Rock Hill Tunnel

Is located in the borough of Pittston, and is situated 1,000 feet south-east of the Susquehanna river. It is operated by Bowkly & Son. Robert Sharp is general superintendent, Benjamin Lloyd is mining boss and Abram Price is outside foreman.

Description.—There is a breaker located about 500 feet from the mouth of the tunnel; they mine and prepare about 85 tons of coal per day; they employ 11 miners, 11 laborers and 4 drivers in the mine; 9 slate pickers, 4 head and plate men, 1 driver, 6 company men, 1 mechanic and 1 boss outside; in all 48 men and boys; they are working the Checkered vein; average thickness 7 feet; they work heading 12, air-ways 10 and chambers 24 feet wide; they leave pillars from 10 to 15 feet wide to sustain the roof; they drive cross-entrances as often as necessary for the purpose of ventilation; the roof is very good; the mine is in a tolerably good working condition.

Ventilation is produced by the action of the atmosphere; they are connected with Beaver & Co.'s mine, and one acts as an outcast for the other.

Machinery.—They use one engine of 25-horse power to operate the breaker; there is no machinery required at the mine.

Remarks.—They have furnished a map of the mine; there are no boys allowed to work in the mine under twelve years of age; the parties having charge know their duty in case of death or serious accident.

Twin Shaft Colliery.

This colliery is located in Pittston borough, and situated on the east bank of the Lackawanna river; it is operated by the Pittston and Elmira coal company. Jos. Cool is general superintendent, Thomas Smiles is mining boss and S. H. Huntington is outside foreman.

Description.—These mines are opened by two shafts twenty feet apart; they are 65 feet deep to the Checkered and 110 feet deep to the Pittston vein; there is a breaker attached to the shaft tower; they mine and prepare about 280 tons of coal per day; they employ 22 miners, 22 laborers, 14 drivers, 5 door-boys and 12 company men in Pittston vein; 7 miners, 7 laborers, 2 drivers, 1 door-boy and 1 company man in Checkered vein; 27 slate pickers, 5 head and plate men, 2 drivers, 7 company men, 3 mechanics and 1 boss outside; in all 138 men and boys; they are working the Pittston and Checkered veins; the average thickness of the Pittston vein is 8 feet and of the Checkered vein 6 feet; they work headings 10, air-ways 15 and chambers 24 feet wide; they leave pillars about 15 feet wide to sustain the roof; they leave cross-entrances about 30 feet apart for the purpose of ventilation; the roof is three feet of slate and good rock above; the mines are in a good working condition.

Ventilation in both veins is produced by means of a steam jet; the intake is located in the shaft where they hoist coal; area 100 feet; the upcast is located in the shaft that is used for hoisting men and supplies into and out of the mines; area 100 feet; the amount of pure fresh air is 15,200 cubic feet per minute; there is some inflammable and noxious gas evolved in the Pittston vein; the mines are examined every morning and evening by the fire boss; they have double doors on traveled roads and an extra one in case of accident to any of the others, and the main doors are hung so that they will close of their own accord; they have attendants at main doors; the amount of ventilation has been measured and reported; the air is conducted to the face of the workings systematically by the aid of check doors; there is but very little inflammable gas in the mines except when a door or gate gets broken, and then not to any dangerous extent; ventilation is good.

Machinery.—They use one hoisting engine of 60-horse power; one pumping engine of 40-horse power, and one breaker engine of 10-horse power; they have a metal speaking tube in the shaft; they have one patent safety-carriage with all the modern improvements in the shaft used for hoisting and lowering men and supplies; they have lately put on a new wire rope and attachments, which are safe and in good condition; they do not allow any person to ride on loaded carriages in the shaft; they do not allow over ten persons to ride on the safety-carriage at one time; the boilers have been cleaned and examined and reported in

good condition; they have flanges of sufficient strength and dimensions for safety attached to their hoisting drums; they have an adequate brake on the hoisting drum; they have a steam-gauge and safety-valves for safety and to indicate the pressure of steam; the breaker machinery is boxed and fenced off so that operatives are safe.

Remarks.—They have furnished a map of the mines; they have second openings for both veins; the Checkered vein is connected with Rock Hill Tunnel workings, and they have a shaft with ladders in from the Pittston vein to the surface; it is located about 1,500 feet south of main shaft; they have a house for men to wash and change in; they have no standing gas or water in the mines; the mining boss is a practical and competent man; he thoroughly understands his business; there are no boys working in the mines under twelve years of age; the engineers seem to be experienced, competent and sober men; the parties having charge know their duty in case of death or serious accident; the shaft landings are protected by safety-gates.

Rough and Ready Shaft Colliery.

This colliery is located in Pittston township, and situated on the east bank of the Lackawanna river. This mine is operated by the National iron company of Danville. Elijah Evans is superintendent and mining boss.

Description.—This shaft is 35 feet from the surface to the Checkered vein; then 7 feet of coal; then 35 feet of rock to the Pittston vein; then 12 feet of coal; then 98 feet of rock to the vein they now propose to work; they had a breaker attached to the shaft tower, but it was burned down during the year; they are not working here at present; they mined only about 5,000 tons of coal during the year 1872, as they have been idle a greater portion of the time; the average thickness of the vein of coal that they propose to work is about 8 feet; the Pittston and Checkered veins are nearly worked out; they are now preparing to build a new breaker and they say that they will get the mines in good working condition.

Columbia Tunnel.

This colliery is located in Pittston township, and situated about ¼ mile southeast of the Lackawanna river. It is operated by Grove Brothers, Danville. Daniel Evans is general superintendent and mine boss, and Evan J. Evans is outside foreman.

Description.—The opening to the coal is a tunnel 7 feet wide by 6 feet high and 2,300 feet long to the face in the mine; there is a breaker located about 500 feet from mouth of tunnel; they mine and prepare about 90 tons of coal per day; they employ 10 miners, 10 laborers, 3 drivers, 2 door-boys and 1 company man in the mine; 6 slate pickers, 2 head and plate men, 1 driver, 2 company men, 3 mechanics and 2 bosses outside; in all 42 men and boys; they are working the Pittston vein; average thickness, 8 feet; they work headings 10, air-ways 14, and chambers 24 feet wide; they leave pillars about 14 feet wide to sustain the roof; they leave cross entrances about 20 feet apart for the purpose of ventilation; the roof is fire-clay and slate; the mine is in good working condition.

Ventilation is produced by a furnace aided by check-doors; the in-take is located at mouth of tunnel; area 42 feet; the up-cast is located in furnace air-shaft: area 25 feet; the amount of ventilation has been measured and reported; ventilation is good.

Machinery.—They use 1 breaker engine of 30-horse power.

Remarks.—The mining boss seems to be a practical and competent man; there are no boys working in the mine under 12 years of age.

Of the smaller companies and operators, I have two to report who have replaced furnaces with fans during the year. Messrs. Jones, Simpson & Co., have put in a twelve feet diameter fan at the Pierce colliery, in Archbald borough, and Messrs. William Connell & Co. have replaced their furnace with a fourteen feet diameter fan, which commenced running October 28, 1879. The Butler Coal Company have replaced a six feet diameter Patterson fan with a sixteen feet Guibal fan, and the little one has been removed to the Twin shaft, Pittston Coal Company, and the Hillside Coal and Iron Company have removed their fan from the Powder Mill shaft, in which the coal is exhausted, to a new air shaft sunk for the Spring Brook tunnel.

All the miscellaneous collieries are in a satisfactory condition at present, excepting the following: Jermyn's shaft and slope, Jermyn borough; Eaton colliery, Archbald borough; Filer colliery, Winton borough; Greenwood colliery, Lackawanna township; Hillside colliery, Pleasant Valley borough; Columbia mines, Pittston township, and the Beaver mines, Pittston borough. The first three named, the Greenwood, and the two last named, are the only very bad ones, and each of these must receive particular attention during the current year. The larger number of the collieries of the small operators, are in very good condition as to ventilation.

Taking the whole of my district, I think that it can be safely said, that the progress made during the year in bringing the condition of the collieries up to what it should be, is highly encouraging and satisfactory, and the work accomplished can be taken, no doubt, as an assurance that what is still wanting, will be done in due time.

Prosecutions for Violations of Law.

It is one of the most unpleasant duties of the position of an inspector, that he feels compelled, in certain instances, to enter criminal proceedings against mine bosses or workingmen, for violations of law. I have often felt that I would prefer to suffer the penalty myself than do this, if I could escape my oath-bound duty by doing so. Whenever I have been forced to prosecute, I have done it "with malice towards none and charity towards all," and have never asked the courts to inflict any but a nominal punishment. But I have been sorely grieved at the course pursued by the operators, superintendents, and workingmen, in defense of the unfortunate parties prosecuted. I do not complain at their availing themselves of all legal and honorable means in defense of the accused, but when they assail the motive of the inspector, and attribute his action to a feeling of spite and a desire for revenge, in retaliation for some real or imaginary wrong they may be conscious of having perpetrated against him, they make the cross a very heavy one to bear. I cannot account for this, only as a verification of the old maxim, that "The guilty fleeth when no one pursueth him." But it grieves me that any one, who claims an intimate acquaintance with me, can imagine it possible for me to be capable of indulging in a low and mean desire for retaliation and revenge; for I thank God that

if needed at any time, they can, by building a strong partition, cut off a hoisting way in the slope without interfering with its safety as a traveling way.

The plans for hoisting and breaker engines and other necessary machinery are not yet fully completed, but I am assured by Fred. Mercur, Esq., the general superintendent of the Lehigh Valley company, that this new colliery shall not bring discredit on my district. From the reputation of the company and that of Mr. Mercur, I have no fear but the colliery will be first class in all its parts when completed. My present understanding is, that the old Heidelberg breaker will be fitted up with improved machinery, and that the coal will be run on the surface from the shaft to this breaker for preparation for market. The shaft and slope have been sunk without a single accident, which is very gratifying.

GREENWOOD SHAFT.—In my report for 1879 I mentioned that the Pennsylvania Anthracite Coal Company proposed sinking a shaft at the Greenwood colliery, in Lackawanna township. They commenced sinking the shaft in January and suspended work on it in July, 1880, after sinking it one hundred feet deep, leaving thirty-five feet yet to go to strike what is known as the No. 4 vein. The shaft is eleven by twenty-eight feet, and the cause of its abandonment is not known outside of the parties in charge. It is my humble opinion that it was a great mistake to put a shaft down where this is located, for the great body of the coal lays to the dip from the shaft. Two shafts should have been sunk at the lowest practicable point on the property, near the breakers, which would open up the whole property at once and put it in good shape. But it is to be presumed that those in charge have reasons which are satisfactory to them for locating the shaft where it is, and it may not be justifiable to doubt their wisdom. I certainly do not desire to interfere with their affairs in any manner, but I would like to see the company prosper. It is not known when the sinking of the shaft will be resumed.

NEW TWIN SHAFT.—This new shaft is located close to the junction of the Lackawanna and Bloomsburg and Lehigh Valley railroads at Pittston, and sunk by the Pittston Coal Company. It has an area of one hundred and forty (140) square feet which is to be divided into two equal sized hoisting ways, and the shaft is two hundred and nineteen (219) feet deep to the bottom of the "Marcy" or "Clark" vein. This will be hereafter the main shaft and the downcast for ventilation, the old shaft being the upcast upon which it is proposed to erect a good sized fan in place of the small one now in use. The old shaft will also be the second opening and is already in communication with the new shaft. The coal at this point is from four and a half to five feet thick and of excellent quality, free from slate and bone. There are one hundred and forty-five acres to be worked, and a large part of the land, judging from adjacent collieries, is underlaid with coal of an average thickness of ten feet. The fourteen feet and seven feet veins have been exhausted through the old shaft. From a point near the foot of the

new shaft a slope has been driven two hundred and ten (210) feet through the coal into the bottom of a basin, and at the foot of this slope there is a splendid passing branch one hundred yards long. A fourteen by twenty-four inch engine will be used to hoist the coal up the slope. The present superintendent, George W. Cooper, Esq., does not apprehend any trouble from water or gas, but I am of opinion that considerable gas will be displaced in the working of this vein, and that it will require good ventilation to dilute and dispose of it so as to avert explosions.

On the surface a complete new breaker has been built, with a capacity of four hundred tons per day. The machinery consists of a hoisting engine, 18×36 inch cylinder, a 14×24 inch breaker engine, a No. 8 Guild & Garrison steam pump, set of rolls, a twenty feet main screen, and a ten feet counter screen. For a breaker of its size and capacity, it is fitted up with all the modern conveniences for preparing and cleaning coal.

The work of sinking was commenced, under the superintendence of Charles Hiscock, Esq., March 28, 1880, and the coal was reached on July 12, same year, and I am glad to say, that no accident of any kind occurred during the sinking, which is creditable to the workmen and to the superintendents. The aggregate cost of the sinking of the shaft and the new breaker is estimated at $20,000.

JERMYN'S No. 4 SHAFT.—John Jermyn, Esq., on the 22d of November, effected a perpetual lease of nine hundred and seventy (970) acres of coal land from Messrs. Pancoast & Price, Philadelphia. The land is located in Dickson borough, and the surface, as well as the coal, is included in the lease. In accordance with the usual enterprise of Mr. Jermyn, he at once entered upon the land, and on the fourth day after the lease was signed, November 26, he commenced sinking, and at this writing, his shaft, which is twenty-six feet long and of the usual width, is down thirty-six feet through the worst kind of quicksand. There is five feet more of quicksand, and about seven feet of gravel to go through to the rock. It is purposed to sink this shaft to the Big vein, which is about three hundred and sixty (360) feet from the surface, that being the coal which will be first worked.

Another shaft, 10×18 feet, will be immediately sunk, one hundred and twenty-five (125) yards away from the main shaft, for a second opening.

As the lease calls for two breakers on the property, coal will be hoisted through both shafts, and the two breakers will be erected, containing all the modern improvements in machinery, to clean the coal and prepare it for market. There will be a pair of 24×48 direct acting engines for hoisting at the main shaft, and one 16×36 breaker engine, with nine boilers thirty-six feet long by thirty-four inches diameter. The boiler-house will be large enough for twelve boilers, in case that number is required. There will also be a pair of 16×30 hoisting engines for the second opening, and an 18×22 fan engine, to run a twenty feet diameter fan. There will be six boilers for generating steam at this shaft also. The pumping will be done in two lifts with four of Guild and Garrison's 14×24 pumps, two pumps in

accidents to the thoughtless and inexperienced workers in mines, thereby relieving the tax-paying community of the support of widows, orphans, and cripples, which might become a public burden.

In my investigations into the sourse of accidents in mines, I find that a great many are caused by the use of an inferior quality of oil, which is used very extensively. It is a compound of lubricating or black oil and kerosene. It throws off large volumes of smoke, vitiating the air to such an extent that it is unhealthy to breath, and its odor is very offensive. It requires a large volume of air to dispel it and render it fit for respiration. The use of this oil in mines I consider a violation of sections seven and twenty of the mine laws of 1870. Whenever I can get such testimony as will justify me in bringing an action in court, I will test the legality of its use in the mines of this district.

There have been mined in this district, for the year 1881, 7,711,660 tons of coal. If the coal trade should demand more coal for the present year, we are in a condition to mine and prepare at least 10,000,000 tons.

Respectfully submitted,

PATRICK BLEWITT,
Inspector of Mines, &c.

GENERAL IMPROVEMENTS.

Fairmount Shaft Colliery.

This is a new colliery, located in Pittston township, on the line of the Susquehanna division of the Central railroad of New Jersey. It consists of a shaft opening, ten by twelve feet, and one hundred and ten feet deep, to the next seam of coal below the Pittston seam. The coal is six feet thick. The breaker has a capacity of preparing about four hundred tons of coal per day. The second opening is a rock tunnel driven from the Pittston seam of coal to the mine workings. Ventilation is produced by a fan twelve feet in diameter by three and two thirds feet face. There is a safety carriage for use when necessary.

Seneca Slope Colliery.

There was a new plane built at this colliery, four hundred and fifty feet long, with friction gear attached, for hoisting culm from the breaker. They also extended the slope inside three hundred and fifty feet more to the third seam of coal, and put in place a forty horse-power engine, which hoists three cars of coal up the slope each trip; also placed four new boilers at mouth of slope to furnish steam for new engines, &c.

Twin Shaft Colliery.

They erected a new fan at this colliery fifteen feet in diameter, by four and a half feet face, also finished new breaker, with a capacity of four hundred tons of coal per day.

GENERAL IMPROVEMENTS.

Eagle Shaft.

This shaft has been idle for some years. It has been cleaned out, and a new slope sunk from the Pittston or fourteen-foot seam to the No. 1 top and bottom seam. They have erected a new breaker, with a capacity of five hundred tons of coal per day; have put in new boilers and machinery, and also erected a new fan, eighteen feet diameter by four feet face.

Tompkins Shaft.

They have sunk the shaft from No. 1 top and bottom seam to No. 2 or Skidder seam. They have also built a new breaker, with a capacity of preparing about four hundred tons of coal per day.

Fairmount Shaft.

There has been sunk from No. 1 top and bottom to No. 2 or Skidder seam, for the purpose of second opening, a shaft two hundred feet deep.

Florence Shaft Colliery.

This is a new colliery just being opened. It is located on lot No. 38, Pittston township, Luzerne county. Shaft is $10\frac{1}{2}\times20$ feet and one hundred and twenty-five feet deep to the B or Stark seam of coal. Air shaft is 8×12 feet and sunk about sixty feet. Breaker is in course of construction, to contain four main screens, and to have a capacity of eight hundred tons per day. Breaker will be finished about April 1st next. Coal will be shipped by Pennsylvania Coal Company. The colliery is connected with railroad by a branch track three thousand feet long.

Mosier Shaft.

They have built, in 1882, and put in operation, a gravity plane five hundred feet long; also sunk a slope in coal four hundred and fifty feet long to lowest basin.

Twin Shaft.

Have put in four new boilers; also changed and put up double doors in mines; also made the brattices air-tight, which is a great improvement to ventilation.

Phœnix Shaft.

Has been sunk to lower seams of coal. They have also finished second opening shaft and erected a fan on top of it. Fan sixteen feet diameter by four feet face.

Stetler Shaft.

This shaft and second opening shaft has been completed. There has been six more new boilers put in place, forty feet long by thirty-four inches in diameter. They have also erected a new fan, twelve and a half feet

was erected thereon. The engine is seventy horse power, connected directly to the shaft of fan. It is used to ventilate the slope workings which were opened the year before.

The Maltby shaft of this company resumed operations in December, 1888, after being idle for four years.

Delaware and Hudson Canal Company.—This company has erected a new breaker at the Delaware shaft, located at Mill Creek. It was started to prepare and ship coal in August, 1888. It is one of the largest and best equipped, with the most improved machinery for the cleaning and preparing of coal that there is in the valley. The shaft workings are ventilated by the old twenty-foot fan that was formerly in operation at Pine Ridge shaft.

At the Laurel Run mines of this company an underground tunnel was driven from the bottom to the top split of the Baltimore seam a distance of eighty feet, likewise an air shaft to ventilate the same a depth of twenty-four feet, which will give good ventilation to this portion of the workings.

Butler Colliery Company.—The Mosier shaft of this company has been sunk from the Marcy to the Powder Mill seam, a distance of three hundred and eighty feet. The air shaft was sunk the year previous, so that the both shafts are now connected in the bottom seam, and the ventilation restored in the proper direction.

The Twin main and air shafts of this company have been sunk to the Powder Mill seam, a distance of two hundred and sixty-three feet. A new fan fourteen feet in diameter was erected on the air shaft, connected directly with a horizontal engine of forty horse power.

The Ravine shaft of this company was sunk to the Powder Mill seam, a distance of five hundred and seven feet, which opens up a large field of good coal for this colliery. A new fan twenty feet in diameter was erected on this shaft, connected directly by a horizontal engine of seventy-five horse power to ventilate this seam. A new air shaft was started from the surface and sunk to the Marcy seam connecting both shafts in this vein, the air shaft not having reached the Powder Mill seam yet, the second opening has not been completed in this vein. This company has likewise built a new breaker to prepare and ship the coal mined in the Twin and Ravine shafts. It is situated close to the Susquehanna river, in the borough of Pittston. It is the largest breaker in the district, and has a capacity of fifteen hundred tons of coal per day, having the latest improved machinery for the preparing of coal for market. All the machinery is covered or fenced off according to law. The coal is taken from the shafts, by two locomotives to the breaker, over a trestling one mile long.

Hillside Coal and Iron Company.—At the Consolidated slope a new fan was erected on a new air shaft, sunk for the purpose of ventilation. It is a closed fan twelve feet in diameter, connected with a horizontal engine by belt gearing. This slope was ventilated by a fur-

Newton Coal Company.

At the Twin shaft a twenty-foot Guibal fan was erected on the air shaft as a duplicate to the old one. It exhausts 130,000 cubic feet of air per minute with a working speed of 67 revolutions. The fan is driven by a horizontal engine, cylinder 16 by 30 feet, directly connected to fan shaft.

Butler Coal Company, Limited.

A new shaft 12 by 18 feet, called the Chapman, has been sunk to the Red Ash seam, a distance of 120 feet. The second opening is not completed at this writing. The shaft is situated 4,800 feet southeast of a new breaker, which was built for the purpose of preparing coal for this and the Butler shaft. The coal from the Chapman shaft will be taken to the breaker by a small locomotive. A new fan will be erected as soon as the second opening is completed.

Annora Coal Company.

At the Annora colliery a new Guibal fan 16½ feet in diameter was erected to ventilate the tunnel workings, exhausting 102,870 cubic feet of air per minute with a working speed of 78 revolutions, run by a vertical engine, cylinder 11 by 18 feet.

Stevens Coal Company.

At the Stevens colliery a new rock slope was driven from the surface on a gradient of 30°, cutting the seam at a distance of 818 feet. All the coal from the old slope will be hoisted out of the rock slope, which will shorten the transportation considerably.

Babylon Coal Company.

In the Babylon shaft an underground plane was driven a distance of 1,800 feet on a gradient of 6°. The coal is lowered down by a pair of engines located at the foot, as the greater part of the coal in this colliery is to the rise of the shaft. This plan will be extended from time to time as necessity requires it to be done.

Mount Lookout Coal Company.

Two shafts were sunk by this company on the west side of the Susquehanna river close to the town of Wyoming, on the land of J. B. Schooley. The contract for sinking through the sand and gravel was given to Sooy, Smith & Co., of New York. The size of the shafts being 12 by 24 feet and 12 by 16 feet. The distance from the surface to the rock being 105 feet. The shafts being started in 1889 and completed in 1891.

On January 15, 1892, I wrote to Messrs. Simpson & Watkins for information and drawings in regard to the sinking of these shafts for this report, and received a reply from Sooy, Smith & Co., New York, Simpson & Watkins having referred my letter to them, who submitted the following to me:

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 22½ 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.

second lift, west heading, in the six foot or lower Baltimore seam to shut off an inflow of water which was coming through the strata in the roof close to the face of the chamber, in such quantities as to almost overcome the pumps. There is a considerable depth of wash over this portion of the vein, and it was thought advisable to abandon, for the present, all mining in this lift until the coal to the dip would be worked out. Therefore a dam was built (see accompanying sketch of dam) close to the break in roof, so that no large quantity of water would be standing behind the dam. The dam is built of brick, five feet thick, laid in cement; length from pillar to pillar, twenty-five feet; arching from bottom top at an angle of forty-five degrees.

Two Breakers and the "Twin Shaft" Tower Destroyed by Fire.

On the evening of July 22, 1892, the Barnum breaker, operated by the Pennsylvania Coal Company, was discovered by the night engineer to be on fire. The flames bursting through the roof of the pump house. From this point it caught the shaft tower which was soon enveloped in flames; then caught the trestling which connects the shaft with the breaker. The water arrangements, which are kept at the colliery for emergencies, not being available on this occasion, the fire companies of Pittston were sent for, and when they arrived at the fire the breaker and other buildings connected with it were so far consumed that nothing could be saved, but the firemen did good service in extinguishing the burning timber which had fallen down the shaft. Preparations were immediately commenced to build a large chute to dump the coal hoisted from No. 2 shaft, and to get the men to work again.

The chute was completed and work resumed on August 1.

The coal is taken to the Bunker Hill breaker, at Dunmore, for preparation for market.

The new breaker, which is in course of erection, is well under way at this writing and is expected to be completed by early spring.

The Burning of the Engine House and Head Frame of the "Twin Shaft."

On Thursday evening, September 11, 1892, the Twin engine house and shaft tower, situated in the borough of Pittston, and operated by the Newton Coal Company, was burned to the ground. The fire was caused by the explosion of a lamp in the engine house. As soon as the engineer found he could not extinguish the flames, he gave the alarm which brought the fire companies of the borough to the scene. Although strenuous efforts were made by the firemen to save the buildings their labor was in vain, as the fire had gained such headway before their arrival as to encompass the tower over the shaft. But the firemen succeeded in saving a portion of the boiler house and adjoining buildings and extinguishing the flames of the burning timbers, which fell down the shaft, thereby saving the mines from being destroyed by an explo-

sion of gas. This is an exceedingly gaseous mine and requires constant care and watchfulness on the part of the officials, as any disarrangement of the ventilating current for a short time would cause the workings of the mine to become filled with explosive gas.

The fans were stopped at 9.30 p. m., immediately after the fire was discovered, as the burning tower caused a current of air up the main shaft. As soon as the fire was extinguished the fan was started again. This was at 2.30 in the morning, when, on an examination of the main shaft, it was discovered that an air compressor which was located close to the shaft had fallen in, carrying to the bottom with it all the cribbing but about four setts with all the buntings in the shaft, and filling it for ninety feet, thereby cutting off the intake air current from the lower or red-ash seam, where forty-three mules were in the barn close to the foot of the shaft. At 8 o'clock the next morning Mr. Langan, general mine foreman, Mr. Lynott, mine boss, and Alex. McCormack, fire boss, proceeded down air the shaft in quest of the mules. When arriving at the bottom they came in contact with a large quantity of gas, and thinking it was not safe to penetrate any farther they came to the surface again.

The same party of men went down the air shaft again at two o'clock the same afternoon and came in contact with the gas coming up the shaft at 145 feet from the bottom They made another attempt at 4.30 p. m. when the gas was encountered at the Marcy seam a distance of 195 feet In this seam the air current was good, as there were no obstructions in the air passages to prevent the circulation of the air to the fan. The next morning the same three men having procured canvas went down to the Marcy seam and divided the air shaft from that seam down to the bottom with it, which caused a current of fresh air to circulate in the Red Ash seam. While placing this temporary brattice in the shaft, Mr. Wilson, of Philadelphia, appeared on the ground with the Shaw gas testing instrument and immediately began making tests of the air of the mine. The following are the results of his investigations: Having brought rubber bags with a capacity of ten gallons each, and a diaphragm pump to fill the same, they were taken into the mine and filled with the return air to the fan; the results are as follows:

Date of tests.	Number of tests.	TIME.	Part of mine from which taken.	Bags filled by.	Standard gas.	C. O^2.	Marsh gas or fire damp.
1892.							
Sept. 15,	1	2.30 p. m.,	Marcy vein,	McCormack and Lynott,	8.2	Trace,	1.6
15,	2	2.35 p. m.,	40 feet below,	do. do.	8.2	do.	5.0
15,	3	2.40 p. m.,	75 feet below,	do. do.	8.2	do.	7.6
16,	1	7.20 a. m.,	40 feet below,	Lynott,	8.4	do.	2.8
16,	2	9.23 a. m.,	60 feet below,	do.	8.4	do.	5.9
16,	3	9.25 a. m.,	90 feet below,	McCormack,	8.4	do.	7.7
16,	6	2.15 p. m.,	140 feet below,	do.	8.6	do.	16.1
17,	2	9.12 a. m.,	100 feet below,	do.	8.5	do.	7.2
17,	3	9.15 a. m.,	165 feet below,	do.	8.5	do.	14.5
17,	8	4.00 p. m.,	180 feet below,	do.	8.5	do.	7.0
18,	1	9.00 a. m.,	40 feet below,	do.	8.5	do.	6.2
18,	3	9.05 a. m.,	Bottom of air shaft,	do.	8.5	do.	4.2
18,	6	4.05 p. m.,	do. do.	do.	11.0	do.	15.0
19,	1	3.50 p. m.,	Return at fan,	Langan,	8.1	do.	2.2
20,	1	3.00 p. m.,	Marcy vein,	McCormack,	8.5	do.	4.0
20,	3	3.05 p. m.,	Bottom of air shaft.	do.	8.5	do.	1.2

Several other tests were made by Mr. Wilson, but sufficient has been shown to prove that the underground workings were in a deplorable condition from gas, and that the greatest care had to be exercised by the men in charge as they proceeded with their work to prevent an explosion of gas.

While Mr. Wilson was making the tests a large force of workmen were busy day and night putting in the buntings and cribbing in the main shaft down to the debris, which was taken out under considerable difficulty, as the workmen were not allowed the use of a light, only the "Clanny safety lamp" which the fire boss, Mr. McCormack, held for them to work by, thereby taking no chances whatever when an opening should be made to the vein for an explosion to occur.

On Saturday morning, four weeks from the time of the fire, the Tower seam was opened and the air current allowed to enter so that an examination for the mules could be made. When the exploring party entered the barn they found seven living and twenty-one dead mules. In a few days they were all found, some having wandered into the abandoned workings. Twenty-five having died and eighteen were alive. The dead ones were immediately taken to the surface and buried.

In three days from the opening of the main shaft, the accumulation of gas was driven out so that the men could work with open lights with safety.

It was very fortunate that the fire took place on Sunday night, as there were no persons in the mines at the time, for there is generally a large number working on the night shift in this shaft, and in all probability an explosion of gas would have taken place from some of the open lights before warning could have reached them to put their lights out. As the inside workings are a considerable distance from the shafts and from a half hour to an hour would have elapsed before they could have been warned of their danger.

Too much credit cannot be given to the officials and men, from the highest to the lowest, whose duty required them to oversee and do the work in repairing the shaft and placing it in working order again. I am happy to state that John B. Law, formerly superintendent of the Pennsylvania Coal Company, having newly been appointed general superintendent of this company's colleries, grasped the situation in a moment, and by giving his orders for the safety of the men, and placing such safeguards around while the repairing was going on, it was done with such rapidity and care that not a single accident occurred.

The shaft resumed operations on November 17, 1892. Almost all of the workingmen who were thrown out of employment by the fire, were given work in this company's Ravine shaft.

The Burning of the Mosier Shaft, Newton Coal Company.

On Friday, April 8, 1892, the Mosier shaft was destroyed by fire. The cause of the fire could not be ascertained. There was both a day and night watchman employed, whose duty it was to look after this breaker, as the works had been abandoned from July 7, 1891, on account of a general settling of the strata at that time, which caused considerable apprehension in the mind of the Inspector as to the safety in allowing the shaft to continue working, therefore the pumps were taken out and the workings allowed to fill with water.

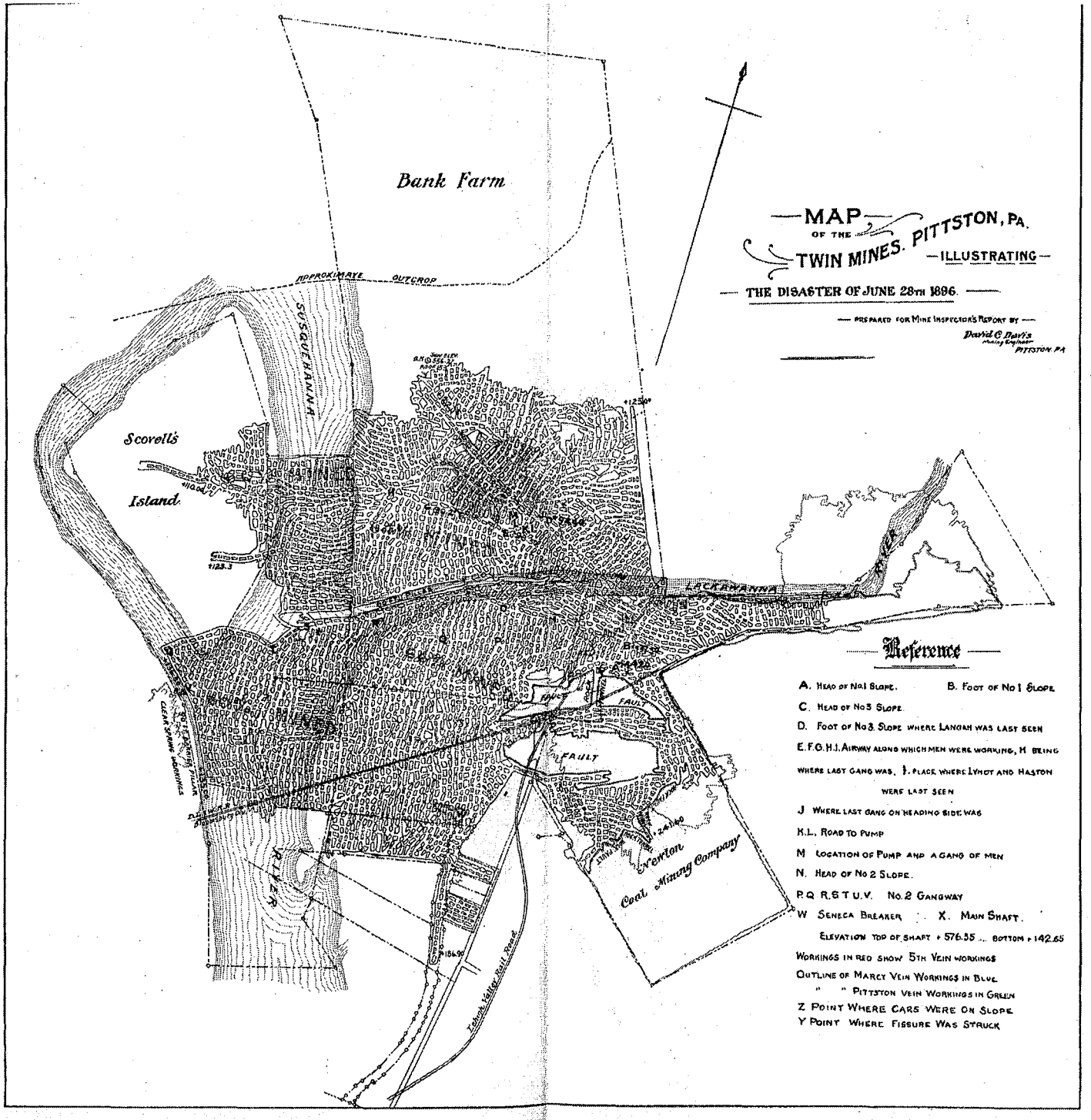
FILLING BY CULM OF THE COOPER VEIN OF THE EAST BOSTON AND BLACK DIAMOND COLLIERIES.

In September, 1889, a large portion of the old and abandoned workings in the Cooper seam of the East Boston and Black Diamond collieries (the former operated by W. G. Payne & Company and latter by J. C. Haddock), began to squeeze along the line of the adjoining property to such an alarming extent that both of these companies proceeded without delay to secure the same by building cogs of timber and standing props to prevent the roof from caving, which fortunately was accomplished after considerable time and expense.

After due deliberation both parties came to the conclusion to fill the old workings with culm, as it would be a more substantial job when done than the propping.

This year both companies commenced filling the old workings with the culm. The East Boston having placed the pipes in position, started flushing the culm into the mines March 21, 1892, and since that time, have satisfactorily filled in four and one-half acres of old workings solid to the roof.

The water used to do the flushing, is pumped from the Bennett seam of same shaft, and is discharged into a barrel connected with culm chute at the breaker which carries the culm down the shaft 170 feet to the vein, by a six inch gas pipe. Continuing from there by the same sized pipe for 400 feet into old workings with a fall of three feet to the



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 Heidelburg 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.

new column complete, installed in Red ash district. New fire proof pump room built for same.

New safety gates built at Red Ash shaft.

New carpenter-blacksmith shop, 52x56 completed.

Seneca Colliery

Several other improvements are under way, but as they are not completed you probably will not care for them. They are as follows:

Two tunnels, one 200 the other 300, through fault in property known as "Old Forge 88," in Twin shaft.

Two bore-holes, one 12 inch, the other 14 inch from surface to the Red Ash vein for drainage purposes. It is proposed to pump the water from this vein through these holes and do away with column pipes in shaft.

A shaft has been started to tap the Pittston vein about 500 feet below the Seneca breaker.

Seneca

Which includes the New or Coxey, the Twin, the Columbia, and the Phoenix shafts.

1st. At the Twin shaft the old wood fan-house was replaced by one of corrugated iron. This insures greater safety from fire, for owing to its proximity to the D., L. & W. R. R. danger from this source was always present with the old structure.

2d. The cribbing in the Twin shaft consisted of a single line of 12x12 hemlock timber. Upon this rested the shaft tower, sixty feet in height. The coal cars landed on fans and run off on a trestle twenty-five (25) feet above the ground. The said trestle extends a sufficient distance east of shaft to allow the passage of empty cars which are hauled from the breaker by a 12½ ton locomotive. The cribbing having been in place between nine and ten years began to crush and bulge into the shaft under the weight of the shaft-tower and trestle. Owing to these conditions it was decided to replace the old cribbing with one of concrete, and if possible, without delaying the operation of the shaft. This was successfully accomplished in the following manner.

The inside dimensions of the cribbing (old) was 12x17x35 in depth. In the line of old buntons several hard wood buntons one on another were placed in good hitches cut in the rock at foot of old cribbing. On these buntons rested a line of posts, six in all, which reached to a point above the top of old cribbing. By means of hydraulic jacks the overhead weight was taken off the old cribbing and placed on 12x16x40 oak timber that was put across the shaft, on top of posts,

ness of the rock covers. These bore-holes are driven at intervals of 100 feet. Whether the rock cover will give out, or a pot hole or crevice be tapped between bore-holes, remains to be seen.

At the Twin shaft, the Clark 5th and 6th veins are being developed at Scovel Island, a substantial coal barrier being retained between the new and the old workings.

It was the 5th and 6th veins that collapsed at the time of the Twin shaft disaster, when there was a great loss of life, and the condition of these workings to-day is problematical. It is known, however, that they contain a large quantity of water, and it is the Company's intention to try to get it out with the pumps now being installed. It is also known that these old workings contain some gas, but how much is not known. A careful inspection, however, fails to show anything alarming. The action of gas and water in bore-holes, driven to caved territory in the 5th and 6th veins, prompted me to ask the Department of Mines to appoint some other inspectors to look over the ground, and report the result of their investigation to me in writing. This was done and the report filed in Harrisburg.

At the Babylon Colliery the robbing, which is about all that is being done, is progressing very well. A large percentage of coal is being won, and a fatal accident is a rare thing.

At the Lawrence the management has, in my opinion, persisted in risking life to rob the pillars, which in some instances are reduced to culm in the squeezed territory in which the men labor, contrary to my requests and instructions in the matter, the argument advanced being that the men are reasonably "safe" and the coal must be won. The territory that could now be robbed with some degree of safety is left to be destroyed by the cancerous growth of this squeeze, which must advance, as the resistance now retarding its development is reduced, by removing the crushed masses of coal that once did duty as pillars.

William A. Colliery.—This is a pillar problem, the solution of which has caused the most serious thought on the part of the officials in charge. The three splits of the Red Ash vein are mined, and the relative position of one to the other, with three pitches, (two to the basin, and one at right angles to it,) the Lawrence being above them at the highest elevation, and the only anchoring point being the pillar under the Lackawanna River, are the problems they must overcome to win the coal, preserve their property, and not sacrifice life. To my knowledge nothing definite has been decided upon.

HILLSIDE COAL AND IRON COMPANY

Consolidated Colliery.—There have been some new developments in the Red Ash vein, which will increase the tonnage and continue the life of this colliery.

CONNELL ANTHRACITE MINING COMPANY

Connells Colliery.—This company has increased their electrical equipment by the installation of motors, undercutters and dynamos. They have also constructed a large dynamo house and increased the horse power of their boiler plant.

The mines are in good condition.