seam was struck. This meant that there was a straight road, 1,390 yards long from the downcast shaft bottom to the face which served as the main haulage road and for most of its length, as the intake airway. The return airway ran parallel to the main haulage road and had a similar succession of gradients. Both roads were supported throughout by steel arches 14 feet by 10 feet.

The seam was reached at the end of 1936 and a connection made between the cruts. from this connection , a longwall face, gradually increasing in width, was set away and on 2nd. July, 1937, this had been developed into a double unit conveyor face, 230 yards long. The roof was of soft blue shale, 4 inches of Black bass, 3 inches of cannel. The coal was four feet nine and half inches thick and the floor was of fireclay. The coal was undercut by compressed air machines to a depth of six feet, loaded on to the belt face conveyors and from there to a gate belt conveyor in the main haulage road. as the

roof of the seam was weak, experiments had been made with various machines cutting in various positions with a view to avoid the firing of shots near the roof as far as possible. At the time of the accident, cutting was being done and inch or so off the floor.

A Sirocco fan driven by a 150 H.P. electric motor or a vertical steam engine at 300 r.p.m. at a water gauge of 4.6 inches provided the ventilation. On 25th. June, 52,120 cubic feet per minute of air were circulating of which 29,000 cubic feet per minute came from the Four Feet Seam. As the airways in the Seam were in a generally straight line with few connections between the, there was little leakage from intake to return. The whole of the air current passed a place where a fire broke out and the men stated that the air was so strong that they ad to wear goggles to protect themselves from flying dust and grit. In fact the ventilation was anything but perfect. A large proportion of the intake air reached the face by the Right Hand carving, the remainder passing straight on to the face down the main haulage road and there joined the main current. fro that point at the gate end, all the air passed up the face to the Black Dip where some of it leaked through the doors and screens in the dip and back into the return, the rest passed up to the top end of the face. Here again the air divided, some going out by the Left Hand carving and some through an airway packed alongside the sold coal and rejoined the air i the carving by means of a hole through the pack. There were two headings in solid coal which were ventilated by diverting part of the intake and return air into them through 24 inch pipes. It was she intention to join these narrow roads by a road running parallel to the Main Dip which would form the start of a new conveyor face advancing north west at right angles to the existing face.

Halewood flame lamps and Davis alkaline electric lamps were used throughout the seam at the time of the disaster but later, electric cap lamps were issued to coalcutting machinemen who also had flame lamps as firedamp protectors.

On the morning of 2nd. July, two coal cutter men, Herman Payne and William Beardmore, were moving a compressed air driven coal cutter down the face to start cutting three yards or so to the right of the main haulage road. The machine was fitted with sharp picks when it arrived, jibbed in and started to cut uphill. After it had cut for about two yards, there was a fall of coal onto the compressed air pipe. This was cleared in a few minutes and cutting resumed.

At about 5.45 a.m., the machine had cut past the gate end and the back of the machine was about three yards beyond the left hand gate side pack when Beardmore, who was shovelling away the cuttings, saw a flame which seemed to run round with the picks for a moment and then extend under the cut coal. The flame flashed back along the holing to where the cutting had commenced, a distance of seven or sight yards, came out of the cut and spread up the coal face towards the roof. It was described Beardmore as *'like a wall of fire.'* The extent of the flame and the heat that came from it were such that the first thought of those near it was to get away as quickly as possible.

At this time there were 55 men working in or close to the coal face. Among these were two firemen and an overman. The two firemen were Jesse Moore and Ernest Astles who were quite close to the machine. Moore was just inbye on the return side of it and Astles was at the ripping in the Main Dip where he was preparing to fire a shot. Overman Trevor Hughes was at the top end of the face to the end of the Left hand Carving. The fireman, Jesse Moore, went down the face with the fouled air current, shepherding out the men who had not gone when they saw and smelled the fire but the majority of the men had already left as the overman, Hughes had already told the men to get put of the upper part of the face. Two men W. Haystead and A. Stanton were building a pack in the middle waste between the Back Dip and the Left hand Carving and they failed to come out. It was a mystery why they did not escape but is was possible that by the time they realised their danger and made their effort to escape, the smoke was so dense they lost their way and wandered into another waste and were overcome.

At about 6.15 a.m., all the men except Haystead and Stanton, along with the three officials, gathered at the bottom connecting cross cut at the entrance to the seam and made plans to put out the fire. Several men were instructed to carry bags of stone down the Main Dip to the face and the overman and the two firemen went forward to investigate. They found that the fire had taken a good hold. The timber at the face was blazing and crackling. The roof near the face of the Main Dip was threatening to fall. No one could get near the fire so the overman ordered the stone dust to be dumped as near the fire as possible which was just on the ripping lip.

When the futility of these efforts was realised another retreat was made and a roll call taken and it was at this time, about 6.35 a.m., that it was noticed that Haystead and Stanton were missing. Efforts were mad to find them and the explorers went down the Left Hand Carving and the Back Dip which was now the only means of access to the face and egress from it. There they met fumes and smoke which was so dense that they were driven back. The search was abandoned and there was little hope of finding the two men alive.

In the meantime, the day shift officials for both the Great Row Seam and the Four Feet Seam, having been notified of teh fireman arrived in the district. One of them, H. Bentley, a fireman in the Great Row Seam who was stranger to the Four Feet workings, was under the impressing that some of the searchers had gone into the Right Hand Carving. He asked J. Hassell, a night shift ripper to take him there. At about 6.30 a.m. whilst Bentley and Hassell were there, an explosion occurred which appeared to have been confined to the coal face and the Right Hand Carving sine no other persons were injured. Bentley came out a little singed accompanied by a collier, E. Beech, whom he had met in the Main Dip, and learned that Hassell had not come out. He went back along the roadway to searching for the missing man but failed to find him.

The effects of the explosion were evident at the bottom of the downcast shaft and were felt by Mr. Davies, the manager and Mr. Whitfield, the assistant manager who had just arrived there and wee talking with the party at the bottom of the dip on the telephone at the time. Mr. Davies ordered them to withdraw and told them that he and others were on their way down the dip. While the night shift men were walking out, the effects of three further minor explosions were felt, one about seven o'clock, one a few minutes after and the last a few minutes later. At this time there was no one in the Four Feet workings except the three missing men.

Going up the Main Crut at about 7.10 a.m., the party met Mr. Davies and Mr. Whitfield near the 5's cross cut. The two men were informed of the later explosions. After an examination of the return airway and a consultation with is officials, the manager decided that stoppings should be put in the cruts, just below the cross cut. He gave orders for materials to be brought to build the stoppings. Mr. Davies was sure that there could be no possibility of recovering the three men who were missing. He said-

> "After my examination in the morning my mind was made up that those three men were dead. I do see they could have possibly have been alive from the atmosphere I saw."

At 7.20 a.m., the night shift men were instructed to go home and the day shift man sent to the 5's cross cut to receive the materials for the stopping. Davies, Whitfield, two overmen and four firemen went into the Four Feet district to make an inspection. On their way down the Main Crut they noticed a reversal in the air which was caused by a fifth small explosion.

Some of the party stayed behind to take the tubs off the rope and the rest went to inspect the Right Hand Carving. About 40 to 50 yards from the face of the roadway, firedamp in explosive quantities was found and the party withdrew. No signs had been seen of Hassell, one of the missing men although they and penetrated further inbye than the place where he was thought to have been when the explosion occurred at 6.50 a.m.

The party returned from the Right Hand Carving about 7.30 a.m. and met Mr. John Cocks, the Managing Director of the Company who had been informed of the situation when he reached the shaft bottom. With others Mr. Cocks went down the Main almost to the face. On the way they found the ventilation doors open, probably as a result of the explosion. It was decided to leave them lest the firedamp known to be in the Right Hand Carving should be driven on to the fire.

Near the face of the Main Dip it was found that the rippings had fallen. No fire could be seen and no inflammable had been detected. This could have been expected as the intake air was coming down this road. At this point the flame in the main road had been temporarily smothered, probably because of the collapse of the roof in the face and at the main road ripping and no more explosions were noticed for some time.

Mr. Cocks decided to put stoppings in the roads of the Four Feet Seam even though Mr. Davies expressed disagreement. One of the stoppings was to be put in the short length of the road in the Main Dip between the new narrow heading and the Right Hand Carving, one in the Back Dip inbye of the bottom cross cut and a third at the entrance to the Left Hand Carving. Mr. F.H. Wynne, H.M. Chief Inspector of Mines, who produced the report on the disaster, commented-

> "This change in the original plan of the manager was a vital matter, resulting, as it did, in the large death toll."

Mr. Cocks had summoned the Holditch Rescue Brigade, who arrived in the district at 7.45 a.m., and he ordered them, to make an inspection in the Right Hand Carving where the previous party had been stopped by firedamp. The brigade made their way right up to the ripping, which they fond had fallen, but no trace of Hassell could be found. The Rescue men were then sent to explore the Back Dip between the bottom cross cut and the coal face in the hope that some trace might be found of Haystead and Stanton. The smoke in this roadway was so dense that progress without a life line was impossible. A life line was sent for but in the meantime, Mr. Cocks ordered the brigade to explore the Back Dip above the bottom cross cut to see if Haystead and Stanton had gone that way.

About 9 a.m., two of H.M. Inspectors of Mines, Mr. H.J. Finney, Senior Inspector and Mr. J.A. Bloor, Sub-Inspector, had arrived and made contact with Mr. Davies at the pit bottom who outlined the position to them. On their way into the Main Crut, at 9.10 a.m., the sixth explosion occurred. Its effects were noticeable in the cross cut and the men there saw Mr. Bloor make an entry in his notebook.

Materials and men were arriving in the district, fitters and an electrician had gone down to disconnect pipes and cables. At 10 a.m. there were 28 men in the seam, including five members of the stand-by rescue team, the two Inspectors and Mr. Cocks. Four others were on the haulage road inbye of the 5's cross cut. All except the stand-by rescue men and the Inspectors were engaged in work connected with the erection of the stoppings. The Holditch Rescue Brigade were all on the way up the Back Crut at this time.

A monument or two before 10.10 a.m., there was a seventh explosion followed immediately by a large one, the force of which blew people of their feet at the pit bottom and reversed the whole of the ventilation system between the shafts and the Four Feet workings. Every man in the seam was badly burned and although they were brought out alive, all of them, except one who had been shielded to some extent by a brick door frame, died, twenty seven in all. With the two who had been lost by the fumes from the fire and another who had been lost in the explosion at 6.50. a.m., thirty lives were lost.

The men who lost their lives were-
H.L. Adkins aged 35 years, undermanager.
James Alfred Bloor aged 51 years, H.M. Sub-Inspector of Mines.
John Cocks aged 57 years, managing director.

Percey Condliffe aged 35 years, collier.
Josiah Cooke aged 37 years, collier.
Albert Leslie Cooper aged 30 years, collier.
Albert Edward Cornes aged 26 years, haulage hand.
Harold John Finney aged 41 years. H.M. Senior Inspector of Mines.
John Harvey aged 39 years. Fireman.
John Hassell aged 35 years, ripper.
William Haystead aged 45 years, packer.
William Stanley Hodkinson aged 38 years, underground mechanic.
Frederick John Howle aged 36 years, collier.
Reginald Jackson aged 35 years, collier.
harry Johnstone. aged 34 years, overman.
Ernest Jones aged 51 years, fireman.
Thomas Henry Jones aged 28 years, collier.
Abel Maiyer aged 39 years, underground mechanic.
Henry Mitchell aged 44 years underground mechanic.
William Pepper aged 39 years, fireman.
George Thomas Pickerill aged 30 years, ripper.
Charles Price aged 33 years, collier.
George Thomas Rushton aged 41 years, ripper.
Albert Warwick Seaton aged 26 years, collier.
Arthur R. Stanton aged 31 years, packer.
Frank Turner aged 22 years, underground electrician.

The members of the Hanley Rescue Brigade who lost their lives.
J.W. Forrester aged 40 years,
W. Hough aged 37 years,
T. Harris, aged 46 years,
Samuel Latham aged 28 years and
Job Lightfoot aged 33 years, was injured.

Those who were injured were-
Harry Bentley aged 47 years, fireman,
Harry Birchall aged 34 years, collier,
Percey Bloor aged 49 years, fireman,
John Owen Davies aged 45 years, mananger,
George Edwards aged 29 yaers, collier,
Frederick Charles Salt aged 39 years, collier,
George Stanier aged 37 years, collier and
Salt was in the devastating explosion and was the only one of twenty eight who were there to escape uninjured.

In the Official Report. Mr. Wynne made special reference to the Holditch Rescue Brigade was led by Azariah Clarke, an overman at the mine. The brigade received the call at 6.30 a.m. when two members were just finishing their shift underground They were met at the pit top. Another member was off work, sick and was not sent for but three others were sent for. On lived some distance from the colliery and was late. They went down when he arrived at 7.30 a.m. and the sick member was sent for if he was fit. He subsequently arrived and attached himself to the stand-by brigade and was one of those who lost their lives.

Mr. Wynne went on to say-

> “It has been narrated how the members of the brigade explored the Right Hand Carving right up to the ripping, beyond which further progress was prevented by a

fall (the sick member of the brigade joined them and completed their number after exploration) how they attempted to travel down the Dip towards the face, but were frustrated by smoke and some time later, they started to travel up the Back Dip from the bottom cross cut. At first, they could only stumble about on a steep gradient through thick smoke but, as they progressed, the smoke grew less dense and the gradient easier. At 10.10 a.m., when the big explosion took place, the brigade had halted to take pressure gauge reading at a spot 100 yards below No.5's cross curt. Fortunately, although they were subjected to the force of the initial blast of the explosion and subsequently the backlash of the air, they were not materially affected by either and were able to proceed on their away through 5's cross cut to the Main Crut, where they heard the telephone bell ringing. the atmosphere here was still dusty and foul, but a few minutes later, when it had cleared and the ventilation had resumed its normal course, the captain (Azariah Clarke) answered the telephone and found the manager speaking from the pit bottom asking for information. The manager suggested that the rescue brigade should go back down the dip to explore, but this was impossible immediately, since the apparatus in use was nearing exhaustion and replenishments for it were required. the brigade. Therefore, went to the pit bottom, exchanged their apparatus for that of another brigade who were standing by and travelled in again, finding, on their way, an injured fireman (Bentley), for whom they summoned a stretcher, and another fireman (Bloor), also slightly injured.

On arriving at the top of the steep portion of the Main Crut, a fire could be seen blazing at the bottom. Fortunately, the explosion had burst a nearby water pipe, so the brigade, bringing their breathing apparatus into use, were able with comparative ease to subdue the flames which came from burning loose props and a cable.

A few yards further on, the rescue brigade came upon a number of injured men and proceeded to succour them and make them as comfortable as possible, pending the arrival of further assistance and a supply of stretchers. One of the brigade was sent back to the pit bottom to report to the manager how many stretchers and bearers would be required, and the brigade therefore took a prominent part in evacuating the injured and some of the dead, among whom were included their own colleagues, who composed the stand-by rescue brigade. This took until about 4 p.m. The brigade then made a final examination of the accessible workings. Having ascertained that there were no living persons left behind, and having noted with some precision the positions of the dead, they were ordered to withdraw, as fears were expressed by those in charge on the surface that there might be further explosion any moment.

During the early evening (about 6 p.m.), doubts having arisen as to whether all living persons had been got out, the brigade set out to make a further exploration, which only served to confirm the opinion formed as a result of previous ones, viz., that no person could possibly be alive in the district it was valuable also, inasmuch as the captain (Clarke) reported that the fire was still burning and, in his opinion on a larger scale than when he left the district previously at 4 p.m. The remainder for the story goes beyond this history, but the whole is an epic worthy to rank with the best tradition of British mining, in which such stories of gallantry in the face of immanent peril are not lacking."

The inquiry into the disaster was held by Mr. F..H. Wynne, H.M. Chief Inspector of Mines in the Council Chamber of the Guildhall, Newcastle-under-Lyme, from the 14th. to the 17th. September. All interested parties were represented.

After an exhaustive examination it was concluded that the original fire originated in the coal cutting machine and was due to frictional heat produced by the picks in the cut.

There was no evidence of any friction between the moving parts of the machine. All the explosions were due to the presence of firedamp.

The two plans that were devised, the first by. Mr. Davies and the second by Mr. Cocks. Mr. Davies' plan was to erect stoppings in the cruts below 5's cross cut. Here the ground was solid and there was easy means of transporting materials over a distance of no more than 500 yards from the pit bottom. The second plan involved the erection of three stoppings and the sites were in broken and unsettled ground. The materials had to be transported 1,300 yards and the number of people required to do the work was much large that with the Mr. Davies' plan. Mr. Wynne commented that the second plan involved more danger than the first and went on to say-

> "It is my considered opinion that at the time the second plan was adopted, very dangerous conditions existed and were known to exist at the time which made the attempt to follow the second plan a matter if immanent peril to the lives of the necessary large number of men required to execute it."

DUMBRECK. Kilsyth, Stirlingshire. 30th. January, 1938.

The colliery was the property of Messrs. William Baird and Company, Limited and was situated one mile west of Kilsyth and was sunk in 1885. There were two shafts Nos.1 and 2 which were sunk to the Kilsyth Coking Coal at a depth of 225 fathoms. The No.1 Pit was the downcast and from it, only the Kilsyth Coking Coal was worked. Ninety eight persons were employed underground, sixty eight on the day shift and fifteen on the back shift. Coal was wound only during the day shift and the output was about 110 tons per day. The No.2 Pit was the upcast and worked the coal from the from the Haughrigg and the Cloven Seams, at 109 and 140 fathoms receptively.

The Kilsyth Coking Coal was 2 feet 4 inches thick and had been extensively worked on the longwall system. The seam had a considerable dip to the south-east but the gradient varied considerably both in amount and direction. The main and side endless rope haulage roads as well as a length of airway known as Kelly's Return were almost level. Waddell's Jigger Brae rose from the side haulage road at 1 in 11 for a distance of 200 yards and then rose to 1 in 6 inbye. Kelly's Brae rose 1 in 4 at the outbye end for 110 yards which deceased to 1 in 6 at the inbye length. Auchinvole's Section had recently bee won by two dipping mines and there were only two coal producing places.

The No.1 Pit was worked with safety lamps, the workmen wore electric cap lamps and searching was carried out in accordance with Section 35 of the Act.

The ventilation was produced by an exhaust fan at the surface. There was only one ventilating current in the seam. It went down the No.1 Pit, passed along the main haulage road to a junction known as the '*Circle'* and along the side of the haulage road to the bottom of Waddell's Brae. At the '*Circle'*, a small quantity of air was directed round Auchinvole's Section coming back to join the main current at the '*undercast'*, which was in the course of construction, at he bottom of Patterson's Road.

At Waddell's Brae the air was split and about 7,000 cubic feet of air per minute passed up the brae to ventilate a small section which had ceased producing coal in early, January, 1938. The other split amounted to about 4,500 cubic feet per minute and this ventilated Kelly's Section in which there were ten coal producing places on a longwall face which was advancing to the rise at an inclination of 1 in 6. The first working place on the intake side was on Stark's Level and was 2,028 yards from the shaft by the intake and haulage road. The distance to the shaft by the return airway was 1,615 yards, or 413 less than the route through the intake.

When Kelly's Section was being opened up, several faults and a '*want'* were found in the seam and, at a point about 100 yards from the side haulage road, three roads were driven through the faulty ground. The main body of the intake air travelled up the companion road, 12 yards west of the haulage brae but some intake air was allowed to

enter Smart's Level through a small airway driven in November, 1937, 100 yards west of the brae. This was intended for local ventilation when Smart's Level was opened out. A considerable quantity of air scaled up the main haulage brae through canvas screens.

The return air from Kelly's Section travelled down a companion road on the east side of the haulage brae and along an old level, known as Kelly's return, the inbye end of which had last been used as a drawing road in September, 1937. The air the went to an overcast over Waddell's Brae and after passing the top of Patterson's Road, went direct to No.2 upcast shaft. there were doors at the air crossing which gave access to the return from Waddell's Brae.

Part oft he main Return Airway and Patterson's Road had recently been enlarged. They were intended to be used as a mechanical haulage road for the conveyance of men when Auchinvole's Section was ready to produce coal, after which Kelly's Section was to be stopped.

The mechanical endless rope haulage ran from No.1 Pit to the foot of Kelly's Section. Waddell's and Kelly's Braes were both worked by over-tub self-acting endless rope haulages. There were three self-acting inclines on Kelly's Brae. The face haulages were '*cuddie braes'*, with the tubs hand drawn along the levels.

The seam was worked on the longwall method with roads set at 45 feet centres. a top brushing was taken, three feet thick in the ordinary roads and six feet thick in the main heading and in the levels. neither coalcutters nor conveyors were used in Kelly's Section, but the coal was undercut by a longwall machine in Waddell's Section until the section stopped on the 22nd. January, 1938.

The electrical supply was both AC. and D.C. The A.C. equipment was obtained from the Company's Gartsherrie Works and the D.C. equipment was made on site. The A.C. system was 3,000 and 500 volts, earthed neutral and the D.C. system 440 volts earthed concentric. The major proportion of the plant, both above and below ground was concentric D.C., but A.C. was gradually being introduced to replace this. the A.C. was not involved in the accident. Lighting at the bottom of the pit was supplied from a D.C. motor generator at 110 volts by a separate cable in the shaft. The only lights off the D.C. concentric system, were at the '*Circle'*.

The total generating capacity of the D.C. generating plant was 700 kW. from a 500 kW.. turbo-generator set and a 2 kW. A.C. motor driven motor-generator set which usually served as a stand-by. Th main switch board in the power house was at the coke-ovens and was a multi-panel bord, open type single pole air-break circuit breakers and single pole knife switches. The overhead line feeder to the Nos. 1 and 2 Pits was protected by a 500 ampere circuit breaker on the main switchboard. This was fitted with a single series connected overload coil and a dish-pot time lag which at the time of the accident was short of oil and therefore acted instantaneously. The rating of the overload coil was 500 amperes and it was set to operate at this value. Transmission from the coke-oven power house to the colliery surface switchboard, a distance of 160 feet, was by two overhead lines, each of 0.2 square inches in cross sectional area.

In the colliery surface switch-house there was a group of switches and circuit breakers. One circuit breaker controlled the supply to the No.1 Pit and two others the supply to No.2 Pit. Other switches controlled the supply to the surface plant. The switch protection the No.1 feeder was an open circuit breaker with an overload trip rated at 125 amps with an adjustable tripping plunger, capable of being set to 100 per cent overload, with a time delay of unknown value.

The No.2 Pit was usually fully manned to wind coal on Sundays. It was usual for the brushers at the No.1 Pit on the back or afternoon shift on weekdays to work on Sunday morning to avoid working on a Saturday afternoon. Thirteen brushers and two firemen came to work in the No.2 Pit on Sunday, 30th. January. The fireman, Joseph Campbell, who was in charged of Kelly's Section, descended the pit about 5.30 a.m. and the thirteen brushers with Thomas McDermott, the fireman in Archinvole's Section,

descended about 6.45 a.m.. Four brushers went with McDermott down the main haulage to Archinvole's Section. Nine, including Thomas Martin, the brushing contractor who worked in Kelly's Section, followed their usual custom and went in by the main return as far as the air-crossing over Waddell's Brae. They passed through the doors into the overcast into Waddell's Brae, down the brae and into the side haulage road and up Kelly's Brae to Kelly's Section. The distance from No.1 Pit to the foot of Waddell's Brae was 300 yards shorter by the return airway and Waddell's Brae than by the intake endless rope haulage road. The return was also easier to travel than the haulage road.

They were met at the lamp station at the foot of Waddell's Brae by Joseph Campbell. It was customary for Campbell to travel inbye by the same rout as the men and the side haulage road, outbye of Waddell's Brae was not travelled by anyone after the end of the day shift on the Saturday. The pit bottomer in charge of the No 1 Pit bottom on Sundays had failed to come to work and no one was appointed to take his place. This was a contravention of Section 53 (2) of the Act. Two shiftsmen were employed all morning examining No.1 shaft.

The current was on in all the A.C.. and D.C. cables in the pit as well as on the surface. According to evidence, there was no interruption of the current until the while of the D.C. plant, both on the surface and below ground, failed about 10.15 a.m. The breaker in the coke oven power house tripped, which indicated a considerable load.

David Campbell, acting pithead man, found that the current had failed to the screening plant and had received a signal bell from the No.2 Pit bottom for the current to be switched on again, went with William Stewart, the lampman, who acted a switch board attendant, to the switch house and after opening all the switches, he telephoned the coke oven power house attendant to close the circuit breaker.. This was done and Stewart and he closed all the surface and underground switches one by one. The power house attendant noted that the current was normal and the No.1 Pit circuit breaker remained closed so that no reading was shown on the ammeter. No signal or message was received from No. 1 Pit bottom as there was no one in attendance there.

At some time between 10.30 and 10.45 a.m., the assistant electrician, James Wilson, entered the switch house and noticed that the circuit breaker for No.1 Pit was off. He pointed this out to William Stewart and Wilson closed the switch without making any further inquiry at the time but later reported what he had done to the head electrician, William Patrick. The switch remained close and the ammeter indicated that there was no current in the circuit. As was the usual practice, both men made no attempt to find the cause of the switch being tripped.

There was no disturbance of the current in the No.1 Pit. About 12.30, the supply outside haulage was cut off at the 'Circle' by William Patrick.

The first indication that there was anything wrong underground was a telephone message received at the surface by William Stewart from Thomas Martin, who was to be the only survivor of the men in Kelly's Section. At the Fatal Accident Inquiry, he stated that eight brushers, the fireman Joseph Campbell and he were sitting in Stark's Bench about 10 a.m. eating their food when they noticed a '*haze, a trace of reek* ' . One of the brushers. Joseph M. Kelly, went down the brae and returned to say that he thought it was the reek of some shots that had been fired in Archinvole's Section. The reek died away.

After piece time, the fireman went down to the foot of the hutches which was 380 yards from the site of the fire, to bench two sets of hutches, while Martin worked the brake at Smart's Bench. Thomas Martin said that on returning about 11 a.m., the fireman said that he ad found nothing wrong. The fireman stayed with Thomas Martin and Joseph M. Kelly, who were erecting steel arches near the face of the main heading.

About 11.20 the reek was again noticed but this time it continued. About 11.55 a.m. Thomas Martin, after informing the fireman of his intention, went out to see what was wrong. He found smoke in the intake as he got below Smart's bench. The smoke got

worse on the side haulage road and he found it very thick at the bottom of Waddell's Brae. He reached the doors in the air crossing leading to the return only with difficulty. Here he found the smoke less dense along the main return and he reached the bottom of the pit safely. As was no pit bottomer, Thomas Martin telephoned William Stewart, the lampman at the surface. He also spoke to William Patrick and James Wilson.

Thomas Martin them went inbye along the main haulage road to beyond the 'Circle' where he met the two electricians, Wilson and Patrick, about 12.20 p.m. The three men then returned to the ' Circle' where William Patrick opened the switch to cut off the current from the side haulage road. He then travelled inbye where he found a fire 100 yards beyond the partly built undercast at Paterson's Road. The fire was on both sides of the road but was greater on the side where the cable ran. The surface attendants were informed by telephone.

James Wilson noticed about half a hutch of stone had fallen on the right hand side at the outbye end of the fire. the road a supported by steel arches 9 feet wide and 6 feet high with a large amount of wood lagging behind . Some of this was old railway wagon sides. There were also several wooden building chocks behind the arches. The road was an old longwall waste. A few bags of stone dust and some sand and cement provided for the construction of the overcast were thrown on the fire.

Robert Buchanan, the oversman in the No.2 Pit, was at the winding was at the winding level at the Cloven Coal in the No.2 Pit about 1.55 a.m. When he noticed smoke coming up the shaft which was evidently coming from the Coking Coal. He went to the surface and after getting the shaftsman, William Whyte, and his assistant while were examining the No.1 shaft out of the shaft, they went down the No.1 Pit. They looked into the return, found smoke and telephoned inbye to Archinvole's Section where they learnt from Thomas McDermott that all was clear in his section. A little later, they got in touch with James Wilson at Paterson's Road when they knew the position of the fire. They telephoned the surface and went inbye again contacting the surface at 12.45 p.m. and shortly after they contacted William McAlpine, the Agent.

Robert Buchanan, with the consent of the agent, arranged for two wooden doors on Paterson's Road between the intake and the return to be opened so as to reduce the amount of air travelling past the fire. When William McAlpine received the message at 1 p.m., he went at once into the mine and contacted the Coatbridge Rescue Station and Mr. Arthur Stoker, Senior Inspector of Mines. Arrangements were made for a supply of fire extinguishers which were quickly obtained. About 50 to 60 men wee organised to carry them in to the mine and return the empty cases. Hundreds of extinguishers including refills were delivered at the site of the fire which was gradually brought under control but it spread inbye and at about 7 p.m. the lagging over the let side of the road, about 10 yards outbye from the original seat of the fire, burned through and a large amount of debris ran from the roof which hindered the operations.

Eventually water was piped to the fire which was finally put out about 3.30 a.m. on the following morning, about 15 hours after it was discovered. The fire had spread inbye 17 to 18 yards from the point where it was first seen and none of the steel arches wee displaced.

The cable was found to be severed at the original seat of the fire, at the outer end of the junction box where the smaller cable was joined to the larger one. The junction box had slipped from the horizontal position about 4 feet above the pavement and was lying touching a heap of dirt. The end of the cable was lying underneath the heap of dirt which had obviously fallen from the side of the road. The switch at the ' Cable' was examined and the fuse was found to be intact.

The Rescue Brigade set up a fresh air station close to the return airway at the top of Paterson's Road at 2.10 p.m. The return was explored inbye but the smoke was so thick an the team could not travel far. Messrs. Arthur Stoker, Senior Inspector and George Hoyle Junior Inspector of Mines held a consultation to decide what was to be down. The

reversal of the ventilation was impracticable due to the length of time it would take to get the men out of the No.2 Pit and all efforts to fight the fire would have to be stopped. There was also a risk of firedamp being carried to the fire.

The position of the imprisoned men was not known. There would have been three possibilities for them. The first to come out of the intake, up Waddell's Brae and through the doors into the return, the same way they usually travelled. Second, to come out by Kelly's Return, the shorter distance and finally to erect screens and doors to short circuit the smoke and try and maintain themselves in some part of the section in fresh air.

Two more teams from Coatbridge had been summoned and a number of trained men from local collieries were called in. Another attempt was made at 4.45 p.m. to get along the return with instructions to go down Waddell's Brae and along the side haulage road to the foot of Kelly's Brae.. They reached the air crossing but found the Brae full of smoke. The visibility was poor and the air very hot that they could not proceed further. They opened the doors at the air crossing which allowed the smoke from the Brae to short circuit into the return. A third attempt was made when the smoke decreased and this party was able to reach a point along the level length of Kelly's Return, about 50 yards inbye of the junction with Waddell's Return. A fourth , unsuccessful attempt was then made. At the fifth attempt, Waddell's Brae was still found to be impassable and the team travelled 1,350 yards to and from the base to reached point of Kelly's Return about 35 yards from Kelly's Brae. Here the road was considered to be too constricted for men with apparatus to travel and the time for the first half of the journey had expired. At the sixth attempt, the visibility was found to have improved and it was possible to pas down the Brae. at 8.50 p.m. The team returned having located the bodies of all the men, eight on Waddell's Brae and one further inbye on the side of the haulage road.

A succession of teams, each of four men, was the organised and the first body was brought to the fresh air base at 9. 25 p.m. and the ninth and last at 2.30 a.m. on the following morning.

Those who lost their lives were all brushers. They were-
Edward O'Neil aged 23 years,
Peter Walker aged 36 years,
James Martin aged 38 years,
Robert Martin aged 35 years,
Joseph Campbell aged 59 years,
Joseph Martin aged 26 years,
Henry Hagan aged 26 years,
Joseph Melvin Kelly aged 30 years and
Peter Byrne aged 58 years.

Mr. John Dean Leslie, Sheriff-Substitute of Stirling, Dumbarton and Clackmannanshire with a jury, conducted the Inquiry into the circumstances under the Fatal Accidents and Sudden Deaths Inquiry (Scotland) Act, 1906 on the 25th. and 26th. April, 1938. All interested parties were represented and the verdict of the jury was a formal one-

> "That the men died from asphyxia, caused by the inhalation of carbon monoxide and carbon dioxide, as the result of a fire which broke out in the side haulage road in the No.1 Pit."

The jury made no observations or recommendations. The Report into the disaster thought that there was little doubt that the fire started at the junction box where the small cable joined the larger one. This was the place where the fire was first seen and it spread from there. The effect of the first fire would have been to increase the quantity of air along the side haulage road but as it increased, it would alter the distribution of the ventilation in Kelly's and Waddell's Sections. With a large volume of air passing over the

fire, this would serve to dissipated to the smoke and make it less noticeable. The air was heavily polluted with the poisonous gasses and would have overcome the men before the doors were opened in Paterson's Road.

A full report of the electrical aspects of the fire was made by Mr. J.A.B. Horsley, H.M. Electrical Inspector of Mines.

MARKHAM No.1 Blackshale Pit. Chesterfield, Derbyshire. 10th. May, 1938.

The colliery was owned by the Staveley Coal and Iron Company, Limited and was about four miles to the east of Chesterfield in the village of Duckmanton. Mining had commenced at the site about 1882 but the Blackshale Seam was not reached until 1925 or 29. The seam was 690 yards deep and it was the third to be developed at the colliery. The two others were the Top Hard seam at 307 yards and the Deep Hard seam at 565 yards. The Blackshale had been worked regularly since 1927 and was ventilated by two shafts, the No.1 being the downcast and the No.4 the upcast. Since 1934 coal getting had not taken place in any district near these shafts and at the time of the explosion was being carried on the the more easterly sections of the mine.

Going inbye to the Blackshale workings to the north along the main road which was known as the North Plane, the haulage engine was reached at about 550 yards. The return airway and travelling road ran parallel to the North Plane about 55 yards to the south of it. After the haulage engine the road went as the East Plane east-north-east with the return still parallel to a turn known as the Roller Turn about 730 yards from the engine house. It then ran slightly to the east about 1,090 yards passing a transformer house at 260 yards fro the Roller Turn. On the north side of the East Plane the units were known as the 5's, 7's a9's, 11's and 2's and on the south side as the 4's and 6's. At the time of the explosion there was no coal being worked in the 4's or 5's units and the night of the 9th. May, 10 p.m. to 6 am. on the 10th. May had no coal cutting machines operating anywhere in the seam.

There had been incident in the Blackshale seam before the disaster. There had been an explosion on the 21st. January 1937 which had been investigated by Mr. J.R. Felton, Divisional Inspector of Mines. It was found that firedamp came from a break in the roof and accumulated at the face due to a fall in the return airway obstructing the ventilation and this was ignited by an electrical spark set up inside a coalcutter. Coal dust played little part in the disaster. There had been an underground fire on the 24th. November 1937 which was investigated by Mr. George Cook, H,M., Divisional Inspector and this was thought to have been caused by a breach of the provisions of Section 35 of the Coal Mines Act by the use of a spark or light producing object used by a workmen. In the view if the inquiry these events had little bearing on the disaster that was to follow since there was no coal cutting being carried on at the time and contraband could safely be eliminated as a an agent.

The mine had a consultant and general adviser, Mr. John Hunter with Mr. R. Ringham as the agent for all the Staveley Coal and Iron Companies collieries. The agent for the pit was Mr. Kirk and it was managed by William Fry who had previously been with the same Company a undermanager of the Worsop Main Colliery. The undermanger was Arthur Wilde and on the day shift there was one overman and five deputies and on each of the afternoon and night shifts one overman and four deputies. There was common agreement that the mine was well managed and very well equipped with safety devices. The survivors of the disaster praised the working conditions at the colliery. Every month the Company inspected a part of the mine and recorded their results in a written document. Meetings were frequently held to discuss questions that might affect safety.

Nothing unusual had happened in the mine for some time before 9th. May 1938. at 10 p.m. on that day, as the afternoon shift ended, every road, airway and working place was reported as being safe and in good order and there was not a single point that required the attention of the overmen or deputies. On the night shift of the 9th. May, the first unit inbye where any work was being done was the 7's unit and this was at the time being turned over slowly and not on the 48-hour cycle. Nothing but repair work was being done and and all was in order in this district.In the other units, all work was done on a 48-hour cycle and by this system the coal face moved forward one turn over in that time or two sets of shifts. One half of the face was turned over o the first day and the second half on the second day.

In the 6's Unit main gate some new steel arches were being set to support the roof and sides of the roadway. This was called rigging. Some shots were fired before midnight, some re-packing done and general clearing up and stonedusting of the roads took place. apart from this, nothing happened in the 6's main gate. On both sides of the face, men were timber drawing while others were working on the conveyor belt to get it in proper order and ready for the next shift.

Proceeding along the East Plane the 9's main gate was the next Unit and here tubs were used to take coal and other material brought from the face by the conveyor belts to the main haulage road on the East Plane. In the main gate on the night shift of the 9th May, ripping was being carried out in the early part of the shift. Shots were fired well before 1.30 a.m. and some rigging took place and various adjustments made to the conveyor belts. Another shot had been fired shortly after 5 a.m. There were signs that the shotfirer had returned to the ripping and was making preparations for another shot firing but this was never fired as the explosion took place before the preparations were completed.

In the 11's and 2's Units, which worked together, for all the coal and other material from the 2's face were brought to a conveyor belt driven by compressed air to a gate conveyor at 11's main gate which transported the coal from both faces down that gate to the junction with the 2's main gate where it was loaded into tubs. These tubs were set on rails inclined at 1 in 15 in 2' maingate and on their way out descended the East Plane which was the main haulage road which a short distance dipped 1 in 9Å for about 13 yards. In the 11's Unit on the night shift of the 9th. May there was some work on the sides of the roads called 'cheeking', being carried out and cleaning up work and stonedusting generally in the main gate. On the left of the face there was also some timber drawing in progress.

At 2's junction and in the slit passage that continued as 11's main gate to the south of 2's junction, some men were cutting the side for a road as an engine house was in the course of construction. In 2's main gate some men were ripping the roof, while at the face others were drawing timber and turning the belt over to bring it nearer the face. Late in the shift, at the ripping lip at the inbye end of 2's right hand airway, one shot had been fired and the work of charging a second appeared to be in progress just before the time of the explosion for an unexploded cartridge with detonator leads projecting from the mouth of the hole was found lying half way along the hole, with the firing cable stretched out on the roadway.

On this shift some signs of firedamp were found to be coming from a small break in a pothole in the roof at the junction of 11's right hand face and 2's left hand face and at the extreme north-east corner of the district. This was discovered about 1.30 a.m. by Carter, a deputy. He ordered that a brattice cloth be erected to direct the air into the pothole and found that the gas quickly cleared. Carter was killed in the explosion but his scorched note book survived and there was evidence from two workmen who survived, George Lowe, tested the pothole with a lamp and L. Gee who could smell the gas gave evidence that this had happened. An overman on the nightshift, A.W. Fitz, visited the break about 45 minutes before the explosion and found it to be clear of gas. After the

explosion, when there was very little ventilation, very little gas was found to accumulate in this pothole and it quickly dispersed when the full ventilation was restored.

No other gas was found towards the end of the shift stonedusting was done at all the loader gates and gearheads. Tubs of material from the roof and sides, cleaning up of coal dust and spillage on the roads from the conveyors, gearheads and gate-end loaders, were standing in 2's junction and in various places along the East Plane. There appears to have been some delay in getting the tubs away that night. One of those in charge of the haulage was heard by a survivor, F. Tompkinson, to say that the movement of the tubs was usually completed about 5.45 or 6 a.m. but it was not completed that night shift until 7 a.m. The practice in the pit was to start moving the tubs from the outbye end of the haulage road and then to move those inbye, finishing with those that were furthest inbye. From the evidence of survivors is seemed that fairly late in the shift many of tubs that were filled with coal dust were standing on the incline in 2's gate or in the East Plane somewhere about 2' junction. They would ordinarily have been secured with the wooden sprags between the wheels and when the time came they would have been lowered down the East Plane where they would have again been secured.

About 5 a.m most of the men prepared to leave and by 5.30 all who were not firing shots, ripping or engaged in the haulage were on their way to the pit bottom. at about 5.32 or 33, those who survived heard a noise like a heavy bump and saw a cloud of dust, which one described as s blue wave, while others felt a rush of air and dust which was so strong in many cases as to knock them over. Many of the men were rendered unconscious. Of the men at the who were inbye of the junction of 4's main gate at the time, only two survived, J.A. Smith and T.C. Watkinson. Both were overcome by carbon monoxide and rescued by the rescue parties. They recovered in hospital. All the others who were inbye from them died as did some who were outbye from them. Many of the victims died from carbon monoxide poisoning and some sustained injuries of violence. Dr. Fisher, H.M. Medical Inspector of Mines thought that the injures occurred at the moment of death.

In the office at the bottom of the pit the overman, Fitz, noticed no more than a slight banging of the separation doors and a hissing noise as if wind were escaping through the partly opened doors into the return airway. Prompt steps were taken to mount a rescue operation. By 6.05 a.m. a rescue party was formed from officials and mineworkers of the colliery and they went down the pit. The overman and others who had already gone inbye to see what could be done before the rescue parties arrived. By 6.25 a.m. The Chesterfield Rescue Corps arrived at the pit from their station six miles away, by 6.32 the Mansfield Rescue Corps arrived after a journey of 10 miles and the Ilkeston Rescue Corps, who had been asked to stand by, were not called until 7.07 a.m. and arrived at 7.50 a.m. having travelled 28 miles in 43 minutes.

Before the teams arrived the men who were suffering from carbon monoxide poisoning had been removed to a position where the air was good and were given carbogen treatment under the supervision of the Chief Agent Mr. Ringham, Mr. Fry, Mr. Fitz and the assistant Safety Engineer, Mr. Hibberd. As a result 40 men were revived. The Rescue Brigades assisted in putting out fires in various parts of the mine and observed danger points and in the sad job of locating and removing the bodies.

Those who lost their lives were-
Henry Alberry aged 46 years, contractor of 6, Clowne Road, Stanfree.
James Allen aged 25 years , contractor of 151 Arkwright Town, Duckmanton.
Leonard Atkin aged 53 years, contractor of The High Street, Barlborough.
David Bann aged 54 years, contractor of 8, Shuttleworth Road, Bolsover.
Albert Bell aged 33 years, road layer of 4, Victoria avenue, Staveley.
Walter Bluer aged 41 years, ripper of 63, Poolsbrook Road, Duckmanton.

Charles Bown aged 27 years, contractor of Romiley Cotttages, Barlborough.
John Henry Bradford aged 46 years, ripper of 16, North Crescent, Duckmanton.
Arnold Bray aged 34 years ,ripper of The View, Poolsbrook.
Samuel Bray aged 20 years, haulage hand of 8, Harrington Cottages, Staveley.
Herbert Brough aged 63 years, shotfirer of 41, South Crescent Duckmanton.
Arthur Brown aged 18 years, pony driver of 56, Poolsbrook Road, Duckmanton who died in hospital.
John Thomas Brown aged 26 years, timber drawer of 29, Orchard Row, Carr Vale.
Cyril Buckley aged 40 years, acontractor of 20, Welbeck Road, Bolsover.
Arthur Carter aged 40 years, deputy of 7, North Crescent, Duckmanton.
John William Commons aged 33 years, contractor of 91, Circular Road, Staveley.
George Cowley aged 38 years, contractor of Pretoria Street, Shuttlewood
George Davidson aged 51 years, contractor of 26, Council Houses, Barlborough.
James Walter Frost aged 47 years, contractor of 1, The View, Poolsbrook.
Alfred Furness aged 39 years, road man of 6, Cavendish Street, Staveley.
Alfred Garland aged 52 years, timber drawer of 32, Foljambe Road, Brimington.
Joseph Geary aged 55 years, of 58, Lime Avenue, Staveley, dataller.
Ambrose Grainer aged 41 years, road repairer of 9, Mansfield Road, Clowne.
William John Grainger aged 49 years, road repairer of 27, Crown Street, Clowne.
Robert Henry Grainer aged 21 years, road repairer of 27, Crown Street, Clowne.
Bernard Gregory aged 34 years, timber drawer of High Common, Barlborough.
Robert Gregson aged 36 years, contarctor of 27a, Chesterfield Road, Shuttleworth.
John William Hadley aged 32 years, contractor of 18, Apple Tree Road, Stanfree.
Joe Hardy aged 37 years, contractor of 239, Chesterfield Road, Staveley.
Herbert Hargreaves snr. aged 48 years, contractor of 5, North Crescent, Duckmanton.
Herbert Hargreaves jnr. aged 27 year, contractor of 5, North Crescent, Duckmanton.
Leslie Hargreaves aged 23 years contractor of 5, North Crescent, Duckmanton.
Wilfred Haywood aged 36 years, ripper of 16, Poolsbrook Cottages, Poolsbrook.
Arthur Henson aged 45 years, ripper of 45, Hartington Road, Spital.
Joseph Hibberd aged 51 years timber drawer of California, Balborough.
Clarence Hill aged 29 years, belt hand of Carlow Green.
Henry Hudson aged 26 years, gate-end loader of 6, Grove Lane, Birmington Common.
Lawrence Jacklin aged 28 years, contrator of 2, West Crescent, Duckmanton.
Henry George Jackson aged 43 years, a contractor of Mansfield Road, Clowne.
Enoch Jones aged 21 years, contractor of South Crescent, Duckmanton.
Frank Jones aged 33 years, haulage hand of 39, Cavendish Street, Staveley.
Thomas Jones aged 49 years, contractor of 14, South Crescent, Duckamnton.
Leonard Keller aged 26 years of 15, South Street, New Wittington, belt turner.
Samuel Kerry aged 28 years, haulage worker of 134, Speedwell Terrace, Staveley.
Rowe Kirk aged 60 years, contractor of 2, West Crescent, Duckmanton.
Alfred Lamb aged 26 years road layer of 18, Pipe Lane Staveley.
Harry Lavender aged 39 years ripper of 67, Poolsbrook Road, Duckmanton.
John William Leivesley aged 46 years, deputy of 4, North Cresent, Duckamnton.
Joseph Lilley aged 30 years, road repairer. of 63, Lowgates, Staveley.
Felix Linathan aged 48 years, contractor of 58, Poolsbrook Road, Duckmanton.
Stanley Lodge aged 40 years belt erector, of Low Common, Renishaw.
Arthur May aged 59 years, contractor of 45, North Crescent, Duckmanton.
Fred Monks aged 60 years timber drawer of 9, Elm Street, Hollingwood.
John McConnon aged 32 years rope greaser of 14, Cross London Street, Nr. Whittington.
Cyril Clarence Palmer aged 39 years, contractor of 23, Myrtle Green, Hillingwood.
Colin Gee Pemberton aged 30 years, belt hand of 13, Barbers Row, renishaw.
Edward George Pether aged 30 years, ripper of 133, Selwyn Street, Hillstown.

Wiliam Pickering aged 24 years, haulage hand of 67, Speedwell Terrace, Staveley.
Mark Richards aged 31 years, ripper of 9, Mooor Lane Balsover.
Ernest Albert Rodgers aged 19 years, of College Avenue, Duckmanton, haulage hand.
Arthur Roper aged 61 years, contractor, Rectory Road, Duckmanton.
James Stanley Rowland aged 34 years, contractor of 16, Robertson Avenue, Duckmanton
Samuel Edward Salt aged 41 years, deputy of 27, North Crescent, Duckmanton.
William Sherwin aged 64 years, engine driver of 11, Duckmanton Road, Duckmanton.
Clarence Silcock aged 42 years, ripper of Sherwood Street, Carr Vale.
Robert Simms aged 57 years, contractor, 21, The Square Poolsbrook.
Frank Smith aged 26 years, belt trimmer, New Bungalows, Barlborough.
Fred Taylor aged 53 years, contractor, 33, Staveley Road, Poolsbrook.
Harry Taylor aged 32 years, belt erector, Westfield Cottages, Barlborough.
Herbert Wale aged 40 years, face timber drawer, 14, Worksop Road, Mastin Moor.
Benjamin Wallace aged 29 years road layer of 42, Speedwell Terrace, Staveley.
William Wilkinson Watson aged 58 years, contractor, of 36, South Crescent, Duckmanton.
Denton Whelpdale aged 39 years contractor of 87, Clowne Road, Stanfree.
William Edrard Whelpton aged 32 years rope greaser, of 48, Hill Top Road.
Redvers Baden Whitehead aged 37 years, shotfirer, of 59 North Crescent, Duckmanton.
George Whitley aged 36 years, contractor of 2, Markham Road, Duckmanton.
Robert Henry Wood aged 22 years, haulage hand of 8, New Bridge Street, Old Whitt.
Thomas George Yates aged 38 years, timber drawer of 5, Poolsbrook Cottages, Pollsbrook.

Those that were injured were-
Joseph Bagshaw aged 27 years, belt turner.
Henry Banner aged 40 years, timber drawer.
George Bluff aged 50 years, timber drawer.
Jesse Bowden aged 29 years, belt turner.
Sam Bray aged 41 years, timber drawer.
John Brown aged 56 years, timber drawer.
Thomas Bullock aged 44 years, timber drawer.
Alec Clarke aged 43 years, timber drawer
Henry Clarke aged 26 years, stall man.
Olivery Clarke aged 39 years, timber drawer.
Tom Clarke aged 57 years, timber drawer.
Desmond College aged 28 years, rope man.
William Cuttle aged 36 years, timber drawer.
Ron Davis aged 45 years, timber drawer.
Tom Edwards aged 34 years, shotfirer.
William Edwards aged 23 years, haulage.
William Evans aged 61 years, timber drawer.
Thomas Fox aged 61 years, timber drawer.
Thomas Grainger aged 34 years, contractor.
James Greaves aged 43 years, timber drawer.
Sam Hartsthorn aged 20 years, haulage.
Arthur Hodkinson aged 43 years, contractor.
Joseph Kirk aged 35 years, road layer.
Don Linathon aged 38 years, timber drawer.
Joseph Marsden aged 47 years, contractor.
Kenneth Monks aged 29 years, belt turner.

Walter Oakden aged 43 years, deputy.
Horace Poyser aged 42 years, timber drawer.
Charles Quail aged 24 years, stallman.
Robert Roberts aged 23 years, belt turner.
Fred Singleton aged 35 years, belt turner.
George Slack aged 49 years, contractor.
Albert Smith aged 56 years, contractor.
Tom Smith aged 49 years, timber drawer.
William Stevenson aged 27 years, contractor.
Arthur Waterfield aged 62 years, timber drawer.
Tom Watkinson aged 38 years, belt turner.
Tom Williams aged 57 years, timber drawer.
Philip Yarnold aged 42 years, timber drawer.

The inquiry into the causes and circumstances attending the explosion which occurred at the Markham No.1 (Blackshale) Colliery, Duckmanton, Near Chesterfield, Derbyshire on the 10th. May 1938, was conducted by Paul Ernest Sandlands, O.B.E., K.C. and presented to Captain Harry Crookshank, M.P., Secretary for Mines on the 19th. September 1938. The proceedings were held in the Chesterfield Miner's Welfare Hall from the 27th. June to the 23rd. July 1938. Mr. Frederick Houghton Wynne, C.B.E., B.Sc., H.M. Chief Inspector of Mines was the assessor. All interested parties were represented and all possible causes of the disaster were considered and many of them investigated.

It was generally agreed that the explosion was mainly of coal dust and the following questions were examined-

1) Was there a firedamp explosion which produced a dangerous disturbance of coal dust and also ignited it, or was the explosion entirely confined to coal dust?
2). In what place did the explosion originate?
3). What was the agent that ignited the coal dust?

As to the first possibility the inquiry was satisfied that there was no explosion of firedamp. This being the case, evidence was sought that would indicate the centre of the explosion. Professor Statham and Mr. George Cook found signs of violence which could be traced back to the area of a tub collision and the inquiry thought that this was the point of origin of the explosion. The coal dust gave the inquiry a problem in a mine where that was stonedusted and Mr. Sandlands said - "It was a sequence of events each one almost fantastically improbable, that this explosion was brought about and developed as will later appear." Samples were taken before the explosion and all samples from 1st. November to 9th. May 1938 showed only a fraction more than 15 per cent of combustible matter. Reference was made to the Wharncliffe Woodmoor explosion of August 1936 and of the frequent samples that were taken for analysis, all showed that the mine was well stonedusted and there was evidence to show that on the night shift of the 9th. May, a great deal of stone dusting had been carried out so the question remained as to how the coal dust had become explosive.

Unless there is a cloud of coal dust in suitable surroundings and of suitable density, it is difficult or impossible for it to explode. After the explosion eleven tubs were found piled on to of each other and completely blocking the roadway outbye of 2's junction and the investigators had to crawl over them with difficulty. They wee full tubs that had been blown across the rails and some had hit the steel arches with terrific force, displaced them and caused a fall of roof which fell on an electric cable and joint-box. It looked as if the tubs had run away and it was deduced that the dust cloud would result when the tubs crashed.

As to how the ignition occurred, attention was turned to the electrical system. As the cable and joint box were damaged by the fall, it was possible for sparks to occur. A

great deal of expert evidence was given as to the state of the electrical system and Mr. Sandlands commented-

> "I think the high voltage switch clearly came out by reason of the explosion and it's effects on the transformer house. It is unnecessary to decide whether it was an earth leakage or the explosion violence that brought out the main low voltage switch while leaving the feeder switch on. I am satisfied that either cause might have brought out the former before the time lag on the latter had been overcome."

The inquiry came to the following conclusions and recommendations. That tubs containing coal dust and other debris were standing on an incline and ran away. An electrical cable and joint box was suspended from the roof clear of the road and tubs and believed to be in a safe position. The inquiry recommend that the use of electricity in mines should be examined and suggested that it may not be advantageous and might be prohibited within a period of ten years and that new Draft New Regulations which related to stonedusting needed modification in some respects and extension in others. The inquiry recommended that the place where tubs were loaded or assembled should not be on an incline and more strict attention should be paid to the tub catches. The question of the position of power cables and joint boxes should be examined as should the management of coal dust and stonedusting.