

minute; the out-cast is located at No. 4 shaft; the area of the in-take is 100 cubic feet and the area of the out-cast is 81 cubic feet; ventilation is good.

Machinery.—They have 2 hoisting carriages in the shaft; one is a safety carriage with all the modern improvements; the ropes, links, chains and connections are in good condition. They use a metal speaking tube in the mine. They have flanges of sufficient dimensions attached to the sides of hoisting drums; they have adequate breaks on hoisting drums; the boilers, feed-pipes, water-gauge cocks, etc., are in good condition; they use a steam gauge to indicate the pressure of steam per square inch; they use 2 hoisting engines=160-horse power.

Remarks.—They have furnished a map of mine; they have no house for men to wash or change their clothes in; they have second openings at Nos. 4, 5, 6 and 11 shafts and No. 2 slope, as all these works are connected together; there are no boys working in the mine under 12 years of age; they have an adequate amount of ventilation in the mine to expel therefrom all noxious or poisonous gases; the mining boss seems to be a practical, careful and competent man; he has an assistant; they examine the mine every morning before the men enter to work, and every evening to see that the mine doors are all closed; the engineers are experienced, competent and sober men; the shaft-landings are well secured by safety gates.

NO. 4 SHAFT.

This shaft is located in Pittston borough, and part of the workings are located in Jenkins township, 1 mile south-west of Pittston and $\frac{1}{4}$ mile south-east of the Susquehanna river. This shaft is operated by the Pennsylvania coal company. This shaft is 192 feet deep; size, 16 feet by 9 $\frac{1}{2}$ feet. Andrew Bryden is general mine superintendent, and Peter P. Daley is mining boss.

Description.—They have no breaker connected with this mine, but they have large schutes for loading large railroad cars. The coal from this mine is prepared at No. 2 breaker, Pittston, and at the screens in Dunmore; they mine about 350 tons of coal per day; they employ 52 miners, 50 laborers, 15 drivers, 2 door-boys and 8 company men, in the mine; 13 company men, 2 mechanics and 1 boss, outside; in all, 143 men and boys. They are working the 14 feet vein; average thickness, 11 feet; they work headings 10, air-ways 15, and chambers from 20 to 26 feet wide; they leave pillars from 14 to 20 feet wide to sustain the roof; they leave cross entrances from 18 to 50 feet apart for the purpose of ventilation; the roof is good slate; the mine is in a good working condition.

Ventilation.—Ventilation is produced by the action of the atmosphere; the in-take is located in main shaft; it contains an area of 95 feet; the up-casts are located in No. 7 shaft and No. 4 slope at present; they contain an area of 95 feet; the average supply of fresh air is 15,500 cubic feet per minute; the main doors on headings and air-ways are hung so that they will close of their own accord; they have attendants at all main doors to keep them shut, so as to assist the ventilation; they have double doors in main traveled roads, and an extra one in case that any of the others should get broken; the air is circulated to the face of the workings in 3 splits; they employ 52 men in one, 16 in the other and 34 in the other; the amount of ventilation has been measured and reported according to law; ventilation is good; they are putting up a new fan which is not in operation yet, the up-cast then will be in main shaft.

Machinery.—The engines in use in this colliery are 2 40-horse power and 2 10-horse power fan engines, and 2 10-horse power engines used for sinking the new slope. They have a metal speaking tube in the shaft; they have flanges of sufficient strength and dimensions for safety, attached to the sides of their hoisting drums; they have adequate breaks on their hoisting drums; the links, chains, ropes and connections, are in good condition; the boilers have been cleaned, examined and reported in good condition, according to law; they have a steam gauge and safety valves for safety and to indicate the pressure of steam.

Remarks.—They have furnished a map of the mine; they are connected with the workings of No. 7 shaft and No. 4 slope, which can be used as a second opening; they have no house for men to wash or change their clothes in; the mining boss is a practical and competent man; there are no boys working in the mine under 12 years of age; the engineers seem to be experienced, competent and sober men; they comply, generally, to the requirements of the law; the shaft-landings are portected by safety-gates.

No. 4 SLOPE.

This slope is located in Jenkins township, lying south-east of No. 4 shaft. It is 184 feet long, 9 feet wide and 6 feet high. It is operated by the Pennsylvania coal company. Andrew Bryden is general superintendent, and James Bryden is mining boss.

Description.—There is no breaker connected with this mine. They mine and ship about 275 tons of coal per day. They employ 40 miners, 40 laborers, 13 drivers, 6 door boys and 8 company men inside; 5 drivers, 13 company men, 2 mechanics and 1 boss outside; in all 128 men and boys. They are working two gravity planes in the mine; one is 203 and the other is 250 feet long. The vein of coal which they are working is called the Pittston or 14 feet vein. Its average thickness is 11 feet. They drive headways 10, air-ways 15, and chambers from 20 to 26 feet wide. They leave the pillars from 14 to 21 feet wide to sustain the roof. They leave cross entrances from 18 to 50 feet apart for the purpose of ventilation. The roof is slate. The mine is in a good safe working condition.

Ventilation.—The mine is ventilated by the action of the atmosphere; the intakes are located at the mouths of Nos. 3 and 4 slopes; the areas are 54 and 60 feet; the out or upcast is in No. 4 shaft in summer and at the mouth of tunnel in No. 3 slope workings in winter; area about 75 feet; the average amount of fresh air to supply the mine is 35,800 cubic feet per minute; there is no noxious poisonous or inflammable gas evolved in this mine; the main doors on headings and airways are hung so that they will close of their own accord, and they have attendants at all main doors to keep them closed so as to keep a steady current of air and conduct it to the face of the working places; the air is conducted to the face of the workings in one volume; the ventilation has been measured and reported according to law; the ventilation is tolerably good.

Machinery.—They use one hoisting engine of 20-horse power; they have a metal speaking tube in the mine; they have flanges of sufficient dimensions attached to hoisting drum for safety; they have an adequate brake on hoisting drum; 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 and safety valve for the purpose of indicating the pressure of steam and for safety.

Remarks.—They have furnished a map of the mine; No. 3 slope and Nos. 4 and 11 shaft workings are connected and can be used as a second opening; they have no house for men to wash or change their clothes in; the mining boss is a practical and competent man; there are no boys working in the mines under twelve years of age; the engineer is an experienced, competent and sober man; there are no persons allowed to ride on loaded cars on the planes or in the slope. The parties having charge know their duty in case of death or serious accident.

No. 5 SLOPE OR GRAND TUNNEL.

This mine is located in Pittston township, about one-fourth of a mile south-east of the Susquehanna river. This mine is opened by a slope and tunnel; the slope is about 500 feet long; it is 10 feet wide by 7 feet high; the tunnel is 500 feet long to where it connects with the slope; the opening is 7 feet wide by 6 feet high; it is operated by the Pennsylvania coal company. Wm. Law is general mine superintendent and James Watson is mining boss.

Description.—There is no breaker connected with this mine. The coal is prepared at No. 2 breaker and the screens in Dunmore; they mine about 300 tons of coal per day; they employ 38 miners, 38 laborers, 21 drivers and 12 company men in the mine, 4 drivers, 18 company men, 2 mechanics and 1 boss outside; in all 134 men and boys; they have two gravity planes in the mine, one is 180 and the other 238 feet long; they are working the Pittston vein of coal; average thickness 12 feet; the character of the workings is drawing back top coal; the headings are 10, airways 15 and chambers 24 feet wide; the pillars are from 16 to 20 feet thick to sustain the roof; the cross-entrances are about 30 feet apart for the purpose of ventilation; the roof is very good slate, and the mine is in a good working condition.

Ventilation.—Ventilation is produced by the action of the atmosphere; they have cut loose in to the old workings of the Butler coal company's mine in several places; there are a great many cave-holes to the surface in these old work-

angle of inclination is $9^{\circ} 35'$. The slope was driven part of the way through coal, at a cost of \$364, but there were $28\frac{3}{4}$ yards of rock to cut, from nought up to eight feet, which cost \$283 33, and 77 yards driven through sandstone, which cost \$3,080. The whole cost for sinking the slope was only \$3,952 33. They have a pair of engines, 13-inch cylinder and 18-inch stroke; estimated horse power, 50; the size of their drum is six feet diameter, which has an approved brake attached to it. There is no second opening to the slope, but they are driving for one toward No. 1 drift, and expect to make a connection soon.

OTHER NEW OPENINGS AND CONNECTIONS.

The Delaware, Lackawanna and Western railroad company have made connections between the Hampton shaft and the Oxford shaft, at Hyde Park, and between Tripp's slope and the Brisbin shaft, in the Third ward, Scranton. They have also sunk an air shaft, at Hyde Park, into the workings of the Oxford shaft, and connects also with the Hampton shaft workings. A fan is to be placed at this air shaft which will assist in ventilating both collieries named.

The Pennsylvania coal company have completed a new slope at No. 1 tunnel, in Pittston township, which is intended for hoisting coal. They have also made a second opening for **No. 4 slope**, in Jenkins township, which is to be used also for ventilation; and the workings of old No. 10 shaft in the 14-foot seam, have been connected with the new No. 10 shaft, in Pittston. No. 2 shaft, Dunmore, was sunk to the lower seam.

The Delaware and Hudson canal company have made a connection, in the 14-foot seam, between Marvine and Leggetts Creek shafts, Providence; and at No. 1 shaft, Carbondale, an air shaft has been sunk, and two more air shafts at No. 3 shaft, and still another at the Coal Brook colliery. These air shafts are only poor-make shafts, unless mechanical means are used to produce ventilation. There are too many of them in Carbondale. What is needed there is a system of air courses inside of the collieries.

At the Filer colliery, Winton, a drift has been driven from a ravine into the workings, for a traveling way for the men to go to and from their work. A new drift has been opened at the Greenwood colliery for mining coal, and the same company have made an additional opening for coal at the Sibly colliery, in Old Forge township. An opening has been made at the Green Ridge slope for ventilation. The above are all the openings and connections made in the district during the year, so far as I am informed.

IDLE AND ABANDONED COLLIERIES.

The Archbald shaft, Lackawanna township, and Oxford shaft, Hyde Park, owned by the Delaware, Lackawanna and Western railroad company, were idle all through the year; the last work done at the Hyde Park shaft was done in February, and the Scranton coal company's drifts at Bellevue were idle. Bellevue slope and shaft worked only $22\frac{1}{2}$ days.

No. 1 shaft, Pittston township, owned by Pennsylvania coal company, was idle; No. 2 and No. 3 shafts were abandoned as hoisting shafts, and are now used as pumping shafts.

The Marvine shaft, Providence; Powderly slope, Carbondale township, and Breaker, Forrest and Jefferson tunnels, Carbondale City, all owned by the Delaware and Hudson canal company, were idle.

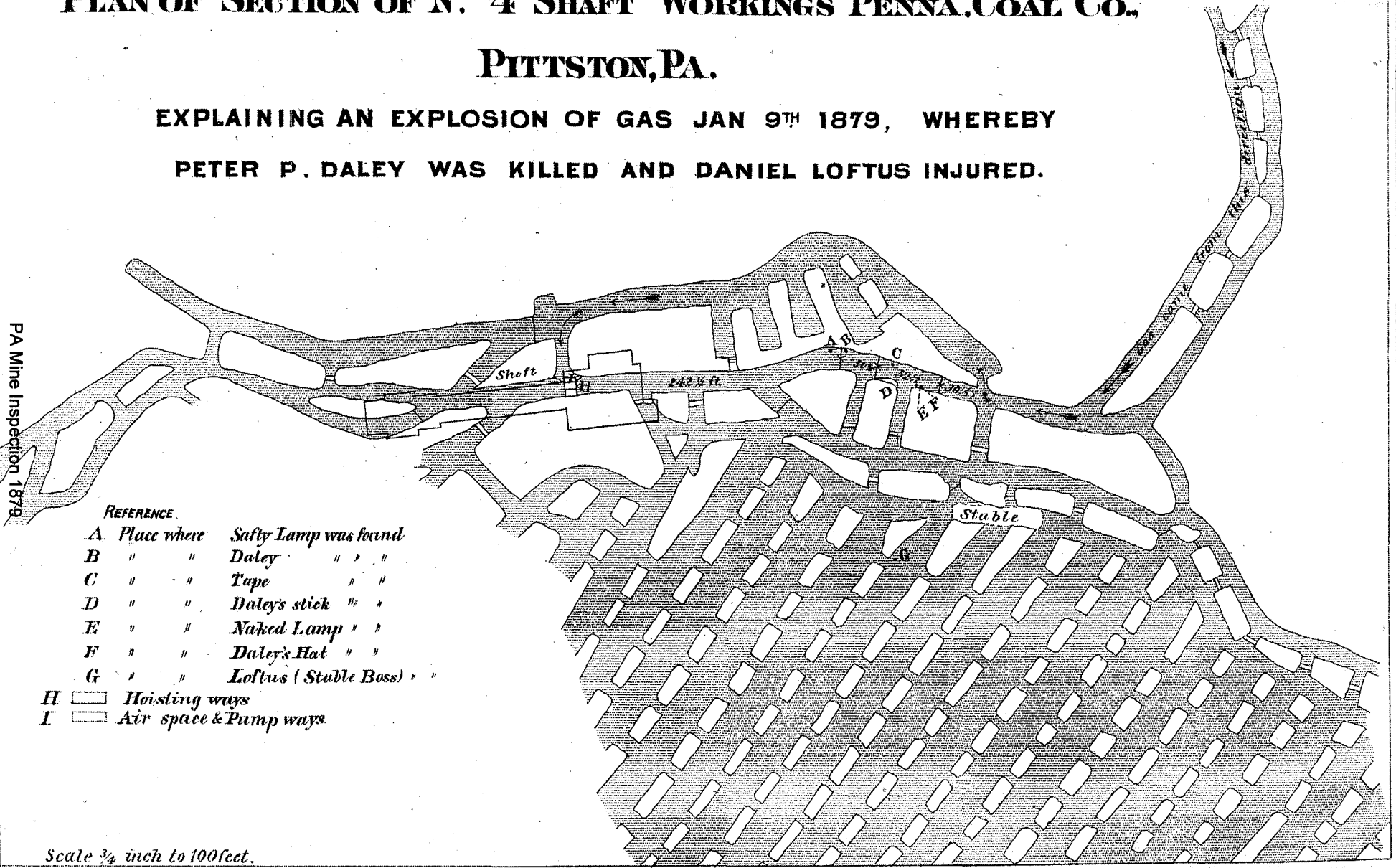
The following collieries have also been idle: Rolling Mill colliery, Scranton, consisting of a slope, tunnel and drift; the Ontario colliery, Pleasant Valley, and the Heidelberg colliery, Pleasant Valley. Spring Brook No. 1

PLAN NO. 1.

PLAN OF SECTION OF N^o 4 SHAFT WORKINGS PENNA. COAL CO., PITTSTON, PA.

EXPLAINING AN EXPLOSION OF GAS JAN 9TH 1879, WHEREBY
PETER P. DALEY WAS KILLED AND DANIEL LOFTUS INJURED.

PA Mine Inspection 1879



REFERENCE.

- A Place where Safty Lamp was found
- B " " Daley " " "
- C " " Tape " "
- D " " Daley's stick " "
- E " " Naked Lamp " "
- F " " Daley's Hat " "
- G " " Loftus (Stable Boss) " "

- H Hoisting ways
- I Air space & Pump ways

Scale 3/4 inch to 100 feet.

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 workmen, 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 persistent 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,

by natural ventilation by driving openings to the surface. A new breaker was erected to prepare the coal from these openings. It is a substantial building with first-class machinery. All the dangerous parts are fenced and boxed off. The breaker started to prepare coal in the month of November, 1886.

The Pennsylvania Coal Company built a new breaker at Port Griffith, in Jenkins township, to prepare the coal from shafts Nos. 4 and 7, slope No. 4 and tunnel No. 1. It is a large breaker and has the latest improved machinery. It has a capacity for cleaning a large amount of coal per day. The breaker started up in November, 1886.

Colliery Improvements During 1886.

The improvements made in the different collieries of this district have been somewhat more extensive this year than last. Some of the collieries are old ones, and have been worked very extensively; therefore, it has caused the companies to sink to lower veins to get their collieries in condition to maintain the present shipments of coal from them.

Pennsylvania Coal Company.

This company sunk a new shaft, in Old Forge township, Lackawanna county, to the bottom of the Powder Mill vein, a depth of 145 feet, sectional area, 384 feet. It is used to hoist coal, which is taken to the Old Forge breaker for preparation for market. A new inside plane was driven at the bottom of the shaft, 125 feet in length, with a sectional area of 208 feet, and a grade of $12\frac{1}{2}$ degrees.

In No. 10 shaft, a new slope was sunk (600) six hundred feet, and driven up a new plane, a distance of (150) one hundred and fifty feet, to maintain the present out-put of coal

No. 1A breaker, situated in Jenkins township, was burned down on the evening of November 18, 1886, with all the surrounding buildings. The breaker was a new one, and started up on August 7, 1886. The fire is supposed to have started in the boiler-room. The night engineer had occasion to go to look after a pump some distance from the boiler-house; when he came back the fire had got such headway that he could not put it out. One of the boilers had a defective sheet next the fire, which sprung a leak, throwing the fire out of the furnace door and setting fire to the building.

Delaware and Hudson Canal Company.

At the Laurel Run colliery, a tunnel was driven from the bottom split of the Baltimore vein to the top split, a distance of 110 feet, to be used to transport coal; sectional area, 70 feet. They are now driving their second opening for the same purpose.

Lehigh Valley Coal Company.

At the Mineral Spring colliery, a tunnel was driven from the bottom

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 workingmen 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

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.

how the accident occurred. The theory which I arrived at, was that Ross and Timboy being in the shanty putting the exploders or caps in the cartridges which were thawed out, by some means exploded one of them, as Ross' hand had some of the wire from the exploder driven into it.

The sticks of dynamite were eight inches long and one and one-quarter inches in diameter, of the B. X. climax brand. The explosive power of the exploder or cap was 85 pounds. Luke Michael, one of the headmen, was standing close to the shaft at the time, and had a narrow escape from being blown down the shaft, his wrist being broken, but he escaped without other injuries.

COLLIERY IMPROVEMENTS DURING THE YEAR 1891.

Pennsylvania Coal Company.

In shaft No. 4 a new gravity plane was driven in the Marcy seam, a distance of 153 feet, with a sectional area of 100 square feet.

In shaft No. 9 a new plane was driven in the Red Ash seam, a distance of 485 feet, with a sectional area of 90 square feet.

On the Old Forge shaft No. 2, a new fan 20 feet in diameter was erected, which gives very good results with a working speed of 50 revolutions, exhausting 108,000 cubic feet of air per minute, with a water gauge of 2.75 inches. The engine is a horizontal cylinder 15 by 36 inches, connected direct to fan shaft.

A new fan 20 feet in diameter was erected on a shaft for the purpose to ventilate No. 8 shaft workings; while running 36 revolutions it exhausts 95,000 cubic feet of air per minute, with a water gauge of 2 inches. The engine is a horizontal cylinder 15 by 24 inches, connected direct to fan shaft.

Delaware and Hudson Canal Company.

In the Delaware shaft two inside tunnels were driven from the bottom to the top split of the Baltimore seam, a distance of 45 feet each, with a sectional area of seven by nine feet. Likewise two gravity planes, one 1,000 feet and the other 1,200 feet long, with a gravity of 7°, and sectional area of 14 by 8 feet.

In Pine Ridge shaft an underground tunnel was driven from the top to the bottom split of the Baltimore seam, a distance of 150 feet, with an area of 84 square feet.

Delaware, Lackawanna and Western Railroad Company.

The new breaker at the Pettebone shaft has been completed, which was mentioned in my report of 1889. It is a large and commodious structure. The coal from the shaft being hoisted to the surface and taken to the hoisting tower at the breaker to be rehoisted to the dump. The breaker is well finished throughout, having ample room to clean and prepare a large tonnage of coal. The breaker commenced to prepare coal for market in February, 1891.

ers at the breaker were abandoned. In the mine an additional intake air course was driven in the eleven-foot seam and the return air course enlarged, which increased the volume of air in the six-foot vein from 85,000 cubic feet to 145,000 cubic feet per minute.

Pennsylvania Coal Company.—The No. 6 shaft was enlarged from 10x16 feet to 10x31 feet to make room for two hoist-ways a pump-way and an air-way from the surface to the Pittston seam, a distance of 312 feet, which shaft was then continued down to the Red Ash vein 300 feet. The location for a new breaker has been staked out to be built in the spring of 1898, which will prepare the coal from shafts Nos. 5, 6 and 11.

At **No. 4 shaft** of this company three new Babcock and Wilcox water tube boilers of 150 horse power each were erected, which take the place of twelve cylindrical boilers formerly used. Also at the Ewen breaker six Babcock and Wilcox boilers were erected and put in operation on February 13, 1897, which supply steam to the breaker, and to No. 7 and Hoyte shafts, supplanting the 27 cylindrical boilers previously used.

Forty Fort Coal Company.—At the Harry E., a new pair of First motion engines have been placed on the head of the inside slope in the Red Ash seam. Diameter of cylinders 30 inches, length of stroke 48 inches. The drum shaft is 14 inches in diameter and made of steel, length being 28½ feet. There will be 8,000 feet of one and one-half inch rope on the drum; 15 cars will be hoisted on a trip.

Raub Coal Company.—At the Louise Colliery an addition of 36 feet was built to the breaker and new machinery placed in position, thereby increasing the capacity of the breaker to 800 tons per day. New openings have been driven from the surface to the Ross and Red Ash seams by tunnels on the property lately acquired by the company. A small locomotive takes the coal from these openings to the breaker, a distance of one mile.

At 5 P. M., March 1, 1897, a settling of the surface was discovered on the east side of Eighth street, in the borough of Wyoming, Pa., which caused considerable anxiety to the people who resided in that vicinity. Realizing that the workings of the Pittston seam of the Mount Lookout Colliery had extended under that portion of the town, word was sent to notify William A. Thomas, the inside foreman of the colliery, of the fact. He immediately descended the shaft to make an investigation of the mine. On reaching the foot he encountered a rush of sand and water coming through the rock tunnel. Knowing the danger of being caught by the rush, he retreated to the foot of the shaft and was hoisted to the surface again. The mine had stopped work that day at 3 P. M., and all the men had come out some time before the rush took place. Therefore, the officials did not attempt to go down again for one hour. When the

No. 8 Shaft.—A new engine house was erected and a new hoisting engine installed to handle the coal from the Clark and Babylon veins. A Guibal fan, 20 feet in diameter, was erected to take the place of the old one.

A large brick building was erected at No. 8 shaft, size 100 x 20 x 12 feet, to be used as Mine Foreman's office and shifting shanty and oil house combined.

At the No. 9 boiler plant, an additional battery of Sterling boilers, 622 horse power, was installed.

At No. 10 shaft a new engine house was built and engine installed to handle the coal from the Pittston and Marcy veins.

At No. 10 shaft two rock tunnels, 7 x 12 feet and 300 feet long and 7 x 12 feet and 125 feet long, were completed from the Marcy to the Clark veins, on the East Level heading.

No. 6 Colliery.—A rock tunnel, 7 x 12 feet and 200 feet long, was driven from the Marcy to the Pittston vein, in the basin of the entire workings, to take care of the body of water in the Pittston vein and mine out the pillars. A new pump was erected in the Marcy vein, size 24 x 48 x 16 x 48 inches, by the Scranton Steam Pump Company, to pump the water by bore holes to the surface. A tunnel, 7 x 12 feet and 100 feet long, was driven in No. 11 shaft from the Pittston to the Marcy vein, in the Lafin basin. A saw-mill has been built at this colliery to cut the mine timber by steam power.

Ewen.—In the Hoyt shaft a rock slope, 7 x 12 feet and 200 feet long, was driven from the Pittston to the Pittston vein through the anticlinal on the west side of the river. A rock plane, 7 x 12 feet and 125 feet long, was driven from the Checker to the Checker vein, for the purpose of mining the coal, which was found to be considerably above the regular level.

At No. 4 shaft a large Jeanesville pump was installed in the Pittston vein, to pump the excess water to the surface. A saw-mill was built at this colliery to cut the prop timber with a steam saw.

No. 14 Colliery.—At the Cortright slope a new brick office, emergency hospital, and shifting shanty, were erected. Connections have been made with the Marcy vein and No. 14 shaft and tunnel.

HUDSON COAL COMPANY

Pine Ridge.—No. 14 plane in the Hillman vein was driven 600 feet; No. 11 plane in the Rock vein was driven 650 feet; No. 21 slope in the Checker vein was driven 900 feet; No. 22 slope in the Rock vein was driven 350 feet from Checker to the Red Ash vein. Two 8-inch bore holes were drilled from the surface to the Hillman vein, a distance of 135 feet, for flushing purposes. Two new steam boilers of 250 horse power were erected.

LEHIGH VALLEY COAL COMPANY

Mineral Spring.—The No. 3 air shaft from the surface to the upper Baltimore vein was lined with concrete. A new building was constructed to examine the mine cars for refuse in the coal.

No. 8 slope was sunk through a rock fault, and No. 9 slope graded. The silting operations in the Red Ash were extended to the west side of the slope.

CONDITION OF COLLIERIES

PENNSYLVANIA COAL COMPANY

- No. 14.—Safety conditions, ventilation and drainage good.
 Ewen.—Safety conditions, ventilation and drainage good.
 No. 6.—Safety conditions, ventilation and drainage good.
 No. 9.—Safety conditions, ventilation and drainage good.
 Barnum.—Safety conditions, ventilation and drainage good.

HUDSON COAL COMPANY

- Pine Ridge.—Safety conditions and ventilation good; drainage fair.
 Laffin.—Safety conditions, ventilation and drainage good.

HILLSIDE COAL AND IRON COMPANY

- Butler.—Safety conditions, ventilation and drainage good.

LEHIGH VALLEY COAL COMPANY

- Heidelberg No. 1.—Safety conditions, ventilation and drainage fair.
 Mineral Spring.—Safety conditions, ventilation and drainage fair.

DELAWARE AND HUDSON COMPANY

- Delaware.—Safety conditions, ventilation and drainage good.

TRADERS COAL COMPANY

- Ridgewood.—Safety conditions, ventilation and drainage fair.

YOST MINING COMPANY

- Yost.—Safety conditions, ventilation and drainage fair.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

Ewen Colliery.—A new brick fireproof storehouse has been built at No. 7 Junction, 33 by 250 feet, two stories high, to handle the supplies for the Pennsylvania and Hillside Companies.

At No. 4 shaft the boiler plant has been increased by adding one and a half sets of Babcock and Wilson boilers, 450 horse power. The ventilating fan has been rebuilt. The wooden connection from the shaft to fan has been replaced with brick and concrete, and the rest of the building made fireproof. A large Jeanesville pump has been installed in the 14 foot vein, which delivers the water to the surface.

No. 6 Colliery.—A power saw was erected to saw the props for the mines. A new washery has been erected in connection with the breaker to handle the tonage and the culm from the bank. One battery of Maxim Sterling boilers, 330 horse power, was added to the boiler plant, and the boiler house remodeled, and also the boilers to the Dutch oven type.