

or loaded cars in the mines; they do not allow more than ten men to ride on the safety-carriage at one time; the parties having charge know their duty in case of death or serious accident; the shaft-landings are protected by safety-gates; they have no second opening yet in the bottom vein; the breaker machinery is fenced and boxed off so that operators are safe.

MARYLAND NATIONAL ANTHRACITE COLLIERY.

This colliery is located in Pittston township, and situate one mile south-east of the Susquehanna river. It is operated by Thomas Waddell, Esq. Thomas Waddell is general superintendent, Alexander Lauder is mining boss, and Owen Mulloy is outside foreman.

Description.—The opening to the coal consists of a shaft and two tunnels. The shaft is 270 feet deep in the Pittston bottom vein; there is a breaker connected with these mines, located on the east bank of the Susquehanna river; they mine and prepare about 100 tons of coal per day; they employ 20 miners, 20 laborers, 6 drivers, 1 door-boy and 3 company men in the mines; 15 slate pickers, 4 head and plate men, 3 drivers, 2 mechanics and 1 boss outside; in all 75 men and boys, they are working a slope inside 113 feet long and driven at an angle of $11\frac{1}{2}$ degrees; they are working the Pittston bottom vein of coal; average thickness about $3\frac{1}{2}$ feet; they work headings and air-ways about 12 and chambers about 24 feet wide; they leave pillars about 14 feet wide to sustain the roof; they leave cross-entrances from 30 to 50 feet apart for the purpose of ventilation; the roof is good rock; the miners are in a good, safe working condition.

Ventilation is produced by a furnace in the tunnel; the intake for shaft is located at mouth of shaft, area—feet, and the intakes for tunnels are located at mouth of tunnels, area of each 64 feet; the upcasts for shaft and tunnels are located in furnace air shaft, area 40 feet; the amount of pure air in shaft is—cubic feet and in the tunnels it is—cubic feet per minute; the main doors are hung so as to close of their own accord; they have attendants at main doors; the air is circulated to the face of the workings in one volume in each place; the amount of ventilation has been measured and reported; ventilation is good.

Machinery.—They use one breaker engine of 25-horse power and one engine for hoisting and pumping at shaft of 80-horse power; they have a metal speaking tube in shaft; they have a safety-carriage with all the modern improvements; they have an adequate brake and flanges of sufficient strength and dimensions for safety attached to their hoisting drum: the ropes, links, chains and connections are in good condition; the boilers have been cleaned and examined and reported in good condition; they have a steam-gauge 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 mines; they have a second opening; they have no house for men to wash or change in; the mining boss seems to be a practical and competent man; there are no boys working in the mines under twelve years of age; the engineers seems to be experienced, competent and sober men; they do not allow any persons to ride on loaded cars in the mines; they do not allow over ten men to ride on the safety-carriage at one time; the parties having charge know their duty in case of death or serious accident; the upcast for shaft is in main opening.

NO. 9 SHAFT.

This shaft is located in Pittston borough, lying one-fourth of a mile south-east of the Susquehanna river. It is 71 feet deep to the Checkered vein, and 136 feet deep to the Pittston or 14 feet vein; it is 12 feet wide by $16\frac{1}{2}$ feet long. It is operated by the Pennsylvania coal company. Andrew Bryden is general mine superintendent and Thomas Richardson is mining boss.

Description.—The coal mined here is prepared and cleaned at No. 10 breaker, which is 2,500 feet from the shaft; they mine about 180 tons of coal per day; they employ 28 miners, 14 laborers, 4 drivers, 2 door-boys and 4 company men, in the mine; 3 head and plate men, 3 drivers, 2 company men, 3 mechanics and

1 boss, outside; in all, 64 men and boys; they are working the Pittston or 14 feet vein of coal; average thickness, 9 feet; they work headings 10, air-way 15, and chambers from 20 to 24 feet wide; they leave pillars from 14 to 18 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 safe working condition.

Ventilation.—The ventilation is produced by means of a furnace, viz: There is a brick partition in second opening and the furnace is on one side of it and steps for men to travel in on the other side; the in-take is located in main shaft; it contains an area of 100 feet; the up-cast is located in air-shaft; it contains an area of 60 feet; the average supply of fresh air is 20,000 cubic feet per minute; there is noxious, poisonous and inflammable gas evolved in the mine; the mine is examined every morning before men are allowed to go to work, and every evening to see that the main doors are all closed; the main doors are hung so that they will close of their own accord; they have attendants at main doors; the air is circulated to the face of the workings in two splits; the amount of ventilation has been measured and reported according to law; ventilation is good.

Machinery.—They use 1 hoisting engine, 40-horse power; they have a metal speaking-tube in the shaft; they have a safety-carriage with all the modern improvements; they have flanges of sufficient strength and dimensions for safety, and an adequate brake, attached to their hoisting drums; the main links, chains and connections are in good condition; the boilers have been cleaned and 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 mine; they have a second opening located 500 feet from main shaft; they have a house for men to wash and change their clothes in; the mining boss seems to be a practical and competent man; he has a fire boss to assist him; there are no boys working in the mine under 12 years of age; they do not allow any person to ride on loaded carriages in the shaft; they do not allow more than 10 men to ride on the safety-carriage at one time; the parties having charge know their duty in case of death or serious accident; the shaft-landings are protected by safety-gates; they do not work more than 50 persons in one split of air.

NO. 10 SHAFT COLLIERY.

This colliery is located in Pittston borough, and lying one-half of a mile southeast of the Susquehanna river. The shaft is 99 feet deep to the Checkered vein and 150 feet deep to the Pittston or 14 feet vein; it is 12 feet wide by 27 feet long; it is operated by the Pennsylvania coal company. Andrew Bryden is general mine superintendent and William Abbott is mining boss.

Description.—There is a double breaker connected with these mines; it is connected to the shaft tower by a trestling 50 feet long; they mine and prepare about 560 tons of coal per day; they employ 82 miners, 72 laborers, 20 drivers, 7 door-boys and 18 company men in the mines; 61 slate pickers, 14 head and plate men, 2 drivers, 14 company men, 13 mechanics and 2 bosses outside; in all 305 men and boys. The character of the workings is pillar and chamber; they are working the Checkered and Pittston veins of coal: average thickness of the Checkered is 6 and of the Pittston vein 8½ feet; they are working headings 10, air-ways 15 and chambers from 20 to 26 feet wide; they leave pillars from 14 to 18 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 miners are in good working condition; they are working a slope in the Checkered vein.

Ventilation.—The ventilation in the Checkered vein is produced by a furnace and in the Pittston vein by the action of the atmosphere; the intake is located in the main shaft for the Checkered vein, and in No. 8 shaft and second opening for the Pittston or 14 feet vein; the upcast for the Checkered vein is in the furnace air shaft, and for the Pittston or 14 feet vein in No. 8 shaft in winter and in No. 3 shaft in summer; the amount of fresh air in the Checkered vein is 23,000 and in the Pittston or 14 feet vein 23,000 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 an attendant at main doors; the air is conducted to the face of the

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.

believed that it can penetrate no further, the only doubt being as to its crossing the tunneled part of the cut. There is no doubt but its progress is wholly checked where the open cut is made, but there have been grave doubts, and they are not wholly dispelled yet, that the fire would cross at the section tunneled. When the fire reached the tunnel the intense heat caused it to cave in, and the company were obliged to flood it with water; and it was very doubtful for a time which of the elements would conquer. Water is being applied still, and the war of the elements is still raging with more or less fierceness, and it is uncertain at times yet which has the advantage, though it is believed on the whole that the water is master of the situation. There is danger, however, of letting off the water too soon, and it is impossible to say when it will be safe to do so, as the fire sometimes seems to die out and then burst out again with renewed force. It has cost the company nearly twenty-five thousand dollars to confine it within its present bounds.

The whole twenty-three acres are now overrun by the fire, but it must burn itself out within its present limits unless it crosses the tunnel—but if that should occur, no one can tell where it would end. The heat of the fire is so intense, that the forty feet strata of rock intervening between the burning vein and the Marcy vein below, is so hot in the latter vein in some places, that one can hardly bear his hand on it. The temperature in the lower vein up to a short time ago, was over one hundred degrees Fahrenheit, and the men worked there in that hot air as nearly nude as possible. There was no lack of air, but it had to travel through this hot region to reach the face of the workings, and it was too hot for men to work in it. When I learned these facts, I at once demanded an air-shaft sunk at the face of the workings, and outside of the line of the fire, so as to provide fresh and pure air for the men from the surface, instead of air conducted to them through the hot region under the fire. The superintendent at once laid the case before the directors of his company, and with their permission, he put down the shaft as suggested, and has since sunk two others, and his men at present get fresh and cold air to work in.

S. B. Bennett, esquire, the superintendent, has done himself great credit in acting so promptly in the matter, and his cheerfulness in doing what was asked of him, is very pleasant and agreeable for both the inspector and himself. If all superintendents would but take the interest in the welfare, and comfort of their men that is manifested in the conduct of Mr. Bennett, no mines would long remain in an unsafe or unhealthy condition.

New Collieries Opened and Under Way.

The company which has taken the lead in opening new collieries, and in developing new fields for coal production during the year, is the Pennsylvania Coal Company. They have opened a new shaft at Hughestown borough, known as the **New No. 9 shaft**, which is sunk to the "fourteen feet" vein. This takes the place of the old shaft of the same number, which has

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.

McClaves latest improved shaking grates with underground tracks for handling ashes.

Steam locomotives will be used to transport all the coal from Number 1 and Number 10, Sr., Shafts to the new **Number 9 breaker**, as it will be named.

Number 9 Shaft will be abandoned as a hoisting shaft and all coal from Number 9 will be hoisted up Number 10. Number 8 Shaft will also be abandoned and all coal will be hoisted up Number 1 Shaft.

Number 1 Shaft.—The following improvements have been made: Rock tunnel from surface to Number 1 Shaft, at which landing coal is hoisted instead of taking to the surface.

Rock slope from this landing to Checker vein pillars, this coal being hauled by engine on surface to the same landing.

In Marcy vein a rock tunnel from the Marcy to the Clark vein. This coal to be taken to the Marcy vein of Number 1 Shaft.

In Bottom or Red Ash vein a rock plane to the Babylon or Top Split of Red Ash. This coal dropped to Bottom vein by engine on surface.

Arrangements made for all coal now hoisted at Number 8 Shaft to come to Number 1 Shaft, the former to be abandoned.

Number 1 Shaft supplied with 22x36 inch first motion engines, piston valve, Exeter make.

In the Marcy vein, a rope haulage engine 18x24 inch, and in the Bottom vein a rope haulage engine 18x24 inch, both to haul coal from west end of property under Pittston and to land the coal at foot of shaft. There is also an engine 16x18 inch in Bottom vein for engine plane to drop coal from hill to foot of shaft, abolishing five balance planes.

Four 7½ ton electric motors in this shaft, two in Marcy vein and two in Bottom vein.

Steam locomotives will be used to transport the coal from Number 1 Shaft to Number 9 Breaker.

Number 10 Shafts, Jr., and Sr.—Number 9 Shaft abandoned. Number 10 Shaft, Sr., re-cribbed with concrete, widened out three feet and re-timbered from top to bottom of shaft.

Steel tower erected for Number 10, Jr., and Number 10, Sr., with steel approaches. The coal hoisted to an elevation high enough to be hauled to Number 9 Breaker by steam locomotives. The new tramway from both shafts goes to Number 9 Breaker across Parsonage Street by steel plate girder bridge.

At Number 10, Jr., the old engines have been replaced by 22x36 inch first motion engines that will hoist coal from the Bottom vein only. The Number 10, Sr., to hoist coal from the Marcy, Big and Checker veins. New steel cages to be used in these Shafts.

Engine houses for both shafts have been made of brick and in engine room at Number 10 Shaft, Sr., is erected duplex compound condensing Jeanesville pump 16 inch and 30x14x48 inch for pumping water to new Number 9 Washery.

Inside Number 10, Sr., a rock tunnel loop has been made around the shaft to handle empty cars, and electric haulage extended throughout all the workings. Rope haulage engines 16x18 inches installed to haul all Marcy vein coal below shaft level by way of new slope just completed.

DELAWARE AND HUDSON COMPANY

Delaware Shaft.—Ventilation and drainage good. Condition as to safety fair.

TRADERS' COAL COMPANY

Ridgewood Slope.—Ventilation and drainage fair. Condition as to safety good.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

No. 14 Colliery.—Marcy vein engine house, 23'x41'x12' high. 1 15"x36" single engine to run fan. 1 pair Gerard engines, 15"x36".

Courtright Slope.—1 Brick fan and engine house, 38'x28'x14'. 1 20' fan, 6'x6'7". 1 Pair 17"x36" engines and house, 23'x41'x12' high. 3 250 H. P. Locomotive boilers, asbestos covered. 1 Feed pump, 12x8x12. 1 Heater completed. 1 Fuel conveyor, 390' centers, 10 1-8" pitch chain complete. 1 6"x8" Horizontal engine to run conveyor line. 1 Brick powder house, 12'x14' 8 feet high.

Courtright Slope, Inside.—The slope in the Hillman vein has been sunk 400 feet during the year. From Hillman vein to Diamond vein. rock slope, about 700 feet. Sectional area, 7'x12' pitch 20 per cent.

Drifts, Inside.—The slope in the Diamond vein from the surface down 1,000 feet. Lifts have been opened to the right and left. Sectional area, 7'x12', pitch 10 per cent.

In the D. and H. tunnel, Big vein, the slope has been extended 400 feet, sectional area, 12'x10', pitch 15 per cent.

Big Vein Shaft, Inside.—New slope from south pitch to back basin has been extended 600 feet.

Checker Vein Shaft, Inside.—Slope from west level heading down No. 3 slope, 600 feet engine plane is extended 700 feet.

Breaker, Outside.—1 30'x18' Brick addition to miners' shifting shanty. 1 12'x12'x10' high, brick addition to compressor house, used as a pump house. 1 Hoisting engine house from Big vein, brick, 45' x37'x12' high, with separator annex, 10'x11'x10' high. 30'x30'x14' high, brick addition to machine shop. 21'x46'x14' high, brick addition to carpenter shop. 1 friction hoist ash plane at breaker with iron fire-proof building. 1 Electric light engine and house 13'x38', with McEwen horizontal type 600 light generator engine. 1 New outside barn (frame) 22'x75'.

No. 9 Colliery.—One shifting shanty, oil house and record building, size 16'x100', made of brick. One general foreman's office, size 26'x50', made of brick. One oil house, size 14'x16', made of brick. One powder house, size 14'x14', made of brick. The oil house is equipped with the modern self measuring oil tanks.

Mine Foremen's Examinations

The annual examination of applicants for certificates of qualification as Mine Foremen and Assistant Mine Foremen, was held in the Y. M. C. A. Rooms, Pittston, May 14 and 15.

CONDITION OF COLLIERIES

PENNSYLVANIA COAL COMPANY

Barnum.—Ventilation, drainage and condition as to safety, good.
 Number 9.—Ventilation, drainage and condition as to safety, good.
 Ewen.—Ventilation, drainage and condition as to safety, good.
 Number 6.—Ventilation, drainage and condition as to safety, good.
 Number 14.—Ventilation, drainage and condition as to safety, good.

LEHIGH VALLEY COAL COMPANY

Mineral Spring.—Ventilation, drainage and condition as to safety, good. This colliery was badly affected at Coal Brook slope by the scarcity of water from September until the end of the year. To relieve the condition they hauled water in tanks.

Heidelberg No. 1.—Ventilation, drainage and condition as to safety, fair.

HILLSIDE COAL AND IRON COMPANY

Butler.—Ventilation, drainage and condition as to safety, good.

HUDSON COAL COMPANY

Pine Ridge.—Ventilation, drainage and condition as to safety, good.

Lafin.—Ventilation, drainage and condition as to safety, good. This colliery was badly affected by the drought and was forced to shut down from September 14 to December 4.

DELAWARE AND HUDSON COMPANY

Delaware.—Ventilation, drainage and condition as to safety, good. This colliery was affected by the scarcity of water during the latter part of the year, but was able to work a few days each month.

TRADERS COAL COMPANY

Ridgewood.—Ventilation, drainage and condition as to safety, good.

RELIANCE COAL COMPANY

Reliance.—Ventilation, drainage and condition as to safety, fair.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

No. 9 Colliery.—Feed, lime and cement house built of brick, 109 x 20 x 14 feet. Built a brick addition to car shop, size 100 x 35 x 14 feet. A new Guibal fan 20 feet in diameter, with fan house made of brick, at No. 10 shaft.

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 Latlin 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.

Explosion of Gas in Hoyt Shaft, Ewen Colliery, of Pennsylvania Coal Company

January 10.—Mathew Daily, company man, Frank Leish, laborer, and Patrick Bulger, company man, were fatally injured by an explosion of gas in Pittston vein. At 1.30 p. m., Bulger was sent to build a wall to direct the air current up to a counter gangway above, where Frank Leish was working. Mathew Daily was cleaning the road on the counter gangway. The fire boss on the above morning failed to discover any gas in the working places. The supposition is that Bulger had about completed the wall that directed the air current up into the abandoned breast where gas had accumulated when the gas was carried into the face of counter gangway and ignited by the open light of Frank Leish, who was the only person burned. Daily was suffocated by the after-damp, Leish died January 12 and Bulger died January 25, from injuries received due to the concussion.

Explosion of Powder in Number 10 Shaft, Number 9 Colliery, of Pennsylvania Coal Company

January 25.—Michael Roach, miner, George Zigmound, laborer, and Andrew Sepcock, laborer, were fatally burned by the explosion of a keg of powder.

These men got into a trip of empty cars with a keg of powder to ride in the gangway to work. The trip of cars was hauled in the gangway, Marcy vein, by an electric motor and the powder was ignited either by the electric current or by the men in the car. Roach died the same evening, Zigmound February 1, and Sepcock February 2.

Four other persons were slightly burned by this explosion while riding in the car next to the one containing the powder.

Explosion of Gas in Number 11 Shaft, Number 6 Colliery, of Pennsylvania Coal Company

June 5.—Walter Fitzsimons, car runner, was instantly killed and Martin Quinn, road cleaner, was fatally burned by an explosion of gas. As June 4 was Sunday, the ventilating fan on Number 5 shaft was slowed down to allow repairs to be made in the shaft, and the fan was not started at its regular speed until sometime in the night. In the meantime gas had accumulated in the workings of Number 6 shaft, Red Ash vein, which is connected through Number 5 workings up to Number 11 shaft.

The mule barn is situated in the workings between Number 11 and Number 5 shafts, and the drivers go down Number 5 shaft to the barn.

The fire boss of Number 11 shaft entered the mine at his usual time in the morning of the 5th and made his examination. On arriving at the foot of the shaft he met Martin Quinn, the road cleaner, at 6.00 a. m., and placed him at a door close to the manway to the barn and told him to allow no person to go in until he returned from examining the workings inside. At 6.45 a. m., Fitzsimons came down and started down the manway to the barn and lighted a body of gas with his open light.

CONDITION OF COLLIERIES

PENNSYLVANIA COAL COMPANY

Barnum No 9, Ewen No. 6 and No. 14.—Ventilation, drainage and condition as to safety, good.

HUDSON COAL COMPANY

Pine Ridge and Laffin.—Ventilation, drainage and condition as to safety, good.

HILLSIDE COAL AND IRON COMPANY

Butler.—Ventilation, drainage and condition as to safety, good.

LEHIGH VALLEY COAL COMPANY

Heidelberg No. 1. and Mineral Spring.—Ventilation, drainage and condition as to safety, good.

DELAWARE AND HUDSON COMPANY

Delaware.—Ventilation, drainage and condition as to safety, good.

YOST MINING COMPANY

Yost.—Ventilation, drainage and condition as to safety, good.

McCAULEY COAL COMPANY

Pickaway.—Ventilation fair. Drainage and condition as to safety, good.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

Barnum Colliery.—A rock tunnel 7x12 feet, was driven from the Marcy to the Pittston vein, a distance of 300 feet, to mine the coal under the city of Pittston.

Number 9 Colliery.—The No. 3 shaft on Broad street, Pittston, was concreted from the surface to rock, and is now being sunk to the Red Ash vein, to be used as a second opening for No. 1 shaft and for ventilation; size of shaft, 10x20 feet.

At Leadville shaft a horizontal, triplex expansion, direct-acting wood-lined plunger pump was installed to deliver 2,500 gallons of water per minute against a head of 500 feet.

Number 14 Colliery.—A new slope 7x12 feet was sunk from the surface to the Diamond vein, and is driven in the vein 700 feet. A concrete arch has been put in from the surface to the vein. A new air shaft 12x12 feet has been sunk from the surface to the Diamond vein and concreted from the surface to the rock. A new concrete and steel air bridge, to connect the slope airway to the air shaft, has been completed.

Two new shafts have been in progress of sinking from the surface to the Red Ash vein. No. 1 shaft 12x16 feet is down to the Marcy vein and is concreted from the surface to rock a depth of 50 feet. No. 2 shaft 12x22 feet is down 90 feet to the rock and is concreted the whole distance.

The new air shaft 12x12 feet in progress of sinking in 1910, from the surface to the Checker vein and Pittston vein, has been completed and concreted from the surface to a point about 30 feet below the Hillman vein, making 90 feet of concrete.

WILKES-BARRE COLLIERY COMPANY

Madeira Colliery.—Ventilation and drainage fair. Condition as to safety, good.

McCAULEY COAL COMPANY

Pickaway Colliery.—Ventilation and drainage fair. Condition as to safety, good.

The roads inside of the mines of the Pennsylvania Coal Company and Hillside Coal and Iron Company are kept in first class condition. The gangways are kept free from refuse and standing water, and are of ample width. The passing branches at the foot of most of the shafts are concreted on both sides from bottom to roof, the roof is supported by steel girders and the foot or landings are lighted by electric lights.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

Barnum Colliery.—A slush pump 24 by 10 by 36 inches has been installed for pumping slush to the top of the hill, southeast of No. 2 shaft. No. 3 shaft has been abandoned as a hoisting shaft, all coal being taken by motor to No. 2 shaft, Pittston vein landing.

Number 9 Colliery.—No. 3 shaft, on Broad street, Pittston, has been sunk to the Red Ash vein, to be used as a second opening and for ventilation; size of shaft 10 by 20 feet.

Curttis slope has been sunk from the surface to the Checker vein, 7 by 12 by 350 feet long. An electric hoist has been installed outside to hoist the coal from this opening. This is enclosed with a fireproof building, 14 by 18 by 12 feet.

At Leadville shaft the Clark vein has been opened through old No. 9 shaft, the coal being dropped to the Red Ash vein and hoisted up the Leadville shaft.

Number 6 Colliery.—A pair of 10 by 24 inch engines was installed outside in a fireproof building 17 by 32 feet, for hoisting the coal from the New Diamond slope. An air shaft 12 by 12 feet was sunk from the surface to the Marcy vein, a distance of 360 feet, for the purpose of ventilating the Diamond, Babylon and Red Ash veins.

In No. 6 shaft a tunnel was driven 7 by 12 by 200 feet long, for the purpose of recovering the Hillman vein pillars.

In No. 5 shaft two shafts, 10 by 10 by 30 feet deep, were sunk from the top to the bottom split of the Checker vein.

In No. 11 shaft a pair of 16 by 24 inch engines were installed to operate the tail rope haulage in the Babylon vein.

Ewen Colliery.—At No. 4 shaft a pair of 15 by 36 inch engines was installed in a brick building 27 by 40 feet, for the purpose of operating the rope haulage in the Red Ash vein.

In Hoyt shaft a fireproof mule barn was erected in the Red Ash vein, to accommodate 24 mules. An air shaft, 10 by 10 by 70 feet, was sunk from the Pittston to the Marcy vein, for ventilation.

In No. 4 shaft a rock tunnel 7 by 12 by 300 feet, was driven in the Red Ash vein, for transportation. A new rope haulage was installed

CONDITION OF COLLIERIES

PENNSYLVANIA COAL COMPANY

Barnum No. 9, Ewen, Nos. 6 and 14 Collieries.—Ventilation, drainage and condition as to safety good.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—Ventilation, drainage and condition as to safety good.

HUDSON COAL COMPANY

Pine Ridge and Laffin Collieries.—Ventilation, drainage and condition as to safety good.

LEHIGH VALLEY COAL COMPANY

Mineral Spring and Heidelberg No. 1 Collieries.—Ventilation fair; drainage and condition as to safety good.

DELAWARE AND HUDSON COMPANY

Delaware Colliery.—Ventilation, drainage and condition as to safety good.

TRADERS COAL COMPANY

Ridgeway Colliery.—Ventilation fair; drainage and condition as to safety good.

WILKES-BARRE COLLIERY COMPANY

Madeira Colliery.—Ventilation good; drainage fair; condition as to safety good.

McCAULEY COAL COMPANY

Pickaway Colliery.—Ventilation and drainage fair; condition as to safety good.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

No. 9 Colliery.—Installed new electrically driven ventilating fan, 10 by 5 feet, driven by a 20-horsepower motor and built a fan house 12 by 33 by 12 feet, corrugated iron sides and roof, with motor room 10 by 26 by 10 feet of similar material, for ventilating the Curtis slope. The Curtis was driven from the Checker vein through the rock to Pittston vein 200 feet, size 7 by 10 feet. Installed Seneca bank pickup plant, consisting of loading pocket, 17 by 20 by 40 feet, wooden structure, and 1,775 feet of belt and scraper line, the whole being operated by one 25-horsepower motor, one 65-horsepower motor and three 35-horsepower motors.

No. 8 shaft: Installed a new Dunmore pump, 20 by 12 by 30 inches, equipped with pot chambers, et cetera, in the Marcy vein near the foot of No. 3 shaft pumping station. The Clark vein plane was graded for haulage purposes, a total of 2,043 cubic yards of rock being removed. Completed a rock plane from the Marcy vein to the Pittston vein on a 12 per cent. degree grade, 7 by 14 by 346 feet.

CONDITION OF COLLIERIES

PENNSYLVANIA COAL COMPANY

Number 14, Ewen, Number 6, Number 9 and Barnum Collieries.—Ventilation, drainage and condition as to safety, good.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—Ventilation, drainage and condition as to safety, good.

HUDSON COAL COMPANY

Lafin Colliery.—Ventilation, drainage and condition as to safety, good.

QUINN COAL COMPANY

Pickaway Colliery.—Ventilation and drainage, fair. Condition as to safety, good.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

Number 14 Colliery.—At the Drifts, a new motor barn was built. A 7½-ton General Electric storage battery locomotive, equipped with Edison batteries, was installed on the outside to handle the coal from the tunnels. At Cortright Slope, a rock tunnel was driven over basin in the Diamond vein, a distance of 350 feet, to handle coal under the river. At No. 14 Shaft, a new slope in the East Marcy vein was completed and an electric hoist placed on the surface to handle the coal. Erected a new boiler house, which has now in operation eleven sets of boilers, with 3,300-hp., equipped with Coxe traveling grates.

Ewen Colliery.—No 2 Slope has been reopened to mine the Top Checker, Bottom Checker and Pittston veins. Began widening of No. 7 Shaft to the Pittston vein and sinking same to the Red Ash vein for the purpose of installing big cars and hoisting the coal from No. 4 workings at this opening. Erected a steel tower in place of old wooden one. At Schooley Shaft, the foundations were laid for an additional 300-hp. unit to the boiler plant. A fireproof building was erected, which serves as a foreman's office supply room, blacksmith shop and wash-room. The wash-room is equipped with five shower-baths and 114 Durand steel lockers. At the breaker, a fireproof recreation room was erected.

Number 9 Colliery.—Built a brick addition to the power house, 13 by 40 feet, and installed an Ingersoll-Rand Imperial, type 10, duplex steam-driven air compressor, together with 11 large cylinder-type receivers. Also completed an addition to the electric shop, 12 by 24 feet, to be used as armature winding repair shop. Reinforced concrete cribbing was placed in Ravine Shaft from the rock to 8 feet above the surface. Substantial stairs were also built from surface to Pittston vein.

CONDITION OF COLLIERIES

PENNSYLVANIA COAL COMPANY

Number 14, Ewen, Number 6, Number 9 and Barnum Collieries.—Ventilation, drainage and condition as to safety, good.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—Ventilation, drainage and condition as to safety, good.

LEHIGH VALLEY COAL COMPANY

Heidelberg Colliery.—Ventilation, drainage and condition as to safety, good.

McCAULEY COAL COMPANY

Pickaway Colliery.—Ventilation and drainage, fair. Condition as to safety, good.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

Number 14 Colliery.—Completed a new slope to Hillman vein, 500 feet long, on a 25 per cent. grade; also a slope to Hillman vein near Red Ash shafts, 450 feet long, on a 25 per cent. grade. These slopes are steam hoist and electric fan. At Checker vein shaft completed five rock tunnels to Top Split Checker vein, each 100 feet long, also five air shafts to ventilate these tunnels, each 15 feet deep.

Outside: Installed two 200 KW. sub-stations at Courtright slope, and erected a brick office building.

Ewen Colliery.—Installed in a new brick building, size 32 by 32 by 16 feet, one AC 320 KW generator, one pair of engines, size 14 by 18 inches, for No. 7 shaft. Also installed one DC 200 KW generator to furnish current to No. 4 shaft, and a 2-stage 2,000-gallon centrifugal pump in the Pittston vein at Hoyt shaft.

Number 9 Colliery.—In No. 1 shaft, Marcy vein, two centrifugal motor driven pumps, 1,200 G. P. M., pumping from the Marcy vein to the surface, were installed to replace two steam pumps at this point.

Outside: At No. 3 shaft, installed two 200 KW generators and one shaft hoist driven by a 52 H. P. motor, to take the place of the old steam engine at this opening. A concrete, brick and steel ventilating fan house was erected, housing a motor-driven Jeffrey fan with a capacity of 175,000 C. F. M. operating at 140 R. P. M.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—Built a new brick locomotive house at Thomas shaft, which will hold five locomotives. Built an addition to wash-house, making it twice its former size.

CONDITION OF COLLIERIES

PENNSYLVANIA COAL COMPANY

Barnum, Numbers 9, 6, 14 and Ewen Collieries.—Ventilation drainage and condition as to safety, good.

DELAWARE AND HUDSON COMPANY

Lafin, Delaware and Pine Ridge Collieries.—Ventilation, drainage and condition as to safety, good.

LEHIGH VALLEY COAL COMPANY

Mineral Spring and Heidelberg No. 1 Collieries.—Ventilation, drainage and condition as to safety, good.

TRADERS COAL COMPANY

Ridgewood Colliery.—Ventilation and drainage, fair. Condition as to safety, good.

WILKES-BARRE COLLIERY COMPANY

Madeira Colliery.—Ventilation and drainage, fair. Condition as to safety, good.

CONLON COAL COMPANY

Conlon Colliery.—Ventilation, drainage and condition as to safety, good.

CENTRAL COAL COMPANY

Wyoming Colliery.—Ventilation, drainage and condition as to safety, good.

McCAULEY COAL COMPANY

Pickaway Colliery.—Ventilation and drainage, fair. Condition as to safety, good.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

Number 9 Colliery.—Installed air compressor at the shaft, and erected a brick extension to the engine room. Completed a brick building 36 feet by 62 feet with a slag roof, at No. 3 shaft. A concrete partition was put in No. 3 shaft between the upcast and downcast from the Red Ash to the surface.

Number 6 Colliery.—Inside: At No. 6 shaft. Installed 2 electric motors to replace air motors, and a large pair of engines on the Red Ash slope. At No. 5 shaft, installed 3 electric motors to replace air motors.