

of that work to assistants. With the exercise of the greatest precautionary care, conditions which make disasters possible arise suddenly and unexpectedly in gaseous mines, now and then, but happily in most cases the dangers are removed without accidents. No man, who has never had any experience in a gaseous mine, should be placed in charge, nor be placed as an assistant in charge, of such a mine. I regret to state that I believe that if the mine-foremen and assistant mine-foremen in positions in this district in 1890 all had the experience required to enable them to foresee, what every experienced man ought to see, some of the disasters mentioned could have been easily averted. The operator or superintendent who engages a mine-foreman or an assistant mine-foreman, who has not had the necessary experience, is guilty of gross indifference as to the effect on the safety of the workmen; he places no value on their lives and jeopardizes the safety of his or his employer's property.

In the following pages of this report I shall endeavor to describe each of the disasters referred to and explain the circumstances which caused them.

**DISASTER AT THE NOTTINGHAM :** AT THE **NO. 3 SOUTH WILKES-BARRE ;** AT THE **JERSEY NO. 8,** AND AT THE **HOLLENBACK** OF THE LEHIGH AND WILKES-BARRE COAL COMPANY.

Prior to the year 1890 the Lehigh and Wilkes-Barre Coal Company's record of accidents has been a very creditable one, comparing favorably with the best of other coal companies. Notwithstanding that several of their collieries were until about two years ago extremely dangerous owing to the large quantities of gas issuing. The number of accidents were comparatively few, remarkably so, when we consider the dangerous condition of the mines. But in the year 1890, though the difficulties were not nearly as great as they had been in the previous year, no less than sixty-one persons were either killed or fatally injured in the collieries of this company. Of this number forty-six were lost in four separate mishaps which occurred in the collieries named at the head of this article.

In order to explain the circumstances which led to such direful results, it is necessary to note the radical and unprecedented changes made in the managing organization of the collieries, and the effect of such changes on the condition of the mines, and on the conduct of the employes. This company operates ten collieries in this district, and prior to the year 1889 each colliery was under the charge of men who had been in the employ of the company in various capacities for many years and had extensive experience of a kind that could not be gained in any other locality, and which was of peculiar value in this region.

On the first day of April, 1889, the inside superintendent resigned his position leaving the collieries all in excellent condition. His successor was engaged from another region of entirely different character, and he

at once fell into the pernicious custom of a few designing new mine officials of reducing the cost of mining in order to show a contrast between their management and that of the preceding one with the view presumably of creating a temporary favorable impression on the company. This custom of new mine officials is a bad one, which generally leads into trouble and additional cost in the end. The excellent condition of the collieries of this company permitted this to be exercised to a greater degree than it could have been if the collieries had not been in good condition, and it was done extensively, regardless of all consequences. Old men, who had been employed to keep the main gangway clean, were peremptorily discharged; the men employed to unload rock and other refuse in old breasts for the purpose of supporting the pillars were dispensed with, as if their work was useless; door-tenders were suspended as superfluous laborers; two hours and half of time was added to each working day of the fire-bosses, compelling them to stay in the mine from about 2 o'clock a. m. until half past three p. m., causing a bitter, resentful feeling, and a spirit of indifference among the most important class of employes; the examination of the abandoned workings was looked upon as unnecessary labor, and it was neglected until the inspector interfered; the measuring of the air currents was neglected, and false statements reported to the inspector; the mechanics were suspended and the mine-foremen were expected to devote much of their time to attending to pumps and other machinery, and neglect their most important duties; thus a mean, niggardly policy was generally introduced to save expenses for the time being, regardless of all propriety, and regardless of the provisions of the law, and of the safety of the property, as well as of the employes. The result was that the officials, refusing to bear the odious responsibility attending such a reckless and indiscreet policy, resigned their positions one after another until the organization was completely changed and demoralized.

Beside the general inside superintendent the following number of mine officials resigned their positions in course of a few months. The general outside superintendent, the chief mining engineers, one master mechanic, nine mine foreman and ten assistant mine foremen. These were all men of experience, some of whom had served the company for twenty-five years and compared favorably with the best mine officials of this region, but all were succeeded by strangers to this region, who knew nothing of its peculiarities, and who had no experience whatever with mines of the character of this company. Considerable bad feeling was engendered by these proceedings, and seeing that old employes of the company were treated with disfavor and that all promotions were made from the men of other regions, a large number of the best and most experienced workmen left the company's service and sought work elsewhere. Methods of mining which had been condemned years ago, were re-introduced, such as driving single gangways and conducting air-currents through pipes

etc., which are generally looked upon as a dangerous method which jeopardizes the safety of a gaseous mine to an unwarrantable extent.

Whenever the provisions of the mine law were disregarded, the mine inspector interfered and demanded compliance with them, but he endeavored to do so in a courteous and inoffensive manner, yet although the law made it his duty to see that their provisions were complied with, he felt that his efforts in that direction were regarded as an intrusion and he did not receive the respectful treatment usually received from the officials of the companies of this district. However the provisions of the law had to be complied with in all matters pertaining to the condition of the mines, in all the cases that came under his notice, but the law is not, and cannot be effective in preventing men from committing grave blunders in cases of unexpected emergency, whether such men are competent or not. In all the disasters of 1890 in this district grave errors were committed, and in each case the errors were committed by officials who did not exercise the care and precaution which might have been reasonably expected if they had the necessary experience. The evident want of experience on the part of the officials of this company caused many to predict trouble, and although we are satisfied that the disasters were the natural sequences of their conduct in general, it would have required a greater power than is bestowed on man to foresee and prevent them by any system of inspection.

#### DISASTER AT THE NOTTINGHAM COLLIERY.

About 9 o'clock a. m., on the first day of February, when James Dunston, a fire-boss, was walking up through a passage-way leading from the No. 5 plane workings to the next gangway above which was driven from No. 2 plane, he unexpectedly entered a body of fire-damp with his naked light and caused a terrible explosion in which he was fatally burned, seven other persons were killed and several others, more or less injured. Reference to the accompanying sketch of that portion of the workings may assist the reader to understand the situation. All the workings west of the seat of the explosion were squeezing and showing positive evidence of an approaching cave. A gang of men consisting of David Fox, Joseph Jones, David J. Williams, John E. Davies, Edwin Parry, Paul Schultz, John Crossing and John Dennis were at work timbering on the No. 2 plane west gangway at the point marked D on the sketch. Another party of men consisting of John D. Humphreys, Thomas Lake, John J. Thomas, Peter Lynn and David Garland were engaged at similar work at the head of No. 5 plane, the point A of the sketch. Mr. Dunston visited the latter party at about 9 o'clock, and after giving directions regarding the work, he left to go up to the other party on the No. 2 plane gangway. When on his way up through the passage, B on sketch, and on reaching the point B, he noticed an enlargement of the flame of his lamp and instantly the whole surrounding atmosphere

burst into a fierce rolling flame. It left him in a poisoned atmosphere of after-damp severely burned and in eight days thereafter he died. He himself gave the account of the occurrence as stated above. The force of the explosion was such that every movable thing was blown from its place for hundreds of feet from the point where it occurred. Five of the gang of men working at D, on the No 2, plane gangway were instantly killed and the other three were severely injured, and one of the three died in a short time after being taken home. All the gang at the head of No. 5 plane were more or less injured; John D. Humphreys was fatally hurt and died an hour afterwards.

The writer was informed of the accident at midday and immediately started for the scene and arrived there at about 2 o'clock. There were hundreds of excited people at the shaft waiting anxiously for tidings from the mine. Five men were still missing. After descending the shaft, I found the mine foreman sitting in the fire-boss station, evidently afraid to go in to the scene of the disaster which was fully a mile and a quarter away. After making a few hurried inquiries I went up the No. 2 plane and on to the scene of the explosion, where I found Mr. Leckie, the district superintendent, the fire-bosses and Mr. Iago Jones, the mine-foreman of the Lance colliery, and several workmen busily engaged in searching for the bodies of the missing five men. The gangway road for a distance of about three hundred feet was covered with rock and out to a depth of from two to three feet. All the air stoppings had been blown away leaving the air-currents to make short circuits, and leaving an extensive area of workings unventilated. Work was continued until shortly before 8 o'clock p. m., before finding any bodies. Then the bodies of John Crossing, Paul Schultz and Edwin Parry were found under a large mass of *débris* at D. Having been covered up instantly at the place where they were at work. After clearing the largest part of the gangway, search was made in the airway, and at 10 o'clock the bodies of David H. Williams and John H. Davis were found lying on their faces at C, in the airway. If the mine-foreman had done his duty, and had gone in to help in the search, the last two bodies could have been found hours sooner. It was not known by the rescuers that the missing men were working in the airway until about 9.30 o'clock when one of the workmen stated that one of the injured men had told him so. Then search was immediately made and the bodies were found at C, shortly after.

Mr. Dunstan, who fired the gas, was an old fire-boss at this mine, but had been employed chiefly in that part of the mine where no fire-damp had been seen. He had been in the workings of the Ross seam on this morning before going to the men at the head of the No. 5 plane, and was evidently going to give directions regarding the timbering. No examination of the workings, intervening between the squeeze and the points where the men were at work, was made. The mine-foreman had not yet



become familiar with that part of the mine, and evidently engaged the fire-boss to do the foreman's duty of directing the repair work, and so omitted his own important duty of making proper frequent examinations of the airways in the vicinity of the squeeze. It was known that a squeeze had been in progress for over a week, but no precaution was taken to ascertain its effect upon the air-currents returning from that section. It is claimed that no gas was ever seen in this part of the mine before, as an excuse for the neglect to make proper examinations at this time. On January 4, in the vicinity of a squeeze, in another part of the mine, where it was also believed that no fire-damp issued, the mine-foreman and district superintendent together, while making examination, ignited a body of gas and both were more or less hurt. Again, on the night of January 6, Thomas Richards, a workman, was burned by an explosion of gas in the vicinity of the same squeeze.

On January 24 a cave-in took place on the No. 6 plane, west of the point where Dunston fired the gas, the concussion of air from which was forcibly felt at the bottom of the shaft. An examination was attempted to ascertain the location of this cave-in, but the pillars were crushing so that it was not safe to approach nearer than the foot of No. 6 plane, a thousand feet or more back from the face. Now, with the experience they had with the other cave-in a few weeks before, and the knowledge of this squeeze and its recent cave-in, it was fair and reasonable to expect that a careful watch would be kept of the effects on the air-currents of a squeeze of such a large extent as this for fear they again might become explosive from the presence of fire-damp. The inspector visited the mine on the 7th, and again on the 27th of January, and saw that none but safety-lamps should be used in the vicinity of the cave of January 2, but although the mine-foreman accompanied him in the inspection of the work of that part of the mine, he said nothing about the trouble on the No. 6 plane, and yet he knew that an extensive squeeze was in progress there. But it has been brought to light since that he did not visit the region of that squeeze during all the time that it was in progress except once. The superintendents went up there nearly every day to examine the squeeze and to listen to its progress, but they went there with naked lights, and took no precaution to ascertain whether there was fire-damp present or not. On Monday morning, February 3, the second day after the disaster, the writer accompanied the superintendents in an examination of the No. 5 plane gangway, and we found the workings filled with explosive gases back to a point 500 feet from the face, proving that an enormous volume of gas was released from the strata or pillars during the squeezing and crushing of the pillars. The air-current from this region was passing the point where Mr. Dunstan fired the gas, and evidently a section of this current having been charged with gas to an explosive mixture reached that point just when he was approaching with his exposed light, and consequently the explosion

followed. The concussion of this explosion killed and injured the workmen at the points mentioned, and did the other damage. The colliery had not been in operation since the other cave-in on January 2, and only repair-men were in the mine when the explosion occurred.

It has been well known here for several years that when a squeeze or a cave-in occurs fire-damp is also liable to appear in the air in sufficient quantities to make it explosive, and every man who assumes charge of a mine should know this, and exercise the necessary precaution when such trouble comes upon him, but in this instance every official, from the superintendent down, seemed to be ignorant of this fact, and acted in conformity with their experience in other very different regions.

#### DISASTER AT THE NO. 3 SHAFT SOUTH WILKES-BARRE.

A map of the workings of this mine is here presented in this report which shows the workings and their connections with the Stanton mine. To enable the reader to understand the situation, the conditions just prior to the accident is explained. The No. 3 shaft was the hoisting way for both coal and men. This shaft was also the inlet for the ventilation. The air-current after descending this shaft, passed in through the tunnel and in the gangway to the point "P" where it was split, a part going up the outlets and down the rock plane to the Stanton fan, and the other split passing into the face of the gangway and returning through the air-way as indicated by the arrows, to the fan at the No. 5 shaft. This shaft also had a cage in to hoist the coal worked from the Baltimore seam 300 feet deeper than the Hillman, which was worked from the No. 3 shaft. Thus it may be seen that there were three available openings for No. 3 shaft working; one leading down the rock plane into the Stanton mine; one in the No. 3 shaft; and one in the No. 5 shaft. It was a gaseous mine and exceedingly so at some points. The rock plane was driven from the Baltimore seam in the Stanton mine on a rise of 18 degrees for the purpose of working the Hillman seam above the level of the point "B" on map, but it proved so gaseous that it was found impossible to conduct sufficient air up through one opening, and to avoid driving another passage through the rock from the Stanton, connection was made to No. 3 working of South Wilkes-Barre, undoubtedly a costly error. On February 2, after making this connection, the inspectors had to notify the company to suspend operation in both the Stanton and South Wilkes-Barre mines, because in consequence of the opposite effects of the ventilating fans of South Wilkes-Barre and Stanton mines. The air-currents became unreliable and fluctuated so that they became explosive at frequent intervals making both mines dangerous. In a few days this was remedied so that a reliable system of ventilation was established in the manner indicated on the accompanying map.

On the third day of March, a party of men consisting of Frank Cull, Hugh Dugan, Thomas Williamson, James O'Donnell, Michal Ferry and

Patrick McNealus was started to work in driving a gangway and air-way at the point B near the head of the rock plane leading down to the Stanton mine. Shortly before 5 o'clock p. m., Frank Connell, William Evans and Brien Markey were repairing the track at C on the passage driven up to connect with the rock plane when the foreman, Richard Faull, passed them on his way out from Cull and his party.

At the same time Thomas Hall and James W. Jameson footman and driver, were going out towards the No. 3 shaft with a trip of cars, and when at the point A, a short distance outside of the tunnel, Jameson stumbled and fell with his head against the rib where a large gas blower was issuing from the coal, and this ignited from his lamp and caused several other blowers to ignite. Mr. Faull was coming outwards on the gangway and smelled something burning in the air-current. Hurrying out, he found the two boys about to try to extinguish the burning blower with a patent fire-extinguisher which they had procured from the bottom of the shaft. The place was thickly timbered and a current of 80,000 cubic feet of air per minute was passing inward and conveying the smoke into the workmen. The patent extinguisher proved useless, and under the circumstances it was only a waste of valuable time to try it. Mr. Faull sent young Jameson in to warn the men and tell them to come out, and immediately went to work to attach hose to the water pipe already convenient, so that a stream of water could be poured on the fire. The night men descended the shaft at this time and joined in to help, but despite their efforts the fire continually gained.

Young Jameson ran in and told George Ford and James Haslam, who were working in the airway, of the fire, and they went out through the No. 5 shaft. Then he ran by Frank Connell and his two companions at C telling them as he went by on his way up to tell Cull and his men.

Frank Connell started out at once to help put the fire out, leaving Evans and Markey to pick up the tools and put them away. The following statement of William Evans explains what occurred:

"My work is carpenter work. I was fixing the track at the time, was down on my knees when the boy James W. Jameson came in and told Frank Connell, who was with me, that he should hurry out to help put out a fire which was just the other side of the tunnel. Frank went out for all he was worth, and then the old man, Brian Markey, followed him, and then I put the tools to one side after they went. We had been taking out some broken wooden rails and replacing them with new ones. The boy, Jameson, went up to notify Cull and the others who were with him to come right out. I was at the bottom of the branch of the plane (at P) when the boy came back. Tom O'Donnell was with me all this time. O'Donnell was the runner. The boy, Jameson, asked O'Donnell whether they could ride out on the mules. O'Donnell said no, let us hurry up and get the mules. The mules were right on the right hand hole (there were two holes, one on the right and the other on the left)

about forty feet away from where we were. Then I told them to hurry up and get out for the smoke was coming pretty fast. So then I hurried out. I came all the way with my head nearly touching the rail, the smoke being heavier (denser) above than it was below. I caught up to Brian Markey before he reached the fire. He was nearly out of breath. Before he came to the fire he asked me whether he would make it (meaning whether we would get out alive) I said yes, that we would be all right soon. We went right through the fire. I put my coat right over my head. Brian was ahead of me. After I got through I helped the men fight the fire. There was plenty of chance for the men to get out, and I don't know why they didn't take the warning and hurry out. They had the same opportunity to get out that I had." "The above is a true account of the circumstances to the best of my knowledge and belief."

Evans was the last person that came out alive. Messengers were sent over to the Stanton mine to see whether or not the Cull party had escaped that way, but they had not, and the smoke was so dense in that direction that it would be impossible for any one to live in it but a very short time.

The efforts to extinguish the fire were continued until about half-past seven o'clock, when it became too dangerous by reason of the presence of a large accumulation of fire-damp in close proximity to the fire, where it might explode and kill them all. Before this Mr. Scott, the superintendent, Mr. Richards, the mining engineer, Mr. R. Morgans, district superintendent, William M. Thomas, mine foreman of the Stanton, John James, assistant foreman, and Charles Jasper, mine foreman of the Empire, had reached the mine, and for a short while assisted in the endeavor to extinguish the fire. At the time stated their efforts were abandoned, and all left the mine expecting an explosion to occur at any moment.

The writer learned of the accident at 7 o'clock p. m., and arrived at the mine at a few moments after 8. On being informed of the situation, and after a careful consideration of the circumstances, it was suggested that an effort be made to enter the mine beyond the fire from the Stanton mine, hoping that thereby the bodies of the missing could be found. The writer realized that this undertaking would be a perilous one, attended with many difficulties, but he knew the district superintendent, the mine foreman and fire bosses of the Stanton mine as men of experience, who could be relied on to make no mistakes, and he, with the approval and co-operation of the managers, resolved to make the attempt.

In order to accomplish what was desired it was necessary to change and reverse the direction of the air current leading to the Stanton, so that the smoke would be driven back towards the South Wilkes-Barre fan, therefore the South Wilkes-Barre fan was run up to a speed of 200 revolutions per minute. District Superintendent Morgan R. Morgans,



Mine Foreman William M. Thomas, and his assistants, John W. Joseph, John R. James and William T. Evans, had descended the mine and were at the bottom of the rock plane ready to make required changes in the airway. The writer and Superintendent T. H. Phillips were in communication with them by telephone from the top of the air shaft, and also with South Wilkes-Barre. Men were stationed at the telephone, and men were employed watching and lubricating the South Wilkes-Barre fan, who were all instructed to be on the alert, ready to give alarm promptly in case the fan failed to keep up the high speed. The Stanton fan was stopped until the party in the mine had pulled down a stopping and put up another, when instantly the air current reversed its course and carried the smoke away towards South Wilkes-Barre. Immediately after receiving word that the changes were completed, the Stanton fan was set to running again at 25 revolutions, half its usual speed, so as to keep the Stanton workings clear of gas. In the meantime the inside party hurried out of the mine for fear that the reversed air-current should cause the fire to ignite the large body of fire-damp known to have accumulated on the South Wilkes-Barre side and produce an explosion.

A party of trusty men was now organized consisting of the following persons: G. M. Williams, mine inspector; M. R. Morgans, district superintendent; William M. Thomas, mine foreman of the Stanton Colliery. John W. Joseph, assistant mine foreman; John R. James and William T. Evans, fire-bosses; Charles Jasper, mine foreman of the Empire Colliery. John Leyshore, Frank P. Thomas, James Berrigan, John J. Thomas, Sheridan Hilton, William Walker, John C. Thomas and William H. Phillips, employes of the Stanton Colliery. All descended the shaft and went to the foot of Rock plane. This plane is nine hundred feet long on a rise of twelve degrees, all driven through rock. Upon receiving assurance from Superintendent Phillips, who was still at the telephone on the top of the Stanton air-shaft that all was right, a man was left at the telephone in the mine at T, and one within hailing distance on the way from there on and up the plane. All had locked safety lamps. At the head of the plane, the intense heat of the air-currents had caused the roof to fall so as to close the passage. It took about an hour to open a small passage sufficient to enable one to crawl through. At this time Superintendent George Scott came in, having been attending to matters at South Wilkes-Barre. The writer suggested to him that it would be well to make preparations for flooding the mine as quickly as possible, so as to prevent the fire from passing over to the Stanton mine, and he went at once to inform Superintendent Phillips to that effect by telephone. Shortly after, a passage was made through the fall and the officials named passed through and down the South Wilkes-Barre gangway as far as P. Its parallel airway was also examined to the same point, but none of the missing men were found. It was too hot to at-

tempt further examination all retreated to the Stanton gangway, and after a brief consultation decided to rest a few hours, to give the heated passages time to cool, and that all should return with additional force at 9 o'clock. It was now 5.30 a. m. At the time agreed, the party returned with the following persons in addition: District Superintendent L. W. Sarge, Joseph Ford, mine foreman of Hollenback Colliery; Joseph Nesbit, R. J. Williams, Wat. Jones, Thomas D. Rowland, Thomas Malia, James W. Davies, Ed. Williams, J. S. Griffiths and David C. Morgan. This time the workings of South Wilkes-Barre were thoroughly examined from the face back to D, to which point the fire had traveled and was seen burning fiercely.

This satisfied us that the missing men had fallen suffocated by the smoke at some point between this and the tunnel, and that the fire had traveled inwards to a point 1,200 feet inside of where it started.

Superintendent Phillips did excellent work in procuring water, and had the mine flooded by March 12, so that water was running over to the Stanton, but it was boiling hot for several days.

On Monday, March 24, they began to hoist the water out again, and by April 1, it was low enough to enable District Superintendent M. R. Morgans and Mine Foreman Richard Faull to descend the No. 3 shaft for examination. They found the gangway completely closed to within 150 feet of the shaft. On the 4th of April again a party of officials examined all that could be examined, and came to the conclusion that the fire was extinguished. They went down the No. 5 shaft and in as far as H, on top of the falls, and found everything cool, but the roof had fallen to a height of about 24 feet and from there it was full of gas.

A gang of men was set to work that night to re-open the gangway from the No. 3 shaft, using locked safety lamps, but at 2 o'clock a. m. an explosion occurred somewhere inside, and blew them about quite roughly, but they came out safe, and without injury of any consequence.

On Monday morning April 7, when the officials were on their way into the Stanton mine for the purpose of making another examination, another powerful explosion occurred which determined that fire still existed and South Wilkes-Barre was filled with water the second time. This time it was allowed to remain filled with water until May 28, and after it was taken out, no attempt was made to ventilate farther than the point where the men were at work. The rock plane leading into the Stanton was hermetically sealed so that no air could pass.

They worked incessantly night and day without finding any trace of the missing men until the last night of the year, December 31, when the bones of two were found. The next day, January 1, 1891, the bones of the other six were found. All were near together at the point H. They had evidently attempted to go to the return airway at this point and were suffocated by the smoke when between the two doors. The roof had fallen to a depth of twenty-two feet over them. The flesh had dis-

appeared leaving nothing but the bones. Frank Cull had lost one leg and this enabled them to identify his bones; but the others could not be identified and all were interred together.

The men who made the daring attempt to rescue the missing men are entitled to the highest commendation for their intrepid courage and humane efforts to save their fellow workmen. The officials of the Stanton mine and District Superintendent M. R. Morgans, without apparent hesitation, took the most perilous position. They knew that under ordinary circumstances this part of the mine would fill with gas in five minutes were the ventilation to cease, and that, if the South Wilkes-Barre fan, being a new one tried for the first time and at such high speed, would break or be retarded in motion, the smoke would be drawn upon them instantly by the Stanton fan. They also knew that if the double doors at H would burn down, the air fan No. 3 would take a short circuit that way to the No. 5 shaft; but, trusting that the tunnel would choke by falls so as to prevent this, all did their part bravely and well without betraying any hesitation.

#### THE DISASTER AT THE NEW JERSEY OR NO. 8 COLLIERY, ASHLEY.

At about 9 o'clock a. m. on the 15th day of May, 1890, an extensive part of the workings of this colliery unexpectedly caved in, closing the usual escape-way of twenty-eight persons and closing them in at the inner part of the first lift west, on the top split of the Baltimore seam, at B in the accompanying sketch.

It was reported to the workmen before they entered the mine that their working places had been examined and found safe. Shortly before 9 o'clock a. m., a message was sent in to tell the employes that the colliery would stop working at 9 o'clock, owing to the scarcity of railroad cars. At about this time also the cave-in took place, closing in not only all the men that happened to be working in the top split, but four others also who were working in the bottom split. The four persons from the bottom split were at their work shortly before the occurrence of the cave-in and the cause and manner of their going to the top split remains a profound mystery. The bottom split gangway did not cave and is still open. The rock passage leading from one split to the other at C was not closed and is still open. At first it was thought fortunate that John Allen, one of the fire bosses, was with the party, because he knew that an opening could be made from the surface at A and to one of the breasts inside of the cave in a short time, and that this would allay their fears and anxiety and guide them in their conduct; but he, through a thoughtless act, caused the death of all but two, twenty-five of his companions and himself.

The driver, Willie Matthews, and Thomas Lloyd, a door-boy, were the last that came out of the top split before the cave-in. They stated that a few minutes before they left, while they were at the back branch (B on

map) getting ready to distribute cars, John Williams came to Matthews and told him not to go in the gangway, that the roof was bad. In five or ten minutes after that the boys started out, and when they had gone a distance of about three hundred yards, the cave-in occurred and extinguished their light. From this we know that there were indications of the cave-in for a short time before it took place, but it is evident that the men expected no such a cave-in as would endanger them. If Allen, immediately on finding that the gangway through which they traveled had been closed, had conducted the men down through the rock passage connecting the bottom and top split at C and out at the bottom split gangway (the passage was open and familiar to him), they could have all walked out and been saved, but this passage filled with gas in a short time, which made it impassable. In about two hours after the cave-in, the mine foreman made an effort to go in that way to rescue them, but he met a body of fire-damp that made it impossible. At about 11 o'clock, just before this attempt of the boss, the concussion of an explosion was felt by a party of rescuers in the bottom split gangway, but its cause was not discovered until the two living men, Robert W. Roberts and Anthony Frayne, were rescued and they explained it as having happened as follows: At about 10 o'clock, after finding that they were closed in, John Allen, accompanied by Robert W. Roberts, Anthony Frayne and Michael Scally, started away from their companions, leaving them all sitting in darkness at B on the gangway, while they were going to search for an opening to go out. A, on map, is the entrance of an old drift, the mouth of which was caved in and to which a hole had been driven from one of the breasts at x. They went up to the old drift workings, and although there was fresh air passing in, they failed to find an opening out through the cave-in. Returning to the breast they went in through the faces to the fourth breast where they met a body of gas. Allen carried a safety lamp and the others followed in the darkness. On returning towards the holed breast again at H, he struck a match to light his naked lamp, and the gas having by this time followed them, ignited and exploded. Beyond this these men cannot give any account. They were painfully burned and soon became unconscious from the effects of the after-damp.

At about 6 o'clock p. m., the old drift was opened and the rescuers on approaching the hole at x heard moaning. The breast below x was full of gas, and it not being safe to take even a safety-lamp down, parties were lowered in the dark guided by a rope, and they soon brought up John Allen, Robert W. Roberts and Anthony W. Frayne alive, and in a short time after, Robert was able to tell what had happened, and where the other men were when they parted from them. The breast was so full of gas that it was impossible to go down the gangway, and a large force of men was set to work to enlarge the opening to admit a larger volume of air.



After this was accomplished some of the gas disappeared, and an attempt was made to go down the breast; but on reaching the first cross-heading it was found still to be full of gas below, and too dangerous to attempt to go farther unless it could be removed.

Doubtless the gas was being carried away as rapidly as might be expected under the circumstances; but, owing to our anxiety, its disappearance seemed exceedingly slow and tardy, and rather than wait there in idleness all the company officials, except Mining Engineer W. Richards, went over to the slope accompanied by all the workmen to close headings for the purpose of reversing the course of the air-current which, if successful, might drive the gas away from the point we desired to reach. At 6 o'clock a. m., the writer having tired waiting for their return, and accompanied by Mr. A. Rees, superintendent Susquehanna Coal Company, and Mr. W. Richards, concluded to go in and see whether or not the gas was disappearing. Leaving Mr. Richards at the top of the breast at *x*, Mr. Rees lead the way down on the right side of the breast followed by the writer, and finding no gas we soon reach the gangway. Here we saw at once the effects of a terrible explosion. The gangway road was covered with broken cars, pieces of props, pieces of sheet-iron and refuse of all description. After making an examination of the gangway on both sides of the breast and finding it comparatively safe, we shouted to Mr. Richards to go outside and send a message over to the slope to tell all hands to come back at once and leave the ventilation as it was.

When Mr. Richards returned to his post, he was accompanied by Mr. Scott, the superintendent, who had just returned from the slope. The latter feared that we were in danger and tried to persuade us to return, but we knew that there was no danger and told him so, yet he went outside and left us, and he did not go down that mine until after all the bodies had been carried out. The most contemptible conduct on the part of a mining man that I have seen in an experience of thirty years in the mines of this valley. Mr. Rees and I continued our examination and found the bodies of twenty men strewn along the gangway between the points *b b* and *d*, and immediately returned to notify Richards of the fact, and tell him to send men with stretchers down as soon as possible. By 1 o'clock p. m. the bodies of were all brought out. The persons present having been there since the previous day were tired and hungry and they went home to rest. There being no provision made to relieve them with fresh men, the search had to be suspended till the same men returned at 7 o'clock May 17. They, accompanied by the writer, went in again and found the body of Michael Scally in the breast *h* near where the gas was ignited. Three more were found a short distance below the point where Mr. Rees and I went on the previous morning in the breast *b b*, and another was found covered by a pile of *debris* on the gangway between *b* and *d*. This completed the number missing, making twenty-eight altogether, two of whom are living.

It needs no more than a statement of the facts to show that Fire-boss Allen made a serious and inexcusable blunder, and thereby caused the death of himself and twenty-five of his companions. He had made another error a few months before which proved his unfitness for the important position he held, and the officials were informed of that, because the company paid a sum of money to settle the claims of the man who was burned through that act, and the writer told the superintendent that it was evident that Allen lacked the experience and knowledge necessary to fill his position properly. I have learned also that he was promoted to this position and held there against the will and judgment of the mine foreman.

I noticed several men who were not employes of the company helping, willingly and bravely, to carry the bodies out. Among them were two or three old officials of the company who had shortly before resigned their positions.

It is unusual to suspend efforts to rescue or recover the bodies of persons from mines after accidents, and it was exceedingly humiliating and disgraceful for a company which employs thousands of men and dozens of officials to depend on a few persons, and have to suspend operations for a whole night because these few failed from fatigue. There should have been men to relieve them, and the work should have been continued incessantly until all that remained of the lost had been restored to their friends. Such a state of things was unheard of in this region prior to this time, and let us trust that it will never occur again. The names of the victims of this disaster may be seen in the list of fatal accidents.

#### DISASTER AT THE HOLLENBACK COLLIERY.

As explained in another part of this report, the breaker of this colliery was damaged by a cyclone on the 19th day of August, 1890, and the colliery had not worked any from that date until this disaster occurred. They were making preparations to begin work on Monday, September 22, and on Saturday, the 20th, Larry Casey and James Sullivan, two young men, were sent to bail water at the bottom of the No. 2 underground slope. The water had to be hoisted to the head of the slope, and the hoisting engine is located on the surface. Edward Button was sent in to be headman of the slope. The No. 2 slope is at a distance of 2,000 feet east of the shaft on a north dip of about fifteen degrees. It had thirteen lifts, seven on the west and six on the east. These men went to work at 7 o'clock. It appears that no examination had been made of the place or of any of the workings of this slope since the cyclone. The fire-bosses and boss had been employed at the colliery all the time, and one examination of the other parts of the mine had been made. It has invariably been an exceedingly gaseous mine, and it has never been considered safe to enter any part of it at any time

without first making an examination with a safety-lamp. On this morning the two water bailers were permitted to go to their work at the bottom of the slope without examination, and they worked there safely until 9 o'clock. At this time James Boswell, fire-boss, and Anthony Jennings, who was on this day starting to work as fire-boss, went in together, carrying naked lights together with their safety-lamps. They passed Charles Wiggins, who had been repairing the electric signals a short distance out from the head of the slope, passed Buttson again at the slope. The latter watched them going down until they turned into the first lift west, and in a few seconds after a terrific explosion occurred. Buttson was severely injured and rendered unconscious and did not know what followed.

Mr. Joseph Ford, the mine foreman, was on the surface and saw a dense volume of dust blown up from the shaft. He immediately ran up to the head of the Hillman vein slope and spoke down by telephone, and, finding nothing wrong there, he returned and descended the shaft and on his way to the No. 2 slope he met Wiggins feeling his way out in the dark, the explosion having extinguished his light. Mr. Ford conducted him back to the shaft and after sending him up, he went in again and at the head of the slope found Buttson painfully injured and unable to move. Ford, finding that he could not take him out without help, had to leave him there while he went outside again to call assistance from the Hillman slope. Then a party of several men went in and brought Buttson out. They passed the bodies of the two fire-bosses, who had been blown from the first lift over the apex of the slope and out a distance of 150 feet farther, and were driven under the end of a car. Of course they were instantly killed, the rescuers were unable to bring any of these bodies out when they brought Buttson, and believing that the explosion had left something on fire down the slope, they concluded to wait awhile lest another explosion would take place.

The writer was informed of the explosion shortly after 12 o'clock and immediately repaired to the mine which was not far from his residence.

Three hours had now elapsed since the explosion occurred, and it was not probable that any of the men could have lived this length of time in the after-damp of such an awful explosion.

Experienced men know that it is safer practice to enter a mine immediately after an explosion than in an hour or two after. The bosses as a rule make haste to go in and ascertain whether or not the explosion has set anything on fire and when he finds that no fire exists, he knows that the gases accumulating in consequence of the derangement of the airways cannot be exploded, unless ignited by the lamps of the men, and this can be guarded against. This opportunity was lost in this case. At 12 o'clock, when the writer was informed of the accident, no effort had been made to go down the slope farther than to rescue Buttson and bring him out. At about 1 o'clock the officials of the mine, led by the superintendents, descended the shaft and went

in and brought the bodies of the two fire-bosses out. Although there were about two dozen safety-lamps at the mine, the writer failed to find one that would be safe to carry into gas. The officials had nothing but an idle mine to take care of for a month and yet the lamps had been so neglected that only two or three were fit to use. Before entering to look for the bodies of Sullivan and Casey, new lamps and a number of new gauzes had to be obtained. At about 5 o'clock the party entered again and by this time the after-damp had cleared so as to enable them to go down the slope and recover the bodies of the missing young men. They were found lying on their faces one a few feet in advance of the other, near the fourth lift. They evidently had made an effort to walk up the slope and fell from the asphyxiating effects of the after-damp. In this struggle for life they had walked up a distance of about 800 feet. From this point up, the slope track was covered with a thickness of *débris* consisting of props, rocks and materials blown from the several lifts and stoppings. All the doors and stoppings were destroyed. Double timber was blown out and large falls of coal and roof was brought down. The workings of the three upper lifts west of slope were entirely transformed into a complete wreck, showing that the explosions had been unusually powerful and destructive.

Mr. Boswell's staff was found at the branch of the first lift. His body and that of Mr. Jennings were found 150 feet over the apex of the slope, having been blown a distance of about 500 feet. Evidently they entered the first lift with their naked lamps trusting that the air-current was pursuing its proper course and that no fire-damp could exist out on the gangway at any distance from the faces of the workings, and they walked into an explosive air unexpectedly at an unguarded moment.

When we consider that this part of the mine had not been examined for over a month and that it was the part that exuded the largest volume of gas, it is difficult to conceive any reason for omitting the usual common precaution of using only safety lamps until it was ascertained that the air-currents were circulating properly and that no accumulation of fire-damp existed. But the fact that they did this, and that they and the mine foreman had permitted the water bailers to go down that slope on this and on the previous morning without previous examination or knowledge of the condition of these workings, showed clearly that neither thought of nor realized the probability of something having occurred to obstruct or divert the course of the air currents during the cessation of work at the mine, and that a large body of fire-damp might have accumulated.

If all the mine officials were as inconsiderate as these were we would have disastrous explosions weekly, but fortunately such deficiency is seldom disclosed in the practice of experienced mine foremen.

The foreman of this gaseous mine was comparatively a stranger to this mine and to this region. Mr. Boswell had been employed in this



colliery for years as a mechanic, putting in water pipe, keeping pumps in repair, and splicing wire ropes, etc. For this work he was a very excellent man, he was a valuable and reliable workmen and had opportunity to see fire-damp in the safety lamp frequently but had not been entrusted to fill the important duties of a fire-boss till recently. His mind was trained for other work, and I am reliably informed that he, himself did not feel that he was fit, but his work on pipe, etc., had lessened, owing to the partial exhaustion of the mine, and he was directed to do the duties of fire-boss in the early morning and of a mechanic the remaining portion of the day to save employing another man. An economy akin to that of a miner, who, on finding his keg full of powder dampened, took it home and placed it in the stove oven to dry. It exploded and injured his family and destroyed his property. Such I regret to state was the nature and consequences of much of the economical practice introduced in the management of the collieries of this company during the year 1890.

#### DISASTER AT THE NO. 4 SLOPE, SUSQUEHANNA COAL COMPANY.

This colliery is located at Nanticoke and is operated by a slope. At about 9 o'clock a. m., April 2, an explosion of fire-damp occurred causing the death of William A. James, James Adams, John Gubovage, Morgan Price and Joseph Beranski, and severely injuring John J. Griffiths, John Ruddick, George Elmy and Michael Barinski.

Robert Pratt, the fire boss who examined that section on the morning of the explosion, reported that a body of gas was found in the breast where William A. James was going to work and told James of it, and told him, also, to stay on the gangway until the bratticemen should go in and extend the brattice to clear the gas. He also reported the presence of the gas to Morgan Price who worked the next breast on the return side, and told him not to go up his breast with naked light and offered him a safety lamp. Price refused to take the safety lamp, saying that he was not going to work there, that the breast was finished, and that he was going to work in another place. Pratt gave safety lamps to each of the miners working in the other three breasts, viz: William A. James, James Adams and John Ruddick.

The four breasts in which these four miners were working were driven parallel up a pitch of about 35 degrees and were all approaching a roll where the coal turned right up to a pitch of about 50 degrees. Price's breast was up to the roll and was stopped, but he had a few car loads of loose coal in and along the chute, and he and his laborer went to work loading this out.

There were two headings (cross cuts) open between James and Price's breasts, and the air-current passed first up James' breast, then through Price's, Adams' and Ruddick's.

Mr. Pratt told George Elmy, the day fire-boss, of the gas in James' breast and requested him to go in to see to it. John J. Griffiths, the brattice man, was sent in to close one of the headings and to put up brattice. When Mr. Elmy went in he found that Griffiths had closed the heading, but the gas did not appear to move. While James went up to his breast, Elmy went up to Adams' breast to look across Price's breast and through the heading into James' and was able to see the latter's light. This convinced them that the upper heading, driven through the previous day was open, and it puzzled them to know why the gas did not move away. While up in the heading from Adams' breast Elmy saw a naked light below in Price's breast, but did not say anything. He told Adams to go down to the gangway from the face and went down himself. James was sitting on the gangway at his own breast when Elmy joined him and in a few seconds the explosion occurred with the usual destructive effects.

The mine foreman and other workmen in the other parts of the mine felt the shock and ran to rescue the injured. They found the place badly wrecked and filled with after-damp, but they succeeded in a short time in bringing them all out. James, Adams and Gubovage were instantly killed. Price was severely burned and otherwise injured and died that night at 9 o'clock. Joseph Beranski was severely injured and died on the way to the hospital. Griffiths and Ruddick were burned and severely injured. Elmy and Barinski were more or less burned and injured.

It is not known how the gas was ignited, but the circumstances makes it evident that immediately after Elmy went down from Adams' breast, that the gas moved in a body and came in contact with Price's naked lamp in the next breast, which produced the explosion.

It was a mistake to leave any of the men go to work in their respective places until after the gas was removed, because they were all working in its path, but the fire-bosses, trusting that it would be safely diffused before reaching them, permitted them to go. It proved a fatal error of judgment, and taught a lesson, which we hope will not be forgotten. Fire bosses should never take such chances, but should choose rather to err on the safe side.

#### PROSECUTIONS FOR VIOLATION OF THE MINE LAW.

Complaint was made against John Berkeiser, mine foreman of the Nottingham Colliery, for violating general rules 4, 5 and 6, in not seeing that proper examinations were made of the workings in the vicinity of the points when the disaster of February 1, took place. He was summoned to appear before the court on February 22, and, waiving a hearing, entered bail to appear in court of quarter sessions. On April 11 a true bill was granted in the case by the grand jury. The case has been

placed on the trial list of every session since, but has not been reached yet.

On May 7 Robert Pratt and George Elmy, both fire-bosses at the No. 4 slope colliery, at Nanticoke, were charged with violation of the provisions of rules 5 and 8 of article 12 of the mine law, and were arraigned before Judge Woodward. Both pleaded guilty and each was fined fifty dollars and costs.