



# Reports

**1904  
Annual Report**

## THE HARWICK EXPLOSION

On the 25th of January, 1904, about 8 o'clock in the evening the department was advised by telegram from Inspector F. W. Cunningham, Wilkesburg, that an explosion had taken place in the Harwick mine of the Allegheny Coal Company, located near Cheswick, Allegheny county, and that one hundred and seventy-seven workmen were entombed in the mine. I at once telegraphed Inspectors Louttit, Ross, Adams, Roby, Blick, Callaghan, Mollison and McCann to go to assist in the rescue of the men, and to make a thorough investigation as to the cause of the accident.

As soon as possible I started for Cheswick, and on reaching Pittsburg got into communication with the mine officials, who confirmed the report as to the appalling character of the explosion. I had not thought it possible that a catastrophe so awful in proportions could occur in a mine like the Harwick, which was new and reported to be comparatively safe. The entire population of the village was in an uproar, and the utmost excitement prevailed. The explosion had been one of terrific force. The tibble, which was built of iron, was wrecked, the cages were blown out of the shaft, and a mule that had been at the bottom of the shaft was caught by the force of the explosion and blown out and over the tibble, a distance of about 300 feet.

I called the inspectors together as soon as possible, and after a hasty consultation the opinion was unanimously reached that there could be no person remaining alive inside of the mine. The accident had destroyed the organization that existed among the officials, as the mine foreman and the fire boss, as well as almost all the employes, had been killed. The officials who were present and had escaped the disaster seemed to be dazed and without confidence in themselves. I assumed control of affairs in the mine, and directed the inspectors to remain in charge of the mine until all the bodies that could possibly be recovered had been removed. I gave them instructions as to how to proceed to recover the bodies and impressed them with the necessity for protecting their own lives. With the assistance of such volunteers as were to be found, they began their efforts to remove any dangerous conditions about the mine that might be a further menace to human life. After that part of the work was completed, they commenced the gruesome task of removing the bodies that were strewn about the mine in all directions where the force of the explosion had blown them. No immediate attempt was made to recover the bodies completely covered

by debris, coal and slate. To do this efficiently the inspectors were divided into two shifts, night and day, to work continuously as long as necessary. On Wednesday the miners from adjoining mines responded nobly to the call for volunteers and faced every danger and hardship in the endeavor to recover the bodies of their brother workmen. The work was extremely dangerous, as the ventilation of the mine had been seriously disarranged and impaired; large quantities of gas had accumulated in many places and had to be cleared away to some extent at least before the bodies could be taken out, even though locked safety lamps were used. By Friday evening the work of recovering the bodies, except those that were hidden under heavy falls, had been completed. The inspectors were then directed to make a final examination of the whole mine to ascertain if possible the cause of the explosion, and to make a full report to the department as soon as practicable after the inspection was completed. The charge of the mine was then turned over to the manager, who put Mr. Bell, a mine superintendent of an adjoining mine, in control until all the bodies should be recovered.

On Saturday evening, January 30, the inspectors met me in Pittsburg and submitted a lengthy report of the accident. Their report, which is printed elsewhere, together with a synopsis of the testimony given before the coroner, covers, in my opinion, all the points in controversy as to the cause of the accident and the person or persons responsible for it. The inspectors are men of extensive experience, having prior to their appointment as inspectors been foremen and superintendents of mines, and were thoroughly competent to make an accurate and satisfactory investigation of this disaster, the greatest thus far recorded in the mining annals of Pennsylvania. It is gratifying to state that the report of the inspectors made to me on the 30th of January, agrees in its conclusions with the later report, dated February 13, of the commission of ten engineers, superintendents, mine foremen and miners, appointed by the Allegheny Coal Company to inquire into the cause of the explosion at the Harwick mine. The report of the commission is also published herewith.

Having full knowledge of all the facts in the case, I may be pardoned for saying that, in my opinion, Inspector Cunningham should not be censured for this accident. I think he had done everything that could reasonably be expected of him, and the fair-minded reader of the facts as stated by the witnesses to the jury will no doubt exonerate him, notwithstanding the fact that he was censured by the jury.

Mr. Cunningham was commissioned Inspector of Mines January 27, 1903, about one year before the date of the explosion. Under the law it is his duty to examine every mine in his district once in

every three months, or oftener if the exigencies of the case require it. He made his first inspection of the Harwick mine on March 11, the second on April 21, the third on July 17, the fourth on October 7. These were regular inspections under the law, at which the whole mine was inspected, the air measured, the number of employes noted, and the condition of the mine in general set forth. The reports of these inspections are on file in the Department of Mines at Harrisburg, and were submitted as evidence before the jury. They all show the mine to have been in comparatively safe and healthy condition, with only a trace of fire-damp found in a few places. The mine was known as a gaseous one, where locked safety lamps were used, but no standing gas was found at any time by the inspector.

On November 4, 1903, Mr. Cunningham was called to the Harwick mine to investigate the cause of a fatal accident. After completing the object of his visit, he, in company with the mine foreman, inspected the south main entries and butts, which he considered the most likely to contain gas, if any existed in the mine. He found no gas, but, on the contrary, everything was in safe condition. A report of this visit was also made to the Department of Mines. Had he inspected this mine on the 7th of January, 1904, three months subsequent to the October examination, and about three weeks before the explosion, he would have most likely found it in the usual comparatively safe condition. Such an examination would also have had a tendency to exonerate him in the eyes of the jury.

The evidence given before the jury showed that the ice was cut and removed at the inlet and in the overcast during December and the early part of January, but that for two or three weeks immediately preceding the explosion no ice was cut. It was also proved that on Saturday, January 23, two days before the explosion, the ice had accumulated to such an extent in the overcast that not more than half of the original area was available for the air current. During Saturday night and Sunday night of the 23rd and 24th of January, the thermometer registered below zero at Harwick, and the area in the overcast was likely much less on the morning of the 25th than on the morning of the 23rd. Of course this is only a conjecture.

The ventilation of the mine at each inspection was found ample, showing from 500 to 700 cubic feet of air per minute for each person employed. The Inspector did not consider the mine a very dusty one. He found, however, that they were watering the roadways as practiced in some other mines. In this connection I think it is proper to state that the law regarding the laying of dust in the mines should be amended, or we shall hear of more explosions from gas and dust, and possibly from dust alone in non-gaseous mines. I explained to the Treasurer of the Allegheny Coal Company the

method adopted in the anthracite mines to prevent the coal from taking fire from gas ignited by blasting. The method is as follows: A large pipe, say eight inches in diameter, is conducted through all the main entries, and a branch pipe is laid into each chamber with a hose attachment to each pipe. When they are ready to fire a blast, they are careful to note that the water attachments are in working condition. If a blast ignites the gas in the entry or room, they turn on the water and saturate the bottom, sides and roof of the room or entry, as the case may be. If some similar method to this were adopted in all dusty bituminous mines, the danger from explosions of gas or dust from blown-out shots would be greatly lessened. The mode of undercutting, and the placing and tamping of the holes, must have more attention on the part of the mine managers, superintendents, foremen and miners, in gaseous and dusty mines, if we are to prevent accidents of this nature. There are many mines in the bituminous counties of the State that are much more dangerous than the Harwick, and under conditions similar to those that existed at the Harwick on the 25th of January, 1904, a blown-out shot might cause another disaster of appalling magnitude.

The bituminous mine inspectors of Pennsylvania are doing all in their power to fulfil the requirements of the present law relating to gaseous and dusty mines, and they cannot be expected to do anything more. If a law were enacted requiring that the dust in all mines be taken out as far as practicable and the roof, bottom and sides of rooms and entries be thoroughly saturated with water, so that dust will not float in the air as a menace to human life, the danger from explosions would be practically eliminated. Wherever coal is mined by machines the atmosphere will be impregnated with dust, the finest particles floating in the air, and the danger to be apprehended from such a condition can only be averted by putting into practice the method herein suggested of saturating the mine with water. Under no circumstances should blasts be fired in a room or entry within an hour from the time a machine had been used or until the dust created by the machine had been allowed to settle on the floor, sides and roof, which then should be drenched with water. The mode and depth of undercutting by machines should be regulated by law, and more attention should be given by the foremen and assistants to the location and depth of holes for blasting. The kind of explosives and the amount needed for each hole should be regulated; the material for tamping the holes should be selected and taken into the mines from the surface, if suitable material is not available inside; the foreman should be the sole judge of the tamping material. Then if the holes

are properly placed, an adequate amount of explosive used, and the holes carefully tamped, the chances for blown-out shots would be greatly lessened. Without going into a discussion of the question as to whether or not coal dust can be exploded by a blown-out shot in the absence of fire-damp, I may be pardoned for saying that even in gaseous mines, if the air is circulated through the whole mine as provided by law, the dust taken out or thoroughly saturated, and the other provisions as stated carried out with care, disasters of a serious character could hardly occur.

A brief report is herewith given of the inquest held Tuesday, March 29, 1904, before Jesse M. McGeary, Coroner of Allegheny county, and the Coroner's jury, to inquire into the cause of the Harwick disaster. The testimony is not given verbatim, as it is too voluminous to be incorporated in this report; but the synopsis covers all the essential points of the witnesses, who include engineers, superintendents, inspectors and miners.

Adolph Gunia, the only survivor of the explosion, testified, in part, as follows:

He lived at Harwick and had been a coal miner for four years, and had worked at the Harwick mine ever since it was opened. He worked in the first right north entry, in rooms 5 and 6. He had seen the fire boss, the mine foreman, and the shooters open their lamps. About a week before the explosion he had seen a lamp opened. He had also seen water wagons used on the roads to sprinkle the dust, but it had been a good while before the explosion. The fifth left entry, in which he worked most of the time, he had often seen sprinkled. He had seen the gas take fire from shots, but it would go out again. He also said that Mr. Brown, the mine foreman, visited his working place every day, sometimes twice a day. At the time of the explosion Gunia was at the bottom of the shaft.

In describing the explosion he said: "Before the explosion the air just held me in place. I think it must have held everybody else, because it held me and I couldn't move. I was just like I was unconscious. It lasted about a second, and then the explosion came." It sounded to him like a big report and he saw a little flame, which he thought came from the south. When asked if the flame came along the roof, he said that he didn't have time to see that. He was knocked down and pushed for some distance. He did not think that he had been unconscious at any time except right after the explosion. His lamp was blown out and his eyes were burned. He was rescued about six o'clock, in the evening, and was therefore about ten hours in the mine. Mr. Gunia said that in his opinion the cause of the explosion was a blown-out shot and that he thought it came from the south side, but wasn't sure. He saw the light coming

from some direction and supposed it to be from the south. He said he had seen the mine foreman light shots with a naked lamp about a month or so before the explosion, but had never seen any of the shot lighters do it. Mr. Gunia said that he could hear a blower any place where there was water. He didn't know, however, "whether it was a blower or whether it was just kind of bubbling up all the time." He supposed that it was the gas bubbling up through the water. They generally tamped the holes with dust dampened with water, made the cartridges out of paper and filled them up with dust and tamped them. He said that they did not have water in the dry parts of the mine to dampen the tamping for their holes, but that they were tamped in any way. He had heard that it was dangerous to tamp a hole with dry dust. He had known of shots being fired in the gas on the south side in either the 3rd butt or the 5th left butt, in some of the rooms, towards the top of the butt. He knew that when a shot was fired the gas or dust was set on fire, and would burn, and sometimes explode. The shot firers had two Davy lamps to light the shots. He had seen them fire a shot. They had a wire that they put between the gauze and heated and then touched the fuse with it. On the north side of the mine in the first right, and on the south side up around the 5th left, he had seen the mine foreman fire a shot with an open light.

On the morning of the 25th of January, Mr. Gunia saw the fire boss coming out of the mine and heard him say to Tom Brown, the top man, that it was all right if the engineer was ready. Gunia then went into the mine to the first right butt on the north side, rooms 5 and 6. He didn't have time to see Mr. Gordon's mark that morning in his working place, as Gordon told him, as soon as he got in, that Mr. Brown wanted him at the foot of the shaft, to shift the empty cars away.

Mr. Gunia said it was dusty in the mine and that he had seen them sprinkling the entries, but not the working places. He was fully satisfied that the explosion occurred from a shot. He had no reason to believe it occurred from an open light at the bottom of the shaft. When the explosion occurred, men were working on the east side of the shaft from Mr. Gunia, but after the explosion he could hear no sound of any kind.

Mr. Sowden testified, in part, as follows:

He was superintendent of the Harwick mine and had been for eighteen months immediately preceding the explosion. Before that he had been superintendent in the Massillon, Ohio, district for eighteen months. He had had continuous experience in coal mining since 1869, and the Harwick mine, he said, was the second gaseous one in which he had worked. In the other gaseous mine, he had filled the positions of trapper and driver; that was about 34 or 35

years ago. Mr. Sowden's home is at Cheswick, where the Harwick mine is located.

The mine foreman at the mine was George Brown, and the fire boss was Joseph Gordon, both of whom were supposed to be dead in the mine. Mr. Sheetz, the manager, engaged Mr. Brown, and Mr. Sowden assisted Mr. Brown to engage the fire boss. Mr. Sowden said that the fire boss was supposed to make an entry on the record book every morning before the men were allowed to enter the mine, but was not certain that he did it on the day of the explosion. Mr. Sowden had glanced at the record book after the explosion, probably some time during the forenoon, but did not remember whether he had seen the fire boss' record in the book. He did not think, however, that an entry had been made. He examined the record book about twice a week and was sure that he had examined it about a week before the accident. He was supposed to know the condition of the mine every day to a certain extent, but he admitted that he did not. To have that knowledge it would be necessary to make daily examinations of the record book. No dangerous condition of the mine had ever been reported to him by the mine foreman or the fire boss. The company had no rules relative to the reporting of accidents or explosions to the superintendent, but Mr. Sowden said that the men would certainly report any that occurred.

He accompanied the mine foreman in his tours of inspection, which consisted of an examination of the roof, looking for bad slate and also for fire-damp. The last examination was made about two weeks before the accident. In the Harwick mine the Davy lamp was used by the shot firers, the Clanny lamp by the drivers and by some of the miners. The Wolf lamp was also used. Mr. Sowden said that he provided, as well as he knew how, all material for safety purposes as required by the mining laws of Pennsylvania. The company had never refused him anything. He said he did not interfere with the mine foreman or the fire boss in the discharge of their duties. When asked if the mine foreman had ever reported a greater quantity of dust than usual, he said "No." And in regard to sprinkling the dust, he said the mine foreman used his judgment. He (the foreman) had water carriers there and every once in a while he took them around in the mine. They baled the water into boxes, on which there was a sprinkler attachment for sprinkling the road. When asked if he knew that the road had actually been sprinkled under the direction of the mine foreman, he said he couldn't say that it had been done, but he had had sprinkling done to the main hauling road. Mr. Sowden, with the assistance of Mr. Brown, hired the miners; Mr. Brown hired the shot firers. The competency of the miners was determined to a great extent by the statements made to Mr. Sowden. The shooters employed were Bachman and



Beecham, who were considered competent by Mr. Brown. The duty of the shooters was to light the shots for the men after the miners got their powder right and their holes properly tamped. The miners drilled the holes and tamped them, and had them all ready for the shooters. The men furnished their own tamping. When asked whether the dust or slack in the Harwick mine would be considered a proper tamping material, Mr. Sowden said that dust and slack and dirt and refuse were all that he had ever used. Dynamite was the explosive used to blast the coal. He was of the opinion that the mine inspector had inspected the mine probably two or three weeks before the explosion, at which time he had posted the regular official notice of the condition of the mine, showing that the condition was good. The inspector at that time had recommended that "something (some attachment) be put on the fan." Mr. Sowden did not remember just what it was, but he had notified the mining boss to attend to it. The mining machines used in the Harwick mine were the Harrison puncher, the Ingersoll puncher, the Sullivan puncher, and the Champion machine, built in England. Compressed air was used to run the machines, of which there were sixteen.

Mr. Sowden said in regard to the mining laws of Pennsylvania, that he had read them partially, such portions as had been brought to his attention. He defined the duties of the mine superintendent to be as follows: "To see that all machinery is in safe condition, that good competent men are in all places of trust, that all supplies and such like are sent into the mine for the safety and welfare of the same and also of the employes." He admitted having signed the mine foreman's report book, but said he had not done so for seven or eight months, as there had been some little difficulty between him and the mine foreman in regard to it. "It had been insinuated to the mine foreman that I was bossing the mine on his papers, and when he reported the same to me I just gave up and told him I was signing nothing and was doing nothing with the inside men, and did not from that day to this." When asked why he did not sign the book in compliance with article 7, section 1, he replied that he never considered that he had any authority in the mine. He had signed the record book once a week up to May 7, 1903. After that he had refused to do it, for the reason stated. He had visited the foot of the air shaft probably three weeks before the explosion and found it in good condition. He said it was the mine foreman's duty to keep the ice from the foot of the air shaft. The fan in the mine was usually run at about 70 to 90 revolutions per minute. The rules governing the miners were posted on the outside in six languages, according to Mr. Sowden's belief. When the miners were unable to read the rules, it was the mine foreman's business to explain them.

Open lights were used at the foot of the shaft at the time Inspector Cunningham made his official visit. Mr. Cunningham had recommended that they be dispensed with, as in his judgment it would make the mine safer. The matter was left to Mr. Brown, but Mr. Sowden did not think that the open lights had been dispensed with. He said that he had looked at the fire boss' record book to see if there was any gas in the mine, but had never gone into the mine to make an examination. He had, however, cautioned the mine foreman about using open lights on the day that Mr. Cunningham visited the mine. He did not mention the matter after that. In answer to a question by Inspector Roby, he said that he had discovered gas three times in different parts of the mine.

On the Sunday before the explosion, Mr. Brown told him that if the cold weather continued, he would have to remove the ice at the bottom of the fan shaft, but said it wasn't doing any harm yet and wouldn't for a week or so if it didn't get worse. The ice was frozen at the bottom about 2 feet, which reduced the area of the shaft about 16 feet. The original area was about 48 to 50 feet. This would have a tendency to reduce the volume of air.

In regard to shot firing, Mr. Sowden said that the mine foreman's instructions were to see that the holes were located right and charged right. Sometimes they used compressed air, as a precautionary measure, he thought. The usual depth of the undercut was  $4\frac{1}{2}$  feet, and the depth to which they bored their holes was about 4 feet. Mr. Sowden had heard of several blown-out shots. In tamping the holes they used slack and dirt and refuse from back along the roads. The mine foreman did not give any instructions regarding tamping; every miner used his own method. The firing was done with a fuse and the fuse was lighted with touch paper or wire. The wire was heated through the gauze of the Davy lamp. There was a certain amount of danger connected with this method. Mr. Sowden said, however, that he approved of the method of lighting the shots and also of the method of tamping with dust. He was in No. 1 butt entry south on the 15th of January and found the condition all right, that part of the mine not being any more dusty than any other part.

Ventilation was maintained at all times and was conducted through the cut-throughs and to the face. Section 1, article 4, of the act of 1893, reads as follows: "The operator or superintendent of every bituminous coal mine, whether shaft, slope or drift, shall provide and hereafter maintain ample means of ventilation for the circulation of air through the main entries, cross entries and all other working places; to an extent that will dilute, carry off and render harmless the noxious or dangerous gases generated in the mine, affording not less than 100 cubic feet per minute for each and every person employed therein; but in a mine where fire-damp has

been detected the minimum shall be one hundred and fifty cubic feet per minute for each person employed therein, and as much more in either case as one or more of the mine inspectors may deem requisite." When asked if this section had been complied with by the mine foreman, Mr. Sowden said: "I am confident that it was." "Well, do you know whether it was?" "I don't know as a fact whether it was."

In regard to the use of safety lamps, Mr. Sowden said that the mine foreman required the men to understand the use of the lamps. In his opinion the explosion was caused by a blown-out shot. He did not think there was any gas in the mine, the principal part of the disaster having been caused by dust. Cleaning the dust and carrying the ventilation to keep the mine clearer from standing gas would, he thought, have prevented the explosion. He said that he was superintendent of the surface work and when he went into the mine to help Mr. Brown he did so as an assistant. He said that he had never examined the air measurements particularly, although he supposed it was his duty.

T. M. Jones testified, in part, as follows:

He lived at Hites, Allegheny county, had been a coal miner for 18 years, and had worked at the Harwick mine for about a year and a half. He was not in the mine when the explosion occurred, but was going on the night shift on the 25th, the day of the accident.

He had seen open lamps in the mine, which he said had been opened by the shot firers, the fire boss and the pit boss. He named Mr. Bachman, Mr. Beecham, Mr. Brown, Mr. North, Mr. Gordon and Mr. Bell. He said that they used to open their safety lamps to light their lamps with in the entries. The shooting in the mine was done at all hours of the day by Arthur Beecham, Thomas Bachman, Mr. Gordon and Mr. Brown. He considered some of the foreigners that worked in the Harwick mine as incompetent; others, he said, were all right. The rules, he said, were posted at the mine in foreign languages. He considered the mine pretty dusty, but said he had seen them sprinkle the roads once or twice in the heading, the third right to the north. He always thought the air was pretty good. When asked if he had ever seen any rooms turned off the entries ahead of the last cut-through, he said, "Yes, I saw them in the third right in the south, in the north, in the first right in the north, and in the entry I worked in, in the fourth right in the south, and in the one I work in now; but the entry men worked in these rooms." He said that he had seen the miners tamp and fire their own shots, that he had done so himself on authority from Mr. Brown and Mr. North.

On the 23d of January (which was Saturday before the explosion) he had seen ice close at the foot of the air shaft, but couldn't state how much. When asked if the ice would reduce the size of the

