

Skidmore vein third lift at foot of new hoisting slope $10\frac{1}{2}$ yards long; tunnel from East Top split, third lift to Buck Mountain vein 70 yards.

Tunnel Ridge Colliery.

A tunnel from Skidmore to top split of Mammoth vein has been driven; total length, $74\frac{1}{3}$ yards.

Report of West Bear Ridge Colliery Explosion.

West Bear Ridge colliery is opened on the lands of the Girard estate near Mahanoy Plane and leased by the Philadelphia and Reading Coal and Iron Company. The slope is sunk in the Mammoth vein on the south dip to the third lift, or as near to the footstool of the basin as the coal can practically be mined from. The angle of vein is sixty degrees, and the vein is from 30 to 40 feet thick. From the foot of slope two gangways are driven east and west on the south dip. From the foot of slope a tunnel is driven across the basin through the rock measures to the north dip, and two gangways driven east and west on the north dip. About sixty feet west of the tunnel connecting the two dips, an air tunnel is driven through the rock measures about fifteen vertical above the transportation openings. Between breasts 25 and 26 opened on north dip gangway or 1,630 feet west of connecting tunnel, a sectional transportation tunnel is driven, connecting both dips. Also a sectional air tunnel is driven immediately above this traffic tunnel, the thickness of rock measures between them being 15 feet.

Between breasts 36 and 37 a second sectional tunnel is driven connecting both dips. In course of constructing these two gangways west to their limit or line pillar, the vein in some sections has been proved to be more slippery and friable than in others, and being on a steep angle and near to the basin, the coal in some breasts will gravitate out by its own weight before they have been driven many yards up the pitch. These being the conditions in connection with mining coal from this colliery as well as some others, much trouble is experienced in maintaining the transportation openings and also the ventilating avenues. The main openings are the points of resistance on which the coal measures are gradually and continually thrusting, causing the timbers to break and the road beds to heave, and it is necessary to have a number of men at work, especially at night to keep the principal avenues open for traffic and ventilation. An idea of the difficulties to be surmounted may be formed when we state that the road beds are lowered from 50 to 60 feet before all the coal has been taken from them, which is accomplished in from five to six years. The men at this colliery all work with safety

lamps, and the quantity of air in circulation has always been unusually large for the number of men employed, which gave reason for all the colliery officials as well as myself to believe that work in the mine was safe for the men.

On the morning of the 18th of February, 1895, I went to St. Nicholas colliery where I met with Mr. John Veith, mine superintendent for the Philadelphia and Reading Coal and Iron Company and two of his assistants, Messrs. John Skeath and Reese Tasker, division and district superintendents, who had all met by appointment to visit Maple Hill colliery. I decided to accompany them and we were about to leave, when the operator handed a message to Mr. Veith, informing him that a serious explosion of gas had occurred at West Bear Ridge colliery and that the men had not been taken out. We at once drove to the colliery and got there about an hour after the explosion occurred, and descended the slope. At the foot of the slope we were met by Mr. Heber S. Thompson, superintendent and engineer for the Girard estate who was making one of his periodical inspection visits in company with his assistant Mr. John Granger, Mine Inspector of the collieries on the Girard lands, who were both glad to see us and astonished that we should have reached the colliery so soon after the occurrence. A consultation is always necessary however brief on such occasions and we were informed that all the men had gotten out with the exception of five, and all hopes of rescuing them alive had been given up. We then concluded to enter the third lift gangway, west north dip where the five men were said to be, and while traveling along this gangway explosions were frequent and more or less violent. Still we persevered as far as No. 19 breast. Mr. Veith who had charge of the exploring party was informed by some of the workmen that they were sure the five men were in the return airway opposite No. 19, which afterwards proved to be correct, and an attempt was made to get up the manway leading into the return airway, but the atmosphere was fouled to that extent that it was impossible to reach the entombed men and live, and so it was decided to make the necessary changes to reverse the air current. Men were at once put to work to erect a door across the gangway between 19 and 20 breasts so as to direct the current of air up the small chute opposite the pillar formed between 19 and 20 breasts, and into the return airway. A door was also placed on the south dip gangway between the return airway and foot of slope, and with some difficulty and risk, a few of the air batteries between the intake and outlet west of the first sectional tunnel south dip were displaced. These alterations were made so as to force the air current east through the return airway to air tunnel connecting with both dips, which would pass over the five men, who were subsequently

found between Nos. 16 and 19 breast. A split of the air current also passed west and north through the first sectional air tunnel to the south dip, down on and out of the south dip gangway to the opening, up to the fan; enough of air was also allowed to pass into the second sectional transportation tunnel and out the south dip gangway, which kept the gas from accumulating between the two sectional tunnels on either dip. After these alterations were completed, arrangements were made, that the door at foot of slope, and the one between Nos. 19 and 20 breast should be shut at one and the same time, and all were to retreat to the south dip, east gangway, and after waiting a short time we all concluded to again enter the north dip gangway where we found the change had worked satisfactorily, and in a short time we recovered the dead bodies of Peter J. Kline, Barney Reading, Joseph Pitz, Peter Greenback and Thomas Durken, and from the appearance of their bodies they must have been killed instantly.

In the return airway where those bodies were found, the smell of the atmosphere gave evidence that the explosion had ignited the timbers and coal, and the work of reopening the return airway westward was the next important work to be accomplished in order to prevent the fire gaining proportions which would necessitate drowning the colliery.

The fire was discovered to be burning in the return airway opposite the sectional air tunnel. A line of three inch pipe was ordered to be attached to the steam pump, from thence south through the tunnel and west through the gangway to the manway between breasts 26 and 27. A branch line was taken up this manway and the water forced on the fire from the inside. A branch line was also taken up between breasts 22 and 23, and the water forced on the fire from the outside, this method of fighting the fire proved to be a success, and it was extinguished in three weeks. Mr. Monroe Shreffler, division superintendent and his assistant, Mr. Elijah Gregory, district superintendent were in attendance night and day directing the work and with their men they displayed good judgment and courage.

When colliery explosions unfortunately occur and which result in loss of life, it gives cause for much speculation, and many opinions are expressed as to how they happen, but when we know the conditions of the colliery both before and after the explosion, together with the testimony received from those who may have escaped unhurt we are placed in a position to better determine how the accident occurred.

In connection with the explosion at West Bear Ridge colliery it was learned that breast No. 32 opened on the south dip gangway had "run," displacing a large quantity of gas into the return airway

which was carried along the air tunnel to the north dip return airway or "monkey," where these unfortunate men were working, along with nine others. The gas was forced through this airway at a high velocity by reason of 32 breast rushing, which forced the flame of the safety lamps through the gauze, igniting the exterior gas. From my examinations I concluded that the return airway to east of first sectional tunnel was the safety valve, so to speak, to the explosion as it was there the most damage was done to the colliery, and had the five unfortunate men been working with their companions on the west or inside of tunnel, I have every reason to believe they would have gotten out alive.

I herewith send a tracing which shows the colliery workings at the time of the explosion and the different points mentioned in the report of the accident.