

Improvements by the Lehigh Valley Coal Company.

At the Franklin colliery a new tunnel has been driven from the Bottom Split of the Red Ash to the top split, a length of 210 feet, and a sectional area of 7×12 feet.

Improvements by the Alden Coal Company.

In the Red Ash seam of the Alden mine, a tunnel was driven across an anticlinal to the basin north of the present workings. It has an area of 90 square feet and is 1,400 feet in length. This is expected to open an extensive area of a good quality of coal.

Improvements by the Parrish Coal Company.

The underground slope of the Baltimore seam in the Parrish colliery has been extended a length of 1,450, feet making it a total length at present of 2,150 feet. It has a grade of about 6½ degrees and a sectional area of 7×12 feet.

Improvements by the Hillman Vein Coal Company.

This company has driven two tunnels, one from the Hillman to the Kidney seam, and the other from the Hillman to the Abbott seam. The former is 170 feet in length and the latter 337 feet. The sectional area of each is 7×12 feet.

Improvements by A. J. Davis.

At the Warrior Run colliery, a new pair of first motion hoisting engines have been erected. The cylinders are 30×48 inches, and the Cone Drum is large enough to carry 2,500 feet of 1.5 inch rope. This was procured to take the place of a single geared engine and is an effective improvement. A short tunnel was also driven from the B to the C vein, a length of 120 feet, having an area of 90 square feet.

Improvements by the Newport Coal Company.

At the Lee colliery two new drifts were opened to the Red Ash seam, and a new slope was driven to a length of 546 feet. It has a varied pitch, the steepest being 70 degrees.

NEW SHAFTS IN PROGRESS OF SINKING.

The Maxwell shaft No. 20, of the Lehigh and Wilke-Barre Coal Company, after being sunk to the rock, was walled with excellent mason work up to the surface. The size of the shaft inside of the walling is 54×12 feet, and at the end of the year 1892 it was at a depth of 134 feet. Workings are being opened ready in the Jersey mine to run coal for this shaft, and the construction of a breaker is in progress.

The Delaware, Lackawanna and Western Railroad Company is sinking three new shafts in Hanover township. The first is named Bliss,

improving the ventilation a 24-foot Guibal fan was erected, run by a horizontal engine, 20x36-inch. Under a speed of 50 revolutions and one inch water gauge, it is exhausting 120,000 cubic feet of air per minute. The upcast has an area of 136 feet and the downcast an area of 100 square feet.

The Buttonwood shaft, which is an opening for a new colliery, was sunk to a depth of 680 feet, having cut four coal seams. The air shaft connected therewith is at a depth of 400 feet, having a sectional area of 12x22 feet.

The new breaker is in course of construction and will be ready to ship coal to market some time in 1894.

Improvements by the Newport Coal Company.

At the Lee colliery a new shaft was sunk to work the basin south of the breaker. Its size is 12x15 feet and depth at present 200 feet, and it has cut the Hillman and the upper split of the Baltimore seam. A second opening is effected by connecting to the slope.

PUMPING BY ELECTRICITY.

The first electric pump in this district was introduced into the Woodward colliery of the Delaware, Lackawanna and Western Railroad Company, to be used instead of the steam pump in the red ash seam slope underground. The heat radiating from the steam pipe was detrimental to the ventilation, and in order to dispense with it, the electric pump was introduced on trial and it has proven very satisfactory. The power station is located in the hoisting engine house on surface. The generator is a No. 25 Thomson-Houston machine of 500 volts, driven by a Ball & Wood automatic engine. From the power station two No. 0 B. & S. wires run overground to the air and drop down the shaft to the red ash seam. They simply hang down the shaft from the hangers at the top. From the shaft bottom to the bottom of the slope they are conducted down the return airway, one on each side. The pump is a horizontal triplex, single acting, with bronze outside packed plungers, 6½x8 inches. It is mounted on a truck which constitutes its frame and is furnished with wheels so that it may be quickly moved. It is operated by a 20-horse power motor, the frame of which makes a casing to protect the motor in case of falls or droppings of water. The motor actuates the pump through double reduction cut spin-gears; the high speed pair is running in a gear case filled with oil. On the left of the motor is the rheostat for starting and stopping the machinery. At this point sparks are emitted which would make it unsafe to run in case a squeeze should take place releasing an extra volume of explosive gases. This makes it necessary to keep the steam pump in place ready for emergencies of this character.

CLASSIFICATION OF FATAL AND NON-FATAL ACCIDENTS.

Causes of Accidents.	Killed or fatally injured.	Severely injured.
By explosions of fire-damp,	7	33
By falls of roof and coal,	44	68
By falling down shafts,	2	. . .
Crushed and run over by mine-cars,	7	59
By explosions of powder and blasts,	4	23
By miscellaneous causes underground,	6	27
By miscellaneous causes on surface,	7	23
Totals,	77	233

Number of widows, 46; orphans, 182.

The Collieries of the Fourth District.

During the year 1894 there were forty-three breakers and sixty-six openings at work more or less time, mining and preparing coal for market in the Fourth Anthracite district. An average of 46,789 tons per day worked was produced, making a total production of 7,162,961 tons in an average work of 153.1 days.

The collieries in operation less than 153.1 days were those of the Lehigh and Wilkes-Barre Coal Company. The No. 3 colliery of the Delaware and Hudson Canal Company, which, after working 153 days, was destroyed by fire on the evening of November 15, and remained idle the remainder of the year. The No. 3 colliery of the Susquehanna Coal Company, where the production is not sufficient to keep the breaker working all day owing to the partial exhaustion of the mine. The Gaylord colliery of the Kingston Coal Company, several weeks' idleness caused by the disastrous cave of February 13th. The collieries of the Lehigh Valley Coal Company, the Red Ash Coal Company, the Parrish Coal Company, the Maffet colliery of the Hanover Coal Company, and the Warrior Run colliery of Mr. A. J. Davis.

The Lee colliery of the Newport Coal Company did not work more than 100 days. It was suspended on August 25th, and since then has passed into the possession of another company. The Buttonwood colliery of the Parrish Coal Company is an old mine enlarged and reopened. It was lying idle since 1866. The shaft was enlarged and sunk to a deeper seam and a new breaker was erected. It began shipping coal in September, 1894, and worked 50 days until the end of the year.

William H. Sayre, second vice president, South Bethlehem, Pa.

John R. Fanshawe, secretary, Philadelphia.

John B. Garrett, treasurer, Philadelphia.

Israel W. Morris, general land agent, Philadelphia.

W. A. Lathrop, general superintendent, Wilkes-Barre, Pa.

Directors, Robert H. Sayre, George H. Myers, Joseph Wharton, Thomas McKean, Beauvéau Borie, John B. Garrett, Wm. L. Conyng- ham, James I. Blakslee, C. O. Skeer, Charles Hartshorne, W. A. Ing- ham, John R. Fell.

Collieries of the Miscellaneous Coal Companies.

Beside the collieries commented on in the foregoing articles, there were twelve collieries operated by smaller companies in the Fourth district. These together produced 1,296,722 tons of coal and shipped to market 1,192,806 tons, in an average of 129.76 days of work. They employed 3,890 persons and mined 185,246 tons of coal per life lost. Three of the seven fatal accidents took place in the Hillman vein colliery, two in the West End, and one each in the Alden and Dod- son collieries. The Nos. 1 and 2 collieries of the Red Ash Coal Com- pany, the Parrish and Buttonwood, of the Parrish Coal Company, and the Maffet, Warrior Run, Lee and Chauncey, did not have one fatal accident.

These mines are all in safe condition and efficiently ventilated. More or less firedamp is emitted in each, but not in such quantities as we find in the deeper mines. They are working closer to the out- crops where the roof is generally better than in the deeper portions of the basin.

The names of the collieries and of the officers are as follows:

Nos. 1 and 2 Red Ash Coal Company.

M. B. Williams, general superintendent, Wilkes-Barre, Pa.

P. H. Ganahan, assistant general superintendent, Wilkes-Barre, Pa.

Daniel J. James, mine foreman No. 1 Red Ash.

Joseph Hopie, outside foreman No. 1 Red Ash.

Timothy Theopilus, mine foreman No. 2 Red Ash.

John Herriotts, outside foreman No. 2 Red Ash.

Officers of the Parrish Coal Company.

H. H. Ashley, general superintendent, Plymouth, Pa.

Thomas R. Evans, general mine foreman, Plymouth, Pa.

Parrish colliery, Henry G. Willilams, inside foreman, Plymouth, Pa.

Parrish colliery, Thaddeus Eddy, outside foreman, Plymouth, Pa.

Buttonwood colliery, Wm. T. Pritchard, inside foreman.

Buttonwood colliery, Merrit Frederick, outside foreman.

July and the new one worked ten days in November, 1895. A new twenty foot fan has been also erected instead of the old one at the air shaft. It is operated by a vertical engine. Running 62 revolutions per minute it exhausts 88,000 cubic feet of air with a water gauge of 1.8 inches.

The Lee Coal Company.

The Lee colliery passed out of the hands of the Newport Coal Company and into the hands of the Lee Coal Company. They sunk a shaft a depth of 200 feet and erected a fan seventeen feet in diameter, operated by a vertical engine. It was ready at the close of the year but had not been started. The colliery worked only twelve days in 1895.

IMPROVEMENT BY THE DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.

Avondale.

A new air shaft 12x21 feet has been sunk, striking the Red Ash vein near the head of No. 2 slope workings to give it more effective ventilation and a sixteen foot fan was erected which, running 65 revolutions is exhausting 67,350 cubic feet of air per minute.

A compressed air pumping plant is being installed, consisting of a 14 and 23½x24 cross compound condensing Corliss engine with 17 and 28x24 Riedler air cylinders which is to furnish air at 150 pounds pressure to operate a cross compound Riedler pump, having plungers 5½ and 7¾x18.

This pump is to operate on a lift of 780 feet, taking the place of three steam pumps. It is expected also to reduce the temperature of the air and improve the effects of the ventilation.

Woodward.

A tunnel from the Red Ash shaft level to the foot of the Baltimore slope a distance of 2,700 feet has been completed.

A 35 foot fan of the same construction as described has been erected at Bliss mines, also a 16 foot diameter Guibal fan has been erected, the former taking the place of a 20 foot direct connected, and the latter a 16 foot open fan.

Both show much greater efficiencies, which together with their ability to run at higher speeds, have resulted in a marked increase in the ventilation. The 16 foot Guibal fan is driven from the engine by manilla ropes instead of a belt.

Bliss.

On September 17, 1895, this new colliery was started to prepare and ship coal for the market. It had been in course of construction