

competent man. There are no persons allowed to ride on loaded wagons or carriages either on the planes or in the shaft. The mine is in a good, safe, working condition. The parties having charge know their duty in case of death or serious accident. The shaft landings are protected by safety-gates. The breaker machinery is boxed and fenced off, so that the operatives are safe.

No. 5 SHAFT

Is located in Jenkins township, about two miles south-west of Pittston, on the east side of the Susquehanna river. It is 88 feet deep to the Checkered vein and 170 feet to the Pittston or 14 feet vein. This mine is operated by the Pennsylvania coal company. Benjamin Harding is mine boss.

Description.—They have no breaker attached to this mine, as the coal from this mine is prepared at No. 6 shaft breaker. They employ 34 miners, 34 laborers, 8 drivers, 2 door-boys, 7 company men in the mine; 2 drivers, 6 company men, 2 mechanics and one boss outside; in all 96 men and boys. They are working the Pittston or 14 feet vein; average thickness 10½ feet. The Checkered vein is not working. They have two gravity planes in the mine; length of each 350 feet. They drive headings 10 feet, air-ways 15 feet and chambers 24 feet wide. The nature of the roof is slate. They leave pillars to sustain it from 16 to 18 feet wide, and cross-entrances for the purpose of ventilation from 18 to 25 feet apart.

Ventilation.—Ventilation is produced in the mine by the action of the atmosphere. They have air-doors and gates on the main traveled roads, so as to control air-currents and force air to the face of all the working places. They have double doors on all main traveled roads with attendants so as to keep them closed. The main doors are hung so as to close of their own accord. The air is conducted to the face of workings in two splits or currents. They work 32 men in one and 36 men in the other. The amount of ventilation has been measured and reported monthly, according to law. The amount of air per measurement, at intake averages 16,500 feet per minute. The intake is located at No. 5 shaft and Nos. 3 and 4 slopes. The outcast is located at the mouth of No. 11 shaft. The area of intake is 130 feet and outcast air-way 150 feet.

Machinery.—They use two hoisting carriages in the shaft; one is a safety-carriage with all the modern improvements. The ropes, links, chains and connections are in good order. They have a metal speaking tube in the mines. They have flanges of sufficient dimensions attached to the side of the hoisting drums. They have adequate breaks on the hoisting drums. They have bridle chains attached to the safety-carriage, where they hoist persons into and out of the mine. The boilers have been cleaned and examined, and all the feed pipes, water-gauge cocks, &c., are in good condition. They use a steam gauge to indicate the pressure of steam per square inch. They also use one hoisting engine of 40-horse power.

Remarks.—They have furnished a map of the mine. They have second openings nearest to shaft, 1,100 feet. They have no house for men to wash or change their clothes. They have no noxious or poisonous gases evolve in the mine. The mining boss seems to be a practical and competent man. There are no persons allowed to ride on loaded wagons or carriages in the mine. The engineers seem to be sober, competent and experienced men. The parties having charge know their duty in case of death or serious accident. The mine is in good, safe, working condition; there are no boys working in the mine under twelve years of age; the shaft landings are protected by safety-gates. In the ventilating of this mine the air currents are quite the reverse in summer to what they are in winter. This shaft is located three-fourths of a mile south-east from the Susquehanna river.

No. 11 SHAFT.

This shaft is located in Jenkins township, two miles south-west of Pittston, on the east side of the Susquehanna river. It is 62 feet to the Checkered vein and 194 feet to the Pittston or 14 feet vein. This mine is operated by the Pennsylvania coal company. Andrew Bryden is general mine superintendent and Benjamin Harding is mining boss.

Description.—The coal mined here is cleaned and prepared at No. 6 breaker, which is located 1,800 feet north-west. They employ 24 miners, 25 laborers, 5 drivers, 2 door-boys, 4 company men, in mine; 2 head and plate men, 1 driver, 1 company man, 2 mechanics, outside; in all, 66 men and boys. They are working the Pittston or 14 feet vein; average thickness, 10 feet; they drive headings 10, air-ways 15, and chambers from 20 to 24 feet wide. The roof is good slate; they have pillars to sustain it from 14 to 18 feet wide. They leave cross entrances for the purpose of ventilation, from 18 to 50 feet apart.

Ventilation.—The ventilation is produced by steam and the action of the atmosphere. They have air-doors and gates on the main traveled road, so as to control the air currents and force the air to all the working places. They have double doors on main traveled roads, with attendants, so as to keep them closed. The main doors are hung so that they will close of their own accord. The air is conducted to the face of the workings in one volume. They work 60 men in this volume. The amount of ventilation has been measured and reported according to law. The amount of ventilation averages 16,500 feet per minute. The in-take is located at shaft No. 5 and slopes Nos. 3 and 4; area about 100 feet. The out-cast is in main shaft; area about 100 feet.

Machinery.—They use 2 hoisting carriages in the shaft; one is a safety carriage with all the modern improvements. They use flanges of sufficient dimensions attached to the sides of the hoisting drum; they have an adequate break on hoisting drum. The strength of ropes, links, chains and connections are tested every day by hoisting coal. They have bridle chains attached to the safety carriage. They do not allow more than 10 men to ride on any wagon or cage at one time. The boilers, feed-pipes, water-gauge cocks, &c., have been cleaned and examined, and reported in good condition, according to law. They have a steam gauge to indicate the pressure of steam per square inch. They use 1 steam engine of 40-horse power.

Remarks.—They have furnished a map of mine; they have a second opening; they have no house for men to wash or change their clothes in; they have no noxious or poisonous gases involved in this mine; the mining boss and engineer seem to be practical, competent and sober men; the parties having charge know their duty in case of death or serious accident; the mine is in a good, safe, working condition; the shaft-landings are protected by safety gates; the shaft is located 1,500 feet south at No. 5 shaft.

Note.—The mines operated by the Pennsylvania coal company are worked regularly and systematically.

NO. 7 SHAFT.

This shaft is located in Jenkins township, about $1\frac{1}{2}$ miles south-west of Pittston, and about $\frac{1}{4}$ mile south-east of the Susquehanna river. It is 160 feet to the Checkered vein and 312 feet to the Pittston or 14 feet vein. This mine is operated by the Pennsylvania coal company. Wm. Law is general mine superintendent, Wm. Reed is mining boss.

Description.—There is no breaker attached to this mine, but they have large chutes attached to shaft tower; they mine and clean 350 tons of coal per day; they employ 40 miners, 44 laborers, 14 drivers, 6 door-boys, 17 company men, in mine; 4 slate pickers, 16 company men, 3 mechanics and 1 boss, outside; in all, 145 men and boys; they are working the Pittston or 14 feet vein; average thickness, 12 feet; they drive headings 10 feet, air-ways 15 feet, and chambers 24 feet wide. The nature of the roof is coal and rock; they leave pillars to sustain it, from 15 to 25 feet wide; they have cross entrances, for the purpose of ventilation, from 18 to 30 feet apart; they have 2 gravity planes in the mine operated, on the same principle as they are in No. 6 shaft; one is 350 and the other 196 feet long.

Ventilation.—Ventilation is produced by means of a suction fan; at No. 4 shaft they have air-doors and gates in the main traveled roads, so as to control the air currents and force the air to the face of all the working places; they have no double doors or traveled roads; they have attendants at all main doors, so as to keep them closed; the air is conducted to the face of the workings in 2 splits; they work 8 men in one split and 76 men in the other; the amount of ventilation has been measured and reported monthly, according to law; the in-take is located at No. 7 shaft; amount of air per measurement is 25,200 feet per

ful readiness to comply with all that the law requires, and I am happy to say that W. R. Storrs, esquire, the general agent, as well as the president and directors, always manifest the same disposition. They are all evidently convinced that it is to the interest of the company, as well as for the good of their workingmen, to keep their collieries in their present excellent condition.

The Delaware and Hudson Canal Company, perhaps have done more to improve the ventilation of their collieries during the last three years, than either of the other larger corporations, and they are now entitled to the second place on the list in this respect, thus changing positions with the Pennsylvania Coal Company. Three years ago, their collieries in Carbondale were about as poorly ventilated as it was possible that they could be, but since that time, they have erected three fans there, the third being added last year, to ventilate the five tunnels composing the Coal Brook colliery. Hereafter, there need be no complaint of poor ventilation in the Carbondale collieries, unless the mine bosses fail to conduct the air properly through the workings. There is a very great and agreeable change for the better, and I am very grateful to the superintendents, especially to A. H. Vandling, esquire, for these improvements. There are now only two collieries owned by the Delaware and Hudson Canal Company, in my district, where the ventilation is not satisfactory, the two being the White Oak colliery, in Archbald borough, and the Grassy Island shaft, in Olyphant borough. Neither of these, however, is very bad, nor is either of them good, and I do not expect them to be good until a fan is provided for each.

The Pennsylvania Coal Company have also done considerable, but are more tardy in effecting the necessary improvements than either of the other large companies. One trouble with them is, their persistant clinging to the objectionable, unhealthy, and dangerous system of ventilating collieries successively with the return air passing from one to the other, instead of ventilating each colliery separately with "pure air," as the law requires. It is very fortunate for them that neither of the collieries where this is done is very fiery, or they could not be allowed to work them at all until this evil was remedied. They have extended two of their shafts down to the Marcy vein during the year—No. 4 and **No. 11 shafts**—and the probability is, that there will be gas enough in this lower vein to oblige them to abandon this dangerous system.

They have some collieries, however, in excellent condition as to ventilation, notably, No. 4, No. 7, No. 8, new No. 9, new No. 10, No. 13, and Law shafts. All their other collieries can be very materially improved, and must be improved before they can be rated as first class, though none of them are very bad. They have erected a new 17.5 feet diameter fan on an air shaft sunk for No. 7 shaft, in Jenkins township, which commenced running October 21, 1879; and another of the same size was put in at the new No. 9 shaft, which commenced running August 2, 1879. These are improvements inaugurated during last year, and were much needed.

been abandoned. They are also developing the Marcy vein at No. 4, and No. 11 shafts, in Jenkins township. But the main enterprise of the year, was the sinking of the Barnum shaft, on what is known as the Waddell farm, near Pittston. This shaft is one hundred and seventy-three feet and five inches in depth, from the top of the stone work at the surface, to the bottom of the "fourteen feet" vein, and is forty-seven feet long by twelve feet wide in the clear, giving a sectional area of five hundred and sixty-four square feet. It is to be divided into six compartments, one, eight feet five inches by twelve feet for an upcast, four hoisting ways, six by twelve feet each, and a pump-way, twelve feet square.

The sinking was commenced in October, 1878, by the company, who drove it down 36.5 feet by day labor. The balance of the work was done under contract, by James C. Smythe & Co., between the 1st of July, 1879, and January 1, 1880. The nature of the strata penetrated by the shaft is as follows: First, There is earth, slate, and rock for 49 feet and 5 inches, when a vein of coal three feet thick is met with; then there is 63.75 feet of fire clay and rock to the "seven feet" or "checkered" vein, which, at this point, proves to be 11.33 feet thick, and is said to be of good quality; then there is 27 feet and 11 inches of rock to the top of the "fourteen feet" vein, which, however, at this point is only 9 feet thick.

No timber is yet on the ground for the breaker, and it is, therefore, rather premature to venture any prediction as to what its capacity will be when built, but it is not likely to be less than one thousand tons per day. The time when shipping of coal will commence cannot at present be approximated, as there is a vast amount of work yet to be done before the colliery will be ready to commence operations; and the dispatch with which the work is driven will depend, in a great measure, on the demand for coal. They must make their connection with their second opening, which is eight hundred feet distant in both veins, and must drive their gangways, &c., in each vein before they can do much in the way of shipping coal.

The second opening is another new shaft eight hundred feet distant from the main shaft which is now being sunk, but is not yet over half way down. There is a large tract of land to be worked through these shafts; but the number of acres cannot be stated, as there are other collieries that will take in more or less of the territory. But it is very evident that when this colliery is completed and opened, it will be the model colliery of the company.

The Butler Coal Company is about to sink a new shaft, and the Lehigh Valley company is commencing to sink a shaft on their property adjoining the Butler colliery, in Pittston township; and the Pennsylvania Anthracite Coal Company are also sinking a shaft at their Greenwood colliery, in Lackawanna township, but neither of these are yet anywhere near the coal.

An Association of Mine Bosses Recommended.

There are about one hundred and fifty mine bosses, mine superintendents,

Examination of Applicants for Mine Foreman's Certificates.

The annual examination of applicants for mine foreman's certificates in the Second district, was held in the Welsh Hill school building, Pittston, Pa., June 25th and 26th. The examiners were H. McDonald, inspector, A. G. Mason, superintendent, both of Pittston, Pa., and Archie McQueen, of Pleasant Valley, Pa.

The following fourteen were successful, John W. Reid, Samuel M. Johnson, James R. Walsh, John Marian, Richard Beer, William J. Thomas, Patrick S. Coyne, Stephen McLinarie, James Blease, James Wilson, Mathew D. Macky, John Hastie, David D. Davis and Evan H. Reese.

James Waddell, of Kingston, Pa., applied for a certificate of service and was recommended to receive one.

General Condition of the Mines.

The mines of this district are in comparatively good condition as regards ventilation with the exception of a few which are not in the condition that the law requires, but I am happy to state that these mines are now being attended to, so that in a short time they will be in such condition as to give all the air to the workmen that is required by law.

The drainage in the mines has been improved more than in former years, yet there is room for improvement in this regard. Likewise the timbering is receiving its share of attention. As there has not been one accident in this district this year attributable directly to the neglect of timbering or propping.

Mine Improvements during 1888.

Pennsylvania Coal Company.—In shaft No. 6 of this company two underground tunnels were driven from the Pittston to the Marcy seam, a distance of one hundred and twenty, and three hundred feet respectively, which opens up an extensive lift of good coal.

At shaft No. 11 of this company, a new underground slope was sunk in the Pittston seam, a distance of five hundred and twenty-two feet. The engines are located on the surface and the ropes pass down through the air shaft.

A new tunnel was driven by this company about one mile south of No. 14 shaft, from the surface, cutting the Pittston seam at a distance of two hundred feet. The coal is of a good quality and is taken by a small locomotive to No. 14 breaker, to be prepared for market.

A new shaft was sunk by this company close to old No. 4 shaft, in Pittston borough, from the surface to the Powder Mill seam, a distance of four hundred and sixty-four feet. Size of shaft twelve by thirty-two feet. It will be used for hoisting coal.

Lehigh Valley Coal Company.—At Coal Brook slope an air shaft was sunk to the Red Ash seam, and a new fan twenty feet diameter

of the said Thomas McDonald, Cortland Rolls and Alex. Young on 31st day of December, 1895, caused by boiler explosion.

JOHN E. PERKINS,
Deputy Coroner.

JOHN MOORE,
M. J. REAP,
MICHAEL FADDEN,
HENRY SAVANNAH,
CON. McLAUGHLIN,
JAMES CONNELLY,

Jury.

COLLIERY IMPROVEMENTS DURING 1895.

Pennsylvania Coal Company.

A new shaft was sunk a distance of 79 feet with a sectional area of 100 feet. It is used for ventilation at their Barnum colliery. A new 14 foot fan was erected which exhausts 95,000 cubic feet of air per minute while running 62 revolutions. It is driven by a horizontal engine steam cylinder 10x24 inches.

At Law's shaft a new 20 foot fan was erected which exhausts 95,500 cubic feet of air per minute, steam cylinder 15x30 inches.

At the Hoyte shaft a new 20 foot fan was erected as a duplicate to the one in present use and so arranged that it can be started at a minute's notice in case of the disarrangement of the other one.

The No. 5 shaft was enlarged from the surface to the Pittston seam, and cribbed from the rock to the surface with stone. It was then sunk from the Pittston to the Red Ash seam, a distance of 232 feet which opens up a large territory of coal. The second opening has been started for some time and will be connected with Number 11 shaft which will answer in the same capacity for it. A new fan 20 feet in diameter has been erected to ventilate the workings but it is not in operation at this writing.

Lehigh Valley Coal Company.

At the Exeter colliery of this company the culm washery was enlarged and fitted with the latest improved machinery for cleaning the smaller size coal. A new steam shovel was put in use to convey the culm to the washery, which works very successfully.

Number 6 Colliery.—In Number 6 Shaft a new brick car and blacksmith shop was built 30x90 feet; also a new brick wash house 17x17 feet.

A tunnel from Clark vein, Number 6 Shaft, to the Babylon vein, in Number 5 shaft, was completed. This will bring all coal to the same foot. Condition of colliery and ventilation fair; drainage bad.

Number 11 Shaft.—A steam plane was driven from the Babylon to the 14 foot vein to the Lafin basin. This will shorten the distance of transportation of coal over one mile.

A ventilating shaft was sunk from the Babylon to Red Ash vein on south pitch. Condition of colliery, fair.

Number 5 Shaft.—No improvements. Condition of colliery, fair.

Ewen Colliery.—A large washery was erected with a daily capacity of 1,600 tons. It is completed with modern machinery for cleaning the culm from the bank.

Number 4 Shaft.—A new steel tower was erected over the hoisting shaft. A new engine and pump house 41x20 feet was built, also a blacksmith, oil and wash house, 48x17 feet, of brick. A rock tunnel was driven from the Marcy to the 14 foot vein to recover the pillars in the old Number 2 Shaft. Condition of colliery, good.

Hoyte Shaft.—A new steel hoisting tower was erected over this shaft 80 feet in height; a new engine and compressor house was built of brick. A rock slope was also driven from the 14 foot to Marcy vein. This slope will reach the coal in Marcy vein, that otherwise could not be reached. Condition of colliery, good.

Number 10 Colliery.—A new breaker and washery was built situated between Number 10 and Number 8 colliery, which will take and prepare the coal from Numbers 1, 8, 9, 10 and 10, Jr., Shafts. It is equipped with all the most modern improvements and has a capacity of 5,000 tons per day.

The coal is carried to the top of breaker by inclined over-lapping open top bucket steel conveyor, which is operated by 185 horse power 250 volt compound wound motor, reciprocating feed on conveyor driven by 10 H. P. 250 volt compound wound motor. The breaker and washery is equipped with mechanical pickers and nine L. V. jigs.

Both buildings are heated by exhaust steam. The engines are the Pennsylvania Coal Company pattern, 18x36 inches, in pairs. A brick building 50x160 feet was built for car and machine shops and is equipped with three lathes, planer, drill press, shaping machines operated by steam.

New mine scales and building erected at foot of conveyor for weighing mine cars. A new track scales for both light and loaded cars have been installed by Barker and Son, Scranton, Pa.

The power house is built of brick 34x74 feet with four engine type direct current compound generators 215 K. W. capacity, four 18x20 inch automatic McEwen engines. This electric power will be carried to Barnum Colliery, Number 1 and Number 10 shafts, and will operate a part of the breaker.

The boiler house is built of brick 76x113 feet, with an addition of 40x33 feet. The boilers are of the Sterling maxim type, consisting of 2,400 H. P. Equipment for boiler plant will be one 4,500 H. P. feed water heater, two 16x10x18 inch Scranton duplex plunger end packed pumps.