

At No. 9 colliery, the hoisting-shaft was sunk from the 14-foot to the Red Ash seam, a distance of 300', which opens a large area of good coal for this colliery.

In No. 10 shaft, a tunnel was driven through an anticlinal 428' with a sectional area of 84'; between this and No. 9 shaft in the Marcy vein it will be used for transporting coal.

In the Hoyt a tunnel was driven from the foot of the shaft in the 14-foot vein to the Marcy, a distance of 300', which opens a large field of good coal. A new slope is being sunk in the Marcy seam to connect the ventilation.

Shaft No. 4, which has been idle since 1886, has been sunk from the Marcy to the Red Ash seam 211'. The air connections have been completed between the shafts in both veins. A new 20-foot fan has been erected on the new shaft sunk in 1888, to ventilate the workings of both veins. The coal hoisted from these shafts will be taken to the Ewen breaker to be prepared for market.

*Lehigh Valley Coal Company.*

The Heidelberg slope No. 1 has been extended through a rock-fault 450', sectional area 7'x12', with a gradient of 16°, which opens a large field of good coal for this colliery. The second opening is now in progress, being rapidly driven to completion, when a new fan will be erected thereon to furnish ventilation.

*Delaware, Lackawanna and Western Railroad Company.*

At the **Hallstead** colliery a new shaft 10'x12' has been sunk on the west side of the Lackawanna river from the surface to the Red Ash seam, a distance of 279', to be used for a second opening and for pumping water from the mine. A new 16-foot open fan was erected on the old second opening, close to the hoisting-shaft. This makes the second fan used in ventilating this colliery, and it gives general satisfaction.

The new Pettebone shaft of this company was completed to the Red Ash seam, which was cut at a depth of 1,126'. The air-shaft cut the Red Ash seam at a depth of 1,143'. The both shafts have been connected in the bottom seam. A new 17-foot open fan was erected on the main shaft. These shafts open an extensive field of good coal. A pair of direct-acting hoisting engines were placed to hoist therefrom. A new breaker is in the course of erection at this writing, which is expected to be ready to prepare coal for market in the month of July, 1890.

*Newton Coal Company.*

At the Twin shaft a new 24-foot fan was erected to ventilate the workings of the Red Ash vein. This makes the second fan erected on this colliery.

The new breaker is quite an improvement on the old one. It is furnished with first-class machinery for cleaning and preparing coal for market. Its capacity will be about 800 tons per day. It was started to prepare and ship coal on August 25, 1890.

*Lehigh Valley Coal Company.*

At the Maltby colliery a new Guibal fan, 18' diameter, was erected on a shaft sunk for the purpose close to the out-crop of the 11-foot seam on the mountain north of the main hoisting shaft. This makes the second fan at this colliery.

In the Prospect colliery a rock tunnel was driven from the Baltimore to the Skidmore seam, a distance of 250 feet, with a sectional area of 9.1 square feet. A tunnel was likewise driven from the Abbott to the Bowkly seam in the same colliery, a distance of 100 feet. Thickness of Skidmore vein 4' 6". Thickness of the Bowkly seam 7'.

In the Midvale colliery a rock tunnel was driven from the level of old slope in the Hillman to the five foot seam, a distance of 300 feet. Sectional area 91 square feet. Thickness of seam 4'.

In the Henry colliery two rock planes were driven through the strata from the Baltimore. The first to the Hillman seam on a pitch of 25°, a distance of 650 feet. The other was driven to the five-foot seam, a distance of 550 feet on the same pitch. Sectional area 100 square feet. This opens up a large district of coal for this colliery.

At the Heidelberg No. 1 slope a new fan 15' diameter has been erected on an opening driven for the purpose on the side of the hill, back of the slope opening. It ventilates the new workings at foot of slope, and the old tunnel workings which were formerly ventilated by a furnace

*Delaware and Hudson Canal Company.*

In Pine Ridge colliery a rock tunnel was driven from the top split of the Baltimore seam to the bottom split, a distance of 165 feet. Sectional area 72 square feet.

In the Delaware shaft a new gravity plane was driven on a pitch of 7°, a distance of 1,100 feet, with a sectional area of 128 square feet.

*Delaware, Lackawanna and Western Railroad Company.*

In the **Hallstead colliery** an underground slope has been sunk in the red ash seam 400 feet, which opens up the coal to the dip of the old slope.

A new inside plane has been completed 900 feet in the same seam on a grade of 4°. These improvements will increase the output of the shaft considerably, likewise shortening the transportation to the foot of the main shaft.

*Wyoming Valley Coal Company.*

At the Forty Fort colliery an underground slope was sunk on a line with No. 1 tunnel in the bottom split of the Baltimore seam, with a sec-

and over the fall he found the body of Bryden lying on the gangway road. He was severely burned on face and hands, but undoubtedly lost his life by the afterdamp, as he evidently got confused and went the wrong way to a distance of 150 feet from where his staff was found. He was a man of large experience in mining and had for a number of years conducted mines that gave off large quantities of gas.

#### Taking the Water out of the Pettebone and Hallstead Shafts.

In my report of 1893 the Pettebone shaft, operated by the Delaware, Lackawanna and Western Railroad Company, was reported flooded to extinguish a fire caused by an explosion of gas. I therefore wrote Superintendent Benj. Hughes, of the above company, for information in regard to the taking out of the water and likewise to give me the information regarding the flooding of the Hallstead shaft located at Duryea and operated by the above company.

The following information was kindly sent to me for this report:

Scranton, Pa., Jan. 18, 1895.

Mr. B. Hughes, General Inside Superintendent:

Dear Sir: Referring to Mine Inspector McDonald's request for information as to Pettebone and Hallstead.

We commenced hoisting the water at the second opening on May twenty-third, 1894, and hoisted continuously in this shaft, excepting on Sundays, and about thirty days lost for repairs of shaft timbers, etc., until September 22.

A pair of iron tanks fitted to travel on the guides, each of a capacity of 1,175 gallons, and arranged for automatic filling and self emptying, were used. With allowance for leakage, etc., it is estimated that they hoisted 1,100 gallons each trip.

The greatest number of tanks hoisted in one shift of eight hours was 593. During the 75 days of actual hoisting, a total of 65,809 tanks were raised, or a daily average of 877 tanks.

As the water stood at the beginning 320 feet down the shaft, and the total depth is 1,150 feet, the average hoist was 735 feet, and the quantity nearly 1,000,000 gallons every 24 hours.

This hoisting was done with a pair of 30x60 slide valve direct connected engines.

From July 6th to 17th we also hoisted in the main shaft, using wooden tanks placed on the regular carriages, one with a capacity of 530 gallons, the other of 750 gallons, or an average of 750 gallons.

Of these we hoisted a total of 8,194 tanks.

The total water hoisted is estimated from the above data at 78,000,000 gallons. In addition to this, there were pumped from the

dips in the several veins, which would not flow to the tanks, from 5,000,000 to 10,000,000 gallons, making a total of about 85,000,000 gallons corresponding very closely to the amount estimated as put in in 1893.

Regarding the **Hallstead**. The water started to flow into the mine on the morning of September 21st, 1894, and by night was flowing at from 2,500 to 3,000 gallons per minute. This inflow was caused by a cave which extended over about 10 acres, and the cracks from which were visible on the surface. As the ground affected is all underlain with water bearing gravel through which the cracks extended, it seems probable that the water comes through this gravel, partially from the river and partially from the small streams which disappeared near the cracks on the surface. These streams have been carried in flumes for some distance, and this seems to have decreased the flow in the mines.

In order to handle the water, it was necessary to introduce nine pumps of various sizes, 250 horse power of boilers, lay about 5,000 feet of ten-inch and twelve-inch column pipe, and 6,000 feet of five-inch and six-inch steam pipe, in addition to the pumping plant previously in use at the colliery.

These pumps were started one week after the breaking in of the water and steadily lowered the water which had filled up the workings below, and part of the No. 9 level. The colliery resumed the shipment of coal on November 21, 1894. The flow has decreased so that it does not now average over 1,200 gallons per minute.

#### Colliery Improvements During 1894.

Some very important improvements were made at several of the collieries during the year 1894, a few of which are described in detail as follows:

##### Improvements by the Pennsylvania Coal Company.

At No. 10 shaft, Jr., a 20-foot Guibal fan was erected run by a horizontal engine 14x30 inches, under a speed of 50 revolutions and half-inch water gauge, exhausting 75,000 cubic feet of air per minute.

At No. 7 shaft a 20-foot Guibal fan was erected run by a horizontal engine, 16x30 inch, directly connected, which gives very good results.

In the Hoyt shaft the second opening from the red ash to the Marcy seam was driven through the rock strata between the seams on a grade of 27 degrees a distance of 270 feet, with a sectional area of 84 feet.

#### Improvements by the Lehigh Valley Coal Company.

At the Oakwood shaft the second opening to the underground slope has been sunk to the red ash seam a distance of 325 feet, with a sectional area of 230 feet.

An underground slope was also sunk in the red ash vein a distance of 614 feet on a grade of four and one-half degrees. This slope opens up a large field of good coal for this colliery.

The Exeter breaker has been remodelled and enlarged and a new tower erected over the hoisting shaft. The shaft has been repaired from the top to the bottom and the inside workings placed in shape for a large transportation of coal. The buildings at the second opening with the shaft have undergone complete repairs.

At the Wyoming Colliery a 15-foot fan was erected on the old opening of the Hillman shaft, which gives very good results; it is run by a horizontal engine 14x24 inch, and driven by belting.

#### Improvements by the Old Forge Coal Mining Company.

The Columbia shaft of this company was sunk from the Marcy to the red ash seam, connecting with the workings of their Phoenix shaft and completing the second opening for both shafts.

#### Improvements by the Butler Coal Company, Limited.

A slope was sunk by this company on the outcrop of the Marcy vein to a depth of 200 feet on a grade of 18 degrees, sectional area 84 feet. The coal is taken to the breaker by a small locomotive.

#### Improvements by the Delaware, Lackawanna and Western Railroad Company.

A tunnel was driven in the **Hallstead** shaft from the second to the third seam, a distance of 656 feet, area 6x12.

#### Improvements by the Algonquin Coal Company.

Two underground slopes were sunk in the Pine Ridge shaft, a distance of 1,100 and 300 feet respectively.

#### Improvements by John C. Haddock.

In the Black Diamond shaft a tunnel was driven from the Bennett to the eleven foot seam, a distance of 200 feet, area 8x12. An inside gravity plane was built a distance of 1,500 feet for transporting coal to foot of shaft.

### Delaware and Hudson Canal Company.

In the Delaware shaft a tunnel was driven from the top split of the Baltimore to the bottom split, a distance of 105 feet. It is used for transporting coal. Sectional area 7x9 feet.

The Laurel Run Colliery, located in the borough of Parson's, which had been operated by the Delaware and Hudson Canal Company since 1869, passed into the possession of the Laurel Run Coal Company on the 1st day of April, 1895, on account of the expiration of the lease.

### Newton Coal Mining Company.

Three rock tunnels were driven in this company's colliery from the sixth to the fifth seam a distance of 300 feet each, which are used for the transportation of coal.

### Old Forge Coal Mining Company.

An underground slope was sunk in this company's Columbia shaft, a distance of 200 feet; sectional area, 84 feet.

In the Phoenix shaft a tunnel was driven through a fault or roll in the Red Ash seam, a distance of 200 feet; area 7x10 feet. A new plane was erected 500 feet in length with gradient of one foot in five.

A new fan 20 feet in diameter was erected at the Columbia shaft to ventilate the workings of the sixth, or Red Ash seam in both of those shafts which are connected with the upcast to fan. While running 60 revolutions, 164,462 cubic feet of air per minute is exhausted.

### Delaware, Lackawanna and Western Railroad Company.

An underground slope was sunk in the **Hallstead** colliery of this company to a depth of 1,000 feet; 6x12 feet area. A rock tunnel was driven a distance of 398 feet, 6x12 feet which has not tapped the coal at this writing.

In the Pettebone shaft a tunnel was driven 138 feet sectional area, 128 feet. An underground slope was sunk 86 feet on a 25 degree pitch. A new fan 35 feet in diameter, 9 feet face with two inlets enclosed in brick work was put in place. At a speed of 43 revolutions per minute 129,960 cubic feet of air is exhausted with a water gauge of 1 9-10 inches.

### Florence Coal Company, Limited.

At the No. 2 shaft the second opening to the Marcy seam was driven to the surface, a distance of 120 feet.

now in course of erection. A new shaft from the surface to No. 3. Dunmore vein is being sunk, and it is expected that all improvements will be completed early in the Spring.

#### AUSTIN COAL COMPANY

Austin Tunnel.—A second opening and return have been driven in the Clark vein, connecting the new slope workings with those of the old. A shaft will also be sunk, connecting the Marcy and Clark veins for a second opening.

#### O'BOYLE-FOY ANTRACITE COAL COMPANY

This is a new operation, and they started to prepare coal in the early Spring. However, not a great deal of development work has been done. The B and C veins are opened and a fan and fan house have been installed and the fan is now in operation.

#### RELIANCE COAL COMPANY

Reliance Colliery.—A new shaft to the Clark vein has been completed, air connections made and carriages installed. A new fan and fan house have also been added.

#### DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

**Hallstead** Colliery.—This Colliery has been idle for the past few years, but during the year just closed, a force of men has been constantly employed, reopening the veins and restoring ventilation, also renewing the outside plant. The main shaft and air shaft have been recribbed, and the boiler plant building rebuilt. The following work is being done, but not completed: Preparing the feeder dam tower and shaft, also rebuilding the Hallstead breaker; installing new scales on both the light and loaded tracks, and repairing the bore holes and boiler plant, as well as making general improvements to all the buildings.

#### GENERAL REMARKS

The following Collieries were idle during the year. Central Colliery which consists of No. 13 and Law shaft, suspended operations in March for repairs and improvements and did not resume during the year.

The **Hallstead**, while very active, neither mined nor prepared any coal. Jermyn Nos. 1 and 3 were idle, through strikes and cyclones, seven months, in all 72 days.

Jermyn No. 2 was idle eight months on account of a strike, working in all 65 days.

The Sibley was destroyed by fire, and worked but five months during the year, or a total of 84 days. Had these mines been in operation, the tonnage for the District would have been much greater.

I desire to call attention to the number of accidents that occurred through individual carelessness. There seems to be no way to prevent them, although ordinary observance of the instructions given would reduce the list at least one-half. Some men will insist that

## ELLIOTT McCLURE AND COMPANY

Sibley Colliery.—The new breaker, boiler house and shaft have been completed, and the lower Dunmore veins are in course of development.

## O'BOYLE-FOY ANTHRACITE COAL COMPANY

O'Boyle-Foys Colliery.—This colliery is developing rapidly and promises to be one of the largest producers in the basin during the life of the property. At present a tail-rope system is being installed.

I have had no call to investigate accidents at this colliery, which speaks well for the management, as the vein being mined has a very bad roof.

## DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Hallstead Colliery.—Two new, very strong auxiliary dams will be built of concrete, on the rock planes, driven from the Red Ash to the Marcy vein.

## RELIANCE COAL COMPANY

Reliance Colliery.—The second opening for the Clark vein in this mine has been secured after much difficulty. At present the Clark vein and shaft are filled with water, which is overflowing into the Twin shaft workings at the Marcy vein. This water comes from the Pennsylvania Pittston vein.

A new boiler plant is in course of construction.

## HUDSON COAL COMPANY

Spring Brook Colliery.—The operations at this mine are confined to second mining almost exclusively, which is being done with care.

Langcliff Colliery.—No. 2 slope in the Red Ash vein is now completed, having been driven a distance of 800 feet. The mines are principally a pillar proposition, and are in fair condition.

## JERMYN AND COMPANY

Jermyn and Company.—The coal that was being prepared at No. 2 breaker is now conducted underground and prepared at No 1 breaker; a new washery has been erected at No. 2 on the site of the old breaker recently destroyed by fire. The estimated capacity of this washery is not less than 700 tons per day.



## CONDITION OF COLLIERIES AND IMPROVEMENTS

## PENNSYLVANIA COAL COMPANY

At Central Colliery, an improvement has been made in the matter of access to the ash pit of the boiler house. Previously there has been but one end open, the other being walled, and the whole ventilated by a steam jet blowing in a stack. The new arrangement does away with that, and the pit is now open from both ends admitting a free passage of pure air.

An egg shaped concrete water course about a mile long, constructed through the workings of both Central and Old Forge collieries, gathers the water from these workings and delivers it to a very modern and unsurpassed pumping plant at No. 2 shaft.

The No. 2 Old Forge shaft has been idle since June and the plant and workings have been completely overhauled. The shaft is now concreted from bed-rock and raised to accommodate a grade, which permits the abandonment of the old grade crossing for mine cars on the main road, the cars now being conducted over a new steel and concrete bridge. A new steel tower has been erected to replace the old one, and also a new brick engine house and hoisting engine. At the Mountain drifts a new shaft has been sunk to the Dunmore vein tapping the advanced workings of No. 2 shaft, a 20 foot fan, electrically propelled, has been installed and encased in a brick engine and fan house, and also a fan drift, which guarantee an adequate supply of ventilation. The new shaft is used for an upcast exclusively, while the old fan shaft at No. 2 provides an additional down-cast.

I consider the Pennsylvania collieries, Old Forge and Central, to rank with the very best in my district.

## DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

The **Hallstead** Colliery was closed down in September, after a conference with the Inspector, it being decided to take up the matter of some much needed improvements. Mining is suspended, but a force of men are regularly employed thus far making the changes referred to. The Pyne and Taylor collieries, which were transferred to me April 1, 1908, from the Fourth district, are in good condition. A new fan shaft is being sunk at the Pyne to supply ventilation to the Dunmore veins, which will later be developed, and a 20 foot fan will be installed thereon.

## JERMYN AND COMPANY

At Jermyrn Collieries a new pump has been installed at No. 2 shaft to return the water from the washery, the silt being run into the old workings. A new washery has been completed near No. 1 breaker; here the silt is first deposited in a settling tank, and the water passes off into the creek, it being first supplied from the Clark vein in No. 3 shaft by the big pump, which delivers it to the top of the washery over one thousand feet removed from the shaft.

## IMPROVEMENTS

## DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Taylor Colliery.—Installed one 6½ ton electric locomotive in Big vein. Rock plane from New County to Big vein. Concreted main shaft from surface to rock. Installed electric track pump on main gangway, Clark vein. Electric pump on B gangway, Clark vein, 300 gallons capacity. New concrete breaker and washery in course of erection.

Hallstead Colliery.—Two rock planes from No. 1 Dunmore to Clark vein. Installed drums, branches, ropes, etc., on one of the above planes, one being second opening. Re-opened Marcy vein tunnel, and installed fan to ventilate same. Covered steam lines, inside. Remodeled breaker, installed pickers, etc. Installed ash handling system at Feder-Dam boiler plant.

## JERMYN AND COMPANY

Jermyn Nos. 1, 2 and 3 Collieries.—New slope and shaft to surface vein. New slope and air shaft to Marcy vein. New drift and air shaft to Clark vein. New fire room 2,000 horse power, also new jigs and shakers in the breaker.

## NORTHERN ANTHRACITE COAL COMPANY

Murrays Colliery.—Wooden tower over shaft has been replaced by a steel structure.

shaft to the Clark vein. A new fireproof motor barn has been built near the foot of No. 1 shaft. A new and large hospital has also been made on the inside at this place. At Coray slope a fireproof motor barn and a fireproof hospital have been placed in the Clark vein.

Central Colliery.—Overwinding devices have been placed on the engines at Laws and No. 13 shafts.

#### DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Taylor Colliery.—Installed one 1,500 gallon centrifugal pump, for the purpose of pumping water from Clark vein to surface. Tunnel driven from Rock vein to bottom split of Diamond vein. Air shaft sunk from Clark to No. 1 Dunmore vein, for the purpose of ventilating Dunmore vein. Brick and concrete washhouse with steel lockers, erected on the outside.

Halstead Colliery.—Re-opening Nos. 2 and 3 Dunmore veins. Rock tunnel made from Clark to Marcy vein. Re-cribbed Feeder Dam shaft. Slope made from surface to Marcy vein. Built new reservoir for Feeder Dam shaft, to replace old one.

#### JERMYN AND COMPANY

Jermyn Colliery.—Installed 3 electric pumps. Concreted No. 3 shaft and fanway.

## DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

**Halstead** Colliery.—Slope was driven from surface to Marcy vein for haulage purposes. Open Marcy vein to increase output. Made second opening to Marcy vein for ventilating purposes. Recribbed Feeder Dam shaft.

## JERMYN AND COMPANY

Jermyn Colliery.—Sunk No. 3 shaft from No. 2 Dunmore vein to No. 3 Dunmore vein. A drift was driven from surface to bottom split of the big vein. An electric pump was installed in the second Dunmore vein.

Outside: An air compressor was installed near No. 3 shaft.

## HUDSON COAL COMPANY

Langcliffe Colliery.—Outside: Breaker was remodeled to a considerable extent.

## HILLSIDE COAL AND IRON COMPANY

Consolidated Colliery.—An air shaft was sunk from the surface to the top split of the Stark vein at Consolidated drift. This shaft also provides a second opening.

## MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held in the High School, Old Forge, May 18 and 19. The Board of Examiners was composed of Augustus McDade, Inspector, Rendham; David Lloyd, Superintendent, Scranton; Morgan E. Griffiths, Miner, Taylor; Michael Cosgrove, Miner, Old Forge.

The following persons passed a satisfactory examination and were granted certificates:

## MINE FOREMEN

John N. Cooke, James McGinley, William C. Riddle, Bernard Boyle, David E. Davis, John J. Boyle, Thomas Phillips, John Rohland, John Digwood, William W. Powell, James Walsh, Louis Tedesco, William G. Gwyn, Old Forge; John Scriven, John Withey, William W. Jones, Gounod Evans, Thomas V. Reynolds, Grover Perry, Martin Carroll, Thomas H. Griffiths, Thomas W. Jones, Daniel Hayes, David J. Thomas, John J. Jarret, Enoch Williams, Charles J. Powell, Alex. G. Law, David Moses, William H. Powell, David E. Harris, Robert J. Jacobs, Thomas G. Townsend, George E. Williams, William G. Lewis, Peter E. Partington, Benjamin Sweetman, Thomas Daniels, George S. Goodwin, Taylor; James Kelley, John W. Clifford, Cornelius McLaughlin, Avoca; William Creeden, Frank Baxter, James Baxter, John M. Reid, Moosic; Michael Joseph, Cosgrove; Martin Durkin, John E. Jones, Barney O'Boyle, William Richards, Thomas Wylam, Rendham; Theodore P. Hartman, Charles Cooksey, John M.