Of the accidents which occur on surface I am pleased to state that few only occur in the breakers. The machinery and stairs are at all places so well guarded by boxing and fencing that no person can be injured without climbing or crawling into places where no one is expected to go. Yet we find that some do it occasionally and one now and then is hurt in consequence. Where so many boys are employed they will play "tag" or "hide and seek" and will crawl into dangerous places and get hurt. This can be prevented only by effective discipline. A more rigid discipline would, I believe, prevent a number of the accidents of each year, but with the class of people who are now employed in and about the mines and who can neither speak nor understand the English language, it is almost impossible to enforce the rules and maintain obedience to them.

Disastrous Explosion at the Dorrance Colliery.

At about 4 o'clock Monday afternoon October 7, 1895, an explosion of fire-damp at the Dorrance colliery of the Lehigh Valley Coal Company, Wilkes-Barre, Pa., resulted in the death of seven young men, five of whom constituted a corps of mining engineers. One was a fire boss and the other was a miner. Reference to the accompanying map of that section of the mine will assist the reader to understand the conditions when the accident occurred. The names of the victims were Daniel J. Davies, fire boss; William Jones, mining engineer; William P. Cahill, Llewelyn Owens, Robert Miller and Robert Blanchard, assistant mining engineers and Michael Morris, miner. The engineers had been in another part of the mine making surveys. Daniel J. Davies an experienced fire boss was sent with them to see that all places were safe before they entered. During the afternoon they went into the section of the mine shown on the accompanying map. The two places turning to the left from breast C were working, all those to the right of this had been finished and abandoned, including breast marked C. They surveyed the three places marked x x x and started to go out, but stopped to examine their map at C and found that the cross cut A was not measured and put on the map. Miller and Blanchard were left at this point with the instruments while Jones, Cahill and Owens, led by Davies went across through headings at the faces, intending to measure the said cross cut A. All carried naked lights.

Davies safety lamp was found hanging on his belt when his body was found, which proves that it was not in use at the time.

Shortly after they left Miller and Blanchard a terrific explosion occurred which caused a perfect tornado that blew away all the air stoppings and doors through a wide extent of workings. All the workmen in that seam felt the concussion and it extinguished their

lights. This naturally caused a panic and all made their way out in the dark through the hot dusty atmosphere as quickly as they could.

The men who were at the faces of the places marked x x x were not injured and one of them when groping his way out through breast C found both Miller and Blanchard severely burned, and led them out. Shortly after a rescuing party found the miner, Morris, at D with his clothing on fire and body severely burned. He died that night.

The afterdamp was so dense that the ventilation had to be partially restored, which took several hours before the bodies of the other four were found. They were finally discovered after some searching at the point marked B which evidently was the point where the gas was fired.

They were all within a few feet of each other and all had been instantly killed and as before stated, Davies safety lamp was hanging on his belt. The props were charred at D and at each breast to right for about two hundred feet. This shows that the flame had expanded to a length exceeding six hundred feet and through five or six breasts having a height of fourteen feet or more.

Miller lived until October 10 and Blanchard until October 19, and they were able to tell what they knew of the disaster, but they knew nothing as to the location of the gas nor as to how it was fired.

It is evident that it was fired at B by the fire boss and the three engineers, because it was at this point that their lifeless bodies were found, and the force of the explosion radiated from this place. This point was also the junction of two splits of air currents. They were traveling in the split coming with them from the west side, but the split from the east entered this breast B at two points through the heading A, which they wanted to measure and also through the heading E; both were open. The heading A was on the top bench of coal and the one at E was on the bottom bench. The air currents had been working in this way for several weeks and no one had known of any gas accumulating at A before, and the accumulation now was evidently an unexpected surprise to the fire boss or he would have examined the place with his safety lamp and discovered it. It is a very gaseous mine and is ventilated by two thirty-foot fans which produce strong currents of air. Gas could not have accumulated at this point unless the current of air had been deviated from its proper course or stopped entirely.

The fan which ventilates the workings of the Baltimore seam, where the explosion occurred was stopped for repairs on Sunday, the day previous for about four hours and it is supposed that the gas accumulated during that time at the cross cut A and at the face of the breasts at each side of it, in such a body that the air current on its

restoration failed to remove it and passed all through the cross-cut E, leaving the gas stand at the faces of the breasts. On Monday afternoon when the fire boss and his company reached the point B and started up towards A the gas fired from their naked lamps.

The explosive gas of mines being only one-half the weight of an equal volume of air is difficult to move when it accumulates in such situations as this, unless the ventilating pressure more than equals the difference of weight between the body of gas and an equal volume of air. To force a log of wood to sink into water a pressure must be applied equal to the difference in weight between the wood and its volume of water. It is precisely the same when it is necessary to force a body of light gas into air. A pressure equal to the difference of weight must be applied. In this case the situation was such that if the cross-cut A and the face of the two breasts were filled with gas it was as effective as if a stone wall was there in preventing the air current from passing through that heading, and the result was that all the air passed through the heading E, leaving the gas stand at the faces. The rise in the breasts was from six to eight degrees.

This was the theory presented to the writer by Mr. Lathrop, general superintendent and by Mr. Moister the superintendent, with which the writer fully agrees. After the explosion the door O was found to have been affected by a fall of roof but evidently the fall came after the explosion and could not have caused the accumulation of gas. The body of gas fired was greater than would have accumulated by leaving this door open from the time the fire boss passed in the morning.

Murder of a Man in the Franklin Colliery.

Andrew Yeisley, a Lithuanian miner, was found dead with the appearance of having been killed by a blast in the breast in which he worked on the Kidney seam, old slope Franklin Colliery, Lehigh Valley Coal Company at 6 p. m., Friday, June 14, 1895.

There were only three breasts working on the gangway and deceased was working the inner one. His boarder Anthony Zemitus was working the one next to him. Shortly before 6 o'clock the driver saw Yeisley on the gangway at his box preparing cartridge to blast. The driver went out leaving no one except the two men in that part of the mine.

Shortly after 6 o'clock Zemitus went back to the pumpmen and told them that a man was killed by a blast. The went back and into the breast and found Yeisley's body partially covered with coal with his clothing on fire.

The body was taken home and the undertaker found bullet holes and came to the conclusion that the man had been murdered. On