

tional area of 84 square feet for a distance of 650 feet, on a pitch of about 8°, at which point a fault was encountered, cutting the vein out entirely. The sinking at this point was abandoned until a drill hole was bored with a diamond drill from the surface down. The reason for boring from the surface was for the purpose of ascertaining the thickness of rock overlying the vein, as there is a considerable depth of quick sand in that locality, and also to find the extent of the fault. The vein was found to have gone up 8 or 9 feet, and it was also found that the strata of rock was ample in thickness to proceed in safety with the slope to get the vein again. Therefore the sinking was resumed in the rock with a grade of 1 in 20 feet for a distance of 145 feet, at which point the vein was again tapped and the slope sunk in the vein 400 feet from the fault, and gangways opened up east and west. The second opening was also completed through the fault, and the air connections completed.

The endless or tail-rope system has been placed in this slope for hoisting, which is giving great satisfaction. The motive power is a pair of second motion steam engines, located in No. 1 tunnel. Cylinders 16" by 30", which takes all the coal from the Baltimore seam through No. 1 tunnel to the foot of the eleven-foot slope, a distance of 3,100 feet.

A new steam pump of Goyon Bros., of Ashland, Pa. make, was put in at the foot of the shaft to take care of the water, of which there is a large supply. Steam cylinders 26" by 37", which is giving good results.

Butler Coal Company, Limited.

This company has started a new colliery called the **Fernwood**, a half mile north of the old Everhart or Boston colliery, located in Jenkins' township. The openings consist of two shafts sunk from the surface to the Red Ash seam, a depth of 100 feet. The main or hoisting shaft is 11x18 feet, the other 11x12 feet in area. The connections between the shafts are not completed at this writing.

A new breaker has been built about five hundred feet north of the shafts, to clean and prepare the coal coming from these openings as well as the coal coming from the Boston tunnels which is taken around the mountain by a track more than 2,000 feet long to be prepared for market in the new breaker. Capacity of breaker about 800 tons per day.

At the Phoenix Colliery the old breaker which has been idle for a number of years was taken down and replaced by a new one which is built on the site of the old one. The machinery in this breaker is of the best for cleaning and preparing coal for market; the capacity is about 800 tons per day. It is heated all through by steam and all the dangerous parts of the machinery boxed or fenced off. The shaft has been re-timbered and placed in good condition for hoisting coal. A new 20-foot Guibal fan has been erected on the air shaft to ventilate the workings of the shaft.

COLLIERY IMPROVEMENTS DURING THE YEAR 1892.

Pennsylvania Coal Company.

In Barnum No. 1 shaft, a new Guibal fan 18 feet in diameter, has been erected on the site of the one which was destroyed by the fire, which occurred on the evening of July 22, 1892. The old air-shaft of No. 2 Barnum has been enlarged from the surface to the depth of 150 feet, and a pair of double engines placed to hoist the coal through it from the 7 and 14 foot seams.

Lehigh Valley Coal Company.

In the Maltby shaft a rock tunnel was driven from the bottom of the 11-foot slope to the 6-foot vein, with a sectional area 7×14 feet, opening up a large territory of good coal.

Delaware and Hudson Coal Company.

In Laurel Run slope a rock tunnel was driven from the Checker vein to the lower Baltimore, a distance of 220 feet, with an area of 60 feet, to be used for transportation.

In the Pine Ridge shaft an air-shaft was sunk a distance of $22\frac{1}{2}$ feet, from the upper to the lower Baltimore seam, to be used for ventilation.

In the Delaware shaft three rock tunnels, 8×10 feet area, were driven between the lower and upper Baltimore seams a distance of 40 feet each, to be used for transporting coal, and a new gravity plane was completed, 400 feet long, 8×10 area, with a gradient of 12° .

Butler Mine Company, Limited.

In the Fernwood shaft an inside slope was sunk a distance of 325 feet in the red-ash seam. A new Guibal fan, 12 feet in diameter, was also erected on the second opening to ventilate the workings, exhausting 22,000 cubic feet of air per minute with a water gauge of 3 inches, working speed of 35 revolutions per minute, driven by a horizontal engine, cylinder 10×24 inches.

In the Chapman shaft the second opening has been completed 130 feet in depth, with an area of 10×12 feet. A new fan, 12 feet in diameter, has been placed thereon to ventilate the workings, exhausting 30,000 cubic feet of air, with a water gauge of 2 inches, running 45 revolutions per minute. The fan is driven by a 20-horse power horizontal engine, cylinder 10×30 inches.

Newton Coal Company.

On the twin shaft a large pair of first motion engines were erected in place of the ones which were destroyed by the fire of September 11, 1892. They were built by the Dixon Manufacturing Company, Wilkes-Barre.

A rock tunnel was driven through an anticlinal from the bottom of the shaft in the Red Ash seam, a distance of 300 feet with an area of 7×16 feet which greatly shortens the transportation of coal to the foot of shaft.

No. 8 slope extended 650 feet Red Ash vein to limit. The haulage road for transportation of No. 2 coal to Baltimore No. 5 shaft has been completed and equipped with electric motor. The haulage is 3,400 feet long. 10x12 inch engines installed on No. 4 slope Baltimore vein.

DELAWARE AND HUDSON COMPANY

Baltimore Tunnel.—No. 6 slope Red Ash vein extended 250 feet. New breaker at Baltimore tunnel equipped with machinery using electricity as power. Began operation December 1.

Baltimore No. 5.—No. 1 slope extended 1,600 feet. No. 2 tunnel driven 175 feet to bore hole for culm flushing. New electric power plant installed to furnish power for the Baltimore tunnel breaker and other uses as required.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery, Outside.—New office was built 30x30x21 and new barn for stock, 32x110x21—6.

Thomas Shaft, Butler Colliery.—Rock plane 250 feet long area 7x12 feet from bottom Red Ash to top split of Red Ash. This plane will be continued in the top split as a steam plane, and will also work the coal in the bottom split as a slope below the shaft level.

The fan at Chapman shaft has been replaced with another and larger fan, 4x16 feet, which is being driven with an electrical motor.

Marcy or Butler Slope, Butler Colliery.—The main slope has been extended a distance of 750 feet further toward the basin in the Marcy vein.

Checker Slope in what is known as the Checker vein, Butler colliery. At a point 950 feet from head of slope, a rock fault was encountered, and after proving ground by bore holes, it was decided to drive through the fault, a distance of 550 feet to strike the coal on the other side. This has been completed and the total depth of the slope is now about 1,800 feet.

Fernwood Colliery, Outside.—Blacksmith, carpenter and machine shop erected, 24x68x20. New supply house, 18x18x16, with fire-proof oil house addition, tanks and pumps for handling the oil. A new barn for stock, 32x112x19-6, has been erected. The fan and fan engine house at No. 1 slope was torn down and rebuilt, and the fan engine changed, and is now in first class condition.

Consolidated Slope.—An additional gravity plane, 7x12x300 long has been driven in Stark vein. A duplex plunger pump, 20x10x36 has been installed for the purpose of furnishing water to the washery.

Consolidated Colliery, Outside.—Boiler house at breaker enlarged and two 150 H. P. return tubular boilers installed.

What is known as the annex to the breaker has been changed and converted into a washery for the purpose of preparing the small sizes from the breaker and also washing out what is known as the "Consolidated culm dump."

Mine Foremen's Examinations

The examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held on the 8th and 9th of May, at Pittston.

Heidelberg Number 2 Colliery.—Extensive repairs were made in breaker during the year.

Robbing of Red Ash vein was extensively carried out.

Silting of a portion of Red Ash vein under the Delaware and Hudson Railroad tracks was completed.

HILLSIDE COAL AND IRON COMPANY

Number 1 Slope in Thomas Shaft has been driven on the Middle Split of the Red Ash vein from the shaft level toward the basin, a distance of about 600 feet; area 6x16 feet. This Slope is continued as a steam plane to the top split of the Red Ash through the dividing rock, and has been driven a distance of about 300 feet. After entering the top split, the same engines will also serve on a continuation of the plane driven toward the basin as a slope in the top split, which will be driven as far as the coal can be worked.

These engines will therefore handle the coal in the Bottom Red Ash Slope and on the Power Plane Slope in the top split of the Red Ash. The Number 1 Power Plane in the middle split of the Red Ash has been extended a distance of about 350 feet; area, 6x14 feet. Condition, good.

Fernwood Colliery.—A washery 40x60x76 feet high has been built to wash out the Fernwood culm dump.

A power house built of brick 35x35x16 feet, and one 150 K. W. 275 to 300 volt electric generator, with 19x18 inch Ewen engines have been installed, and three 7½ ton electric motors in Number 1 Slope. Condition of colliery, good.

Clarence Colliery.—The Number 1 Slope has been extended 106 yards during the year, area 6x12 feet, and the Number 2 Slope 79 2-3 yards, area 6x12 feet. Condition of colliery, good.

HUDSON COAL COMPANY

Lafin Colliery.—New trestle from plane to breaker to replace one blown down by storm, new blacksmith and carpenter shop, locomotive house and supply house.

Number 5 Slope Bottom Red Ash, driven 600 feet.

Number 3 Plane driven 100 feet in rock from bottom to top split Red Ash and continued in vein 150 feet.

Number 6 Slope opened and driven 100 feet.

Condition of colliery, good.

Pine Ridge Colliery.—Number 13 Slope driven through rock from Hillman to Rock vein a distance of 250 feet, and continued in Rock vein a distance of 550 feet.

An 8 inch bore hole was put down 102 feet for rope for Number 13 Slope.

Number 14 Slope in Kidney vein extended 100 feet and completed, Number 15 Slope in Hillman vein extended 200 feet.

Number 16 Slope in Rock vein opened and driven 425 feet. A 22 inch bore hole was sunk for the purpose of pumping through to the surface from Checker vein, a distance of 464 feet.

A 6 inch bore hole sunk 146 feet to Hillman vein for flushing purposes.

A 6 inch bore hole sunk 203 feet to Rock vein for flushing purposes. Condition of colliery, fair.

A mule stable in the Red Ash vein was extended and made ready for more mules.

At Coal Brook slope, a new plane, 7 x 14 feet and 186 feet long, was completed between the No. 29 tunnel and No. 35 tunnel levels.

HILLSIDE COAL AND IRON COMPANY

Butler.—Erected a new concrete building, 94 x 40 feet, with an annex 40 x 60 feet, fire-proof throughout, to be used as machine, car and blacksmith shop.

At **Fernwood** a new slope, 7 x 12 feet and 1,000 feet long, was driven on the west rise, from the surface to the bottom split of Red Ash vein, to open up the Fernwood mines to deliver the coal to the Butler breaker. A tunnel was also driven off the new slope to the middle split of Red Ash. A new plane opening was driven from the Fernwood to the Clarence mine, 7 x 12 feet and 400 feet long, the coal to be taken up the Fernwood slope, thence to the Butler breaker.

In the Thomas shaft, a tunnel, 7 x 12 feet and 38 feet long, was driven from the middle split to the bottom split of Red Ash, for developing purposes.

DELAWARE AND HUDSON COMPANY

Delaware.—The new shaft in the course of sinking was sunk 160 feet from the surface and will be continued to the Red Ash vein.

The Mill Creek air shaft was extended 105 feet to the Ross vein; No. 7 rock slope was sunk 1,100 feet to the Red Ash vein; No. 10 plane in the Ross vein was extended 900 feet; No. 8 slope Ross vein was sunk 1,100 feet towards the North basin. A return airway in the Ross vein was driven 300 feet towards Mill Creek air shaft.

in the Red Ash vein, 3,000 feet. A fireproof mule barn to hold 17 mules was built in Red Ash vein, and one was also built in Marcy vein.

Number 14 Colliery.—A new fireproof mule barn 87 by 114 feet, was built on the outside at the tunnels, to accommodate 54 mules.

At the Courtright slope, a brick building 10 by 12 feet was erected outside for the use of blacksmith.

Two new shafts, one 12 feet by 16 feet 5 inches by 608 feet, and one 12 feet by 22 feet by 585 feet, were sunk from the surface to the Red Ash vein, for the purpose of working the veins below the Marcy.

A rock tunnel 7 feet by 12 feet by 250 feet was driven through the anticlinal in the Pittston vein for transportation.

A fireproof mule barn, to accommodate 45 mules, was built in the Checker vein.

HUDSON COAL COMPANY

Pine Ridge Colliery.—A rock slope was sunk from the Cooper to Red Ash vein, a distance of 900 feet, size 7 feet by 14 feet. The second opening was driven to the Laurel Run workings, a distance of 1,700 feet.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—Built a new washery, pockets of concrete and the balance of yellow pine, size 110 feet by 65 feet by 90 feet high. Washery is equipped with the latest machinery to prepare coal.

One-half battery 150 H. P. of B. and W. dutch oven type boilers added to the boiler plant.

One brick wash-house, 18 by 42 by 11 feet erected for the firemen, breaker and washery employes.

Thomas shaft. A rock tunnel 7 by 12 by 540 feet, was driven through the anticlinal for haulage road in the Red Ash vein.

A rock slope 7 by 12 feet is being driven from the Red Ash vein to the Butler workings through the fault, to be used as a second opening for the Butler slope Red Ash vein.

Butler Marcy slope. The Pittston water tunnel has been extended to the Marcy vein.

Fernwood slope. A new mule barn of wood has been erected outside to accommodate 20 mules; size 20 by 120 by 12 feet. A new building of corrugated iron was erected for supplies; size 32 by 112 by 12 feet.

LEHIGH VALLEY COAL COMPANY

Mineral Spring Colliery.—Safety over-hoists were placed on the shaft engines. Two powder cars were built for the transportation of powder to Coal Brook tunnel. Two closed passenger cars were constructed for the transportation of men to and from Coal Brook.

A new loading belt was installed in the breaker.

The mule barn in the Red Ash vein was made fireproof. A new concrete hospital was built in the first lift off the Baltimore slope.

The props and timber in No. 39 tunnel for a distance of 60 feet were replaced by concrete and steel beams.