CONSUMER'S COAL COMPANY'S SHAFT, KINGSTON, PA.

East Boston Shaft.—No. 1 carriage dropped, first trial, 13¾ inches; second trial, 6 inches; third trial, 9½ inches. No. 2 carriage not used for hoisting or lowering persons.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY'S SHAFTS.

Avondale Shaft.—No. 1 carriage dropped, first trial, 2 inches; second trial, 1¾ inches; third trial, 1¾ inches. No. 2 carriage dropped, first trial, 1½ inches; second trial, 1½ inches; third trial, 1½ inches.

Boston Shaft.—No. 1 carriage dropped, first trial, 1½ inches; second trial, 1¼ inches; third trial, 1½ inches. No. 2 carriage dropped, first trial, 1½ inches; second trial, 1½ inches.

RIVERSIDE COAL COMPANY'S SHAFT, PLAINSVILLE, PA.

Enterprise Shaft.—No. 1 carriage dropped, first trial, 4 inches; second trial, ¾ inch. No. 2 carriage not used for hoisting or lowering persons.

LUZERNE COAL AND IRON COMPANY'S SHAFTS, PLAINSVILLE, PA.

Henry Shaft.—No. 1 carriage dropped, first trial, 2 inches; second trial, 2 inches. No. 2 carriage not used for hoisting or lowering persons.

Prospect Shaft.—No. 1 carriage dropped, first trial, 2 inches; second trial, 2 inches; third trial, 2 inches. No. 2 carriage not used for hoisting or lowering persons.

DELAWARE AND HUDSON CANAL COMPANY'S SHAFTS.

Pine Ridge Shaft.—No. 1 carriage dropped, first trial, 2 inches; second trial, 2 inches; third trial, 2 inches. No. 2 carriage dropped, first trial, 2 inches; second trial, 2 inches; third trial; 2 inches.

Conyngham Shaft.—No. 1 carriage dropped, first trial, 12 inches; second trial, 14 inches; third trial, 8 inches. No. 2 carriage not used for lowering or hoisting persons.

NORTHERN COAL AND IRON COMPANY'S SHAFTS, PLYMOUTH, PA.

No. 1 Shaft.—No. 1 carriage dropped, first trial, 2 inches; second trial, 2 inches. No. 2 carriage dropped, first trial, 2 inches; second trial, 2 inches.

No. 2 Shaft.—No. 1 carriage dropped, first trial, 3 inches; second trial, 2 inches. No. 2 carriage dropped, first trial, 3 inches; second trial, 2 inches.

No. 3 Shaft.—No. 1 carriage dropped, first trial, 3 inches; second trial, 2 inches. No. 2 carriage not used for hoisting or lowering persons.

No. 4 Shaft.—No. 1 carriage dropped, first trial, 6 inches; second trial, 2½ inches. No. 2 carriage dropped, first trial, 6 inches; second trial, 2½ inches.

WILKES BARRE COAL AND IRON COMPANY'S SHAFTS.

Dodson Shaft.—No. 1 carriage dropped, first trial, 6 inches; second trial, 6 inches; third trial, 6 inches. No. 2 carriage dropped, first trial, 6 inches; second trial, 6 inches; third trial, 6 inches.

Lance Shaft.—No. 1 carriage dropped, first trial, 5 inches; second trial, 4 inches; third trial, 6 inches. No. 2 carriage dropped, first trial, 6 inches; second trial, 6 inches; third trial, 6 inches.

which has been idle since 1878. The gangways were retimbered and the tracks relaid, so that the mine is now in shape to produce coal. It is to be hauled to, and shipped through, the No. 18 breaker.

At the Nottingham colliery, in Plymouth, the new air shaft was completed to the Ross seam, and a twenty-four foot Guibal fan was erected thereon to ventilate the workings. A cage and an engine adapted to hoist the workmen was also placed thereon, which proved a relief to both employés and company.

Delaware and Hudson Canal Company.

The new Baltimore shaft of this company was completed to the Red Ash seam, which was cut at a depth of 655 feet. It opens an extensive field of this seam, and the other shaft (No. 2), already working that seam, will be connected to effect a second opening.

At the Boston mine a new seventeen and a-half-foot fan was erected, which improved the ventilation of the mine to some extent. It was located at the No. 3 shaft—too far away to be of much effect as a ventilator of the Boston workings; hence, the result is not quite satisfactory.

The No. 2 shaft of this company, at Plymouth, was sunk from the Cooper to the Bennett seam, and opened an extensive field of that seam.

At No. 3 colliery a slope is being sunk underground in the Cooper seam. The hoisting engine is located on the surface, and the rope passes into the mine through a bore-hole made for the purpose.

Susquehanna Coal Company.

A number of minor improvements were effected at the mines of this company, but I shall note only a few. At No. 1 shaft, in both the Forge and Red Ash seams, underground slopes were sunk, extending to lower levels. The hoisting engines of both were located on the surface, and the ropes pass down through bore-holes.

The No. 4 slope was graded and thereby made to work much more satisfactorily. It is now being extended through the rock into the Hillman seam.

Red Ash Coal Company.

The No. 1 slope of this company was extended and a new pair of direct-acting hoisting engines were placed to hoist therefrom. The cylinders are 28x48 inches, and they work admirably.

At the No. 2 colliery a new slope was made to a length of 750 feet, and a pair of direct-acting hoisting engines were furnished, having cylinders 28x48 inches.

A new sixteen-foot fan was also erected on this mine, which has improved the ventilation to an appreciable degree. The collieries of this company are now in good shape for producing coal for a number or years.

Hillman Vein Coal Company.

At the Hillman Vein colliery two tunnels were driven to the Abbott seam. One was an extension from the Kidney to the Abbott, 7′x12′ area and 325′ in length, driven for the purpose of hauling the coal through; the other was driven to effect a second opening from the Hillman to the Abbott seam and to constitute a return air-way. It is 7′x10′ area and 150′ long.

NEW VENTILATING MACHINES ERECTED DURING 1889.

At the No. 5 shaft, South Wilkes-Barre, of the Lehigh and Wilkes-Barre Coal Company, a new fan of the Capell double-power type was erected. The inventor G. M. Capell claims that this machine is superior to all well-known fans. This is the first to our knowledge that has been erected in this country and we are not prepared to state how it compares with the fans generally in use in this district, as we have not yet had an opportunity to make the necessary tests for that purpose. It is a peculiarly constructed machine, differing considerably from the pattern of the fans generally used. It is constructed very strongly, and adapted to run at a very high speed. It is 12′ wide and 12½′ diameter; has an inlet for the air on each side, but it is divided by a disc at the center of the blades, so as to form a partition from the fan shaft to the blade-tips. The air is delivered from the blades into a wide expanding chimney. The accompanying cut will show the construction lines of the machine, and may assist the reader to understand how it is made. If circumstances permit, we shall report its work in the future.

At the Dorrence colliery, Lehigh Valley Coal Company, a new Guibal fan, 30′ diameter, was erected in the air shaft. It is 10′ wide and has one inlet 15′ diameter. This makes a second 30′ fan at this colliery. The engine cylinder is 30″x60″, connected directly to the crank of the fan.

At the Warrior Run colliery a new fan was erected on the air-shaft. Its diameter is 15′, face 7′, and running eighty revolutions per minute exhausts 79,000 cubic feet of air. This has improved the ventilation of this mine considerably, and the location of the fan is favorable for circulating the air through the face of the workings.

At the No. 2 Baltimore shaft, Delaware and Hudson Canal Company, a 20′ fan was erected and enclosed with brick work. This is a new mine and the fan provides ample ventilation without running it at its maximum speed.

At the No. 2 shaft, Plymouth, of the Delaware and Hudson Canal Company, a new fan was erected in place of an old one. It is 17½′ feet in diameter, of modified Guibal type, and it is doing very satisfactory work.

NEW BREAKERS IN COURSE OF ERECTION.

At the No. 2 shaft, Wilkes-Barre, the Delaware and Hudson Canal Company is building a new breaker. It is expected to be completed by

100,000 cubic feet per minute, the quantity of gas issuing was sufficient to make the whole current explosive, and it was maintained in that condition during a period of from three to four weeks. During this time the mine was kept idle, and no one was permitted to enter with any light but that of a safety lamp.

Cave at the Hillman Vein Colliery.

In this mine the Hillman seam is worked right over the section which caved in the Hollenback mine. The distance between the Baltimore and Hillman seam is about 300'. At about 8 o'clock A. M., June 12, the officials of the colliery having already been apprised of the existence of a "squeeze" in Hollenback mine beneath them, were on the alert, watching for its effects, they noticed the pillars suddenly beginning to crack and crumble and at once sent the workingmen out. At about 12 o'clock it fell in, closing the most of their workings. A large quantity of explosive gas simultaneously appeared, and mixed with the air, charging it so that the whole became explosive and continued so for several days. Explosive gases escaped from crevices on the surface at several points and caused some alarm among the inhabitants lest accumulations would take place in the cellars of their houses, but care was taken to caution them against taking lights into the cellars until it was ascertained that no danger existed.

No naked lights were used in this mine until the workings and airways were re-opened and the ventilation restored so that no dangerous bodies of fire-damp existed therein.

Cave at the Boston Mine.

In the month of April a small section of the workings of this mine in both the Bennett and Cooper seams caved very suddenly at a point where the pillars were large and regular in thickness. It did not damage the mine-workings much except that it permitted a large volume of water to flow in and flood a large portion of the workings. The surface over this point consisted of a depth of coarse, sandy gravel, but no body of water was known to exist there. However, the large volume which found its way into the mine through this cave, proved that an acmulation existed somewhere beneath the gravel, and it is supposed that the hydrostatic pressure developed by this water was the originator of the squeeze and the cave-in. No fire-damp appeared in this case.

Cave at Nos. 2, 3 and 5 Collieries at Plymouth.

These three mines worked different seams, over or above each other. In No. 5 colliery, the Bennett and Cooper seams were mined. In No. 2, the Five-foot and Hillman were mined, and in the No. 3 the Five-foot and Cooper seams were mined. The three were old collieries having very extensive workings, all nearly exhausted of coal. For a few days

prior to the 10th of September, a squeeze was noticed in a few pillars in the eastern workings of the Bennett vein in the No. 5 colliery. It spread with amazing rapidity from pillar to pillar in all directions during a few hours before it caved. Work was in progress in the three mines on that day and no indications of trouble in neither No. 2 nor No. 3 were perceptible until a short time before the day's work was over.

No one expected an extensive cave, and no preparation for that was made, but at about 8 o'clock P. M., September 10th, at least one hundred acres of ground sank a few feet, and an equal area of workings collapsed affecting the workings of the three collieries. Caves of this extent invariably prove damaging, and this proved so to each of the mines.

In No. 3 it extended to the underground barn and killed three of their mules. The others very narrowly escaped uninjured.

An increased quantity of water found its way into each of the mines and in Nos. 2 and 5 extra pumping machinery had to be put in, as the inflow of water proved to be much greater than their pumping engines were able to pump out. The mines were idle for several weeks, and though the coal had nearly all been won, it was a severe loss and a cause of much disadvantage that the workings caved so unexpectedly.

ABANDONMENT OF THE DIAMOND MINE.

Work was permanently suspended at this mine on the 31st day of January, 1889. It had been in operation since the year 1871 when the shaft was completed and the workings connected to those of the Old Mordacai workings. In the year 1872 the inspector reported this as an extensive mine, having a natural ventilation of 19,360 cubic feet at inlet. Then they had steam boilers and a steam engine inside, the heat of which assisted in producing the ventilation. Since then the boilers have been taken out and fans provided to furnish ventilation. The workings caved twice causing the mine to fill with fire-damp; but, with care and good management, it was cleared in both cases without injury to anyone. Once a fire took place and this could not be extinguished without flooding that portion of the workings with water.

Both the Baltimore and Hillman seams were worked out and exhausted, leaving the old workings connected with those of the Empire in both seams, and with those of the Hollenback and Baltimore tunnel in the Baltimore seams. As long as these other collieries are kept at work the workings of the Diamond should also be well ventilated and closely watched.

ECONOMY OF WORK IN THE CONSTRUCTION OF MINE CARS AND CAR WHEELS.

In view of the great improvements that have been made in anthracite preparing, hoisting, pumping, ventilating and general mining ma-

At the Reynold's colliery a new slope was driven through the rock from the Ross seam to the surface. It is 240 feet in length and 84 square feet area, on a grade of 20 degrees. This is to take the place of the old slope and leads to a new breaker now in course of erection.

Delaware and Hudson Canal Company.

The new breaker at the Baltimore No. 2 shaft of this company was completed and began to prepare coal for the market in the month of November, 1890. This is a new colliery. The shaft is sunk from the surface to the Red Ash seam, a depth of 650 feet, and having a sectional area of 11 by 45½ feet. A compartment having an area of 11 by 12 feet is bratticed off for upcast, upon which a fan 20 feet diameter is erected. There are three cages, two for hoisting coal and one to hoist the workingmen. The coal is hoisted by a pair of engines 26″ by 48″ cylinders directly connected to a conic drum 6 and 10 feet diameters. The men will be hoisted by a pair of engines 18 by 36 inches, geared 4 to 1 to a parallel drum 9 feet diameter. The fan is operated by a pair of engines 14 by 24 inches.

At the No. 2 colliery, Plymouth, a new pair of hoisting engines were erected having cylinders 24 by 48 inches, directly connected to a parallel drum 8 feet diameter. A new fan was also erected to take the place of the old one. It is 17½ feet diameter, operated by an engine 14 by 36 inches. They also added ten feet to the length of the breaker-wings in order to enable them to lengthen the screens used to separate the different sizes of coal.

Susquehanna Coal Company.

At the No. 1 shaft an underground shaft was sunk from the Ross to the Red Ash seam, a depth of 180 feet. It is to be used to hoist the coal from the Red Ash to the Ross level. Its size is 12 by 21 feet. A space of this area was driven up a distance of 35 feet to give height to land the cages. The hoisting engines are located on the surface, from which the ropes pass down through bore-holes 950 feet deep and eight inches diameter. Another hole of the same diameter was sunk for the signal wires. The three holes are incased by a pipe 5⅝ inches diameter. This shaft will enable this company to work all the lower parts of the Red Ash seam in their property which could not be reached without incurring greater expense from their other openings.

In the Forge seam of the same shaft, the underground slope was extended to a depth of 1,150 feet. This slope has an area of 14 by 7 feet, and an average grade of 8½ degrees.

At the No. 2 shaft the underground slope was extended a distance of 600 feet, and the hoisting engine was placed on the surface. The bore-hole for the rope is 500 feet deep.

At the No. 2 slope the timber was removed from the underground engine house and replaced by walls of masonry. Now everything is in-

The Red Ash slope was extended, and a new lift was opened. A line of water pipes was laid into the lower gangways ready in case of fires from ignition of gas. The weak and affected pillars were strengthened by having the exhausted breasts filled up with refuse. A new underground slope was sunk on the Ross seam a distance of 660′ and the rope for hoisting, passes down a hole 206′ deep from surface. The hoisting engines on surface are 22″×48″ direct-acting to a parallel drum 9′×14′.

Two batteries of Babcock & Wilcox high pressure boilers, 212 horse power, were added to the surface plant and three elevators and three setts of conveyors were added to the breaker.

At the Reynolds No. 16 colliery the new breaker in course of erection in 1890 was completed and the old one was removed. The new breaker was started to prepare coal for the market in April, and so was the new slope described in my last report. An underground slope was sunk in the Ross seam with hoisting engines located on the surface, size of cylinders 14″×24″. The bore-hole through which the rope passes is 125′ deep. A tunnel 300′ feet long was driven through rock fault in the third west gangway, and a new plane was made in the Red Ash seam.

At the No. 18 colliery, Wanamie, a tunnel was driven from the Baltimore to the Ross seam a distance of 630 feet, and at the No. 19 colliery a tunnel was driven from the Ross to work the overlying seams. The main slope is also being extended to work another lift in the Ross seam. The breaker was remodeled, and one sett of elevators and two large conveyors were added to its machinery.

Improvements by the Delaware and Hudson Canal Company.

At the No. 2 shaft, Plymouth, an underground slope is in progress of sinking in the Bennett seam. This will enable them to mine the coal lying to the dip from the shaft level. A second opening was made for the Bennett seam by driving to connect with the workings of the No. 5 shaft, making a very convenient place of exit in case the shaft became unavailable. At the No. 3 shaft, Plymouth, a plane 1,000′ long, on a grade of 9°, was made in the Five Foot seam.

Improvements by the Susquehanna Coal Company.

At the No. 1 shaft the second opening for the underground shaft was completed by driving to connect with the slope level workings. Second opening for the tunnel to the Ross was also effected by driving a rock plane from the Red Ash level gangway. This will be useful also to work a large area of the Ross seam to the rise from that point.

A sixteen-foot Guibal fan is in course of construction to ventilate the workings of the George seam.

An underground slope is being sunk in the Forge seam east of the shaft. The hoisting engines for which are located on surface near the No. 2 shaft and the rope passes into the mine through a bore hole drilled for that purpose.

A short rock tunnel for ventilating purposes, 43 feet long and 7×12 feet area from the top to the bottom split of the Red Ash seam, was driven.

At the No. 8 Jersey colliery two new tunnels were driven from the Baltimore to the Ross seam, one in each of the two lower lifts of the new slope, and they are continued to tap the Red Ash seam. Size of each is 7×12 feet, and their lengths will probably be 600 feet each when completed. They are now at work driving second openings for the Ross seam.

At the No. 9 colliery, Sugar Notch, the underground slope is being extended, and a traveling way has been completed 900 feet in length on a grade of 20 degrees.

At the No. 11 Lance colliery a new air shaft is in progress of sinking, 12×30 feet area, and it will be about 600 feet in depth when completed. At the close of the year it was at a depth of 40 feet. Three new gravity planes of various lengths were completed, to run coal down from elevated workings. A new Guibal fan thirty-five feet diameter was erected as an auxilliary to the old one. It exhausts 229,630 cubic feet of air per minute when running fifty revolutions. This also has a self-recording pressure meter connected to the return air and an automatic alarm attached to give alarm in case the ventilation is reduced.

At the Nottingham colliery a new air shaft has been sunk to the Ross seam. It has an area of 12×30 feet and a depth of 175 feet.

A new fan 24 feet in diameter is in progress of erection and will be operated by a horizontal direct-acting engine 20×36 inches.

At Wanamie Nos. 18 and 19 two new tunnels have been driven at different points from the Baltimore to the Cooper seam. Each is 165 feet in length and 7×12 feet area.

The No. 19 slope is being extended to open another lift.

Beside improvements recorded above, a number of new steam boilers were added to the plants of several of the collieries, and several other minor improvements were effected.

Improvements by the Delaware and Hudson Canal Company.

At the Baltimore Tunnel colliery, the underground slope on the Red Ash seam was extended a distance of 500 feet, making the total length of the slope equal 900 feet. The average grade is 18 degrees. At the Boston colliery a new fan has been erected on the foundation of the old one which was torn down. This is 20 feet diameter and running 100 revolutions exhausts 50,000 cubic feet of air per minute under a pressue of 0.75 inch water gauge. The size of the engine is 14×48 inches, running the fan by a belt transmission.

At the No. 2 colliery, Plymouth, an underground slope has been sunk to a length of 500 feet on a grade of 12 degrees, which is the inclination of the seam. It opens a lift of excellent Baltimore vein coal. The engine to hoist from this, is located on the surface.

tion at Ashley. The shaft and breaker will be completed ready to ship coal in a few months, and this is expected to add about 2,500 tons per day to the already large producing capacity of this company.

The following is a list of their collieries and names of the foremen in the Fourth or Wilkes-Barre district.

Hollenback No. 2, Rees W. Morgan, inside foreman; J. A. Connor, outside foreman.

Empire No. 4, D. W. Davies, inside foreman; Thomas Williamson, outside foreman.

South Wilkes-Barre Nos. 3-5, J. F. Jones, inside foreman; T. B. Robinson, outside foreman.

Stanton No. 7, Wm. M. Thomas, inside foreman; Jacob Rhinehart, outside foreman.

Jersey No. 8, S. R. Morgan, inside foreman; C. L. Peck, outside foreman.

Sugar Notch No. 9, H. N. Martin, inside foreman; Thomas Mack, outside foreman.

Lance No. 11, William E. Jones, inside foreman; Dennis Moore, outside foreman.

Nottingham No. 15, James D. James, inside foreman; G. R. Connor, outside foreman.

Reynolds No. 16, James Rowe, inside foreman; J. B. Wolfe, outside foreman.

Wanamie Nos. 18, 19, Richard Lloyd, inside foreman; Thomas C. Carr, outside foreman.

Maxwell No. 20, S. R. Morgan, inside foreman; D. C. Tiffany, outside foreman.

Collieries of the Delaware and Hudson Canal Company.

This company operated nine collieries in the Fourth Anthracite district in the year 1894. Four of these are located in Wilkes-Barre and five in the neighborhood of Plymouth. Besides these, two new shafts are about completed, one near the Boston, and one north of the No. 2 shaft, Plymouth, for the purpose of working the lower seams in properties where the old collieries are working the upper seams.

This company employed an average of 3,501 persons in and about their mines during 1894, and worked 179.66 days. They produced 1,262,838 tons of coal, of which 1,243,151 tons was shipped to market. This shows a producing capacity of 6,919 tons per day from their collieries in the Fourth district.

Their mines in the Plymouth division are all, excepting the No. 4, working the Bennett or overlying seams. The No. 4 only has worked in the Red Ash and Ross seams; therefore, only a small proportion of these lower seams is mined.

the coal from the shaft to the breaker. Another conveyor line was constructed to convey the coal of the Baltimore No. 4 shaft to this breaker.

At the Boston colliery the breaker hoisting tower was torn down and a conveyor was constructed to scrape the coal from the dump at the shaft to the head of the breaker, and in the mine a tunnel has been driven from the bottom to the top split of the Red Ash seam. It is 400 feet in length and 7x12 feet area.

The No. 2 shaft at Plymouth was extended from the Bennett to the Red Ash seam 312 feet, making the total depth of the shaft 898 feet.

A new fan was erected to take the place of the old one. It is 22 feet in diameter, encased by a brick wall. It runs 70 revolutions and is exhausting 97,800 cubic feet of air. The engine is horizontal direct acting, 16x30 inch cylinder.

At the No. 3 colliery, Plymouth, the Hillman seam was opened and a slope was sunk to a length of 620 feet; average grade 12 degrees; 7x12 feet area.

At the No. 4 colliery a new slope has been sunk in the Red Ash seam to a length of 800 and it is still being driven. It is 7x14 feet area and has an average grade of 7 degrees. It opens a large area of excellent coal.

Improvements by the Susquehanna Coal Company.

In the No. 1 shaft, Nanticoke, an extension of tunnel has been driven from the Lee to the Ross seam a length of 960 feet, and 7x14 feet sectional area. A tunnel has been driven from the Forge through troubled ground a length of 1,570 feet, 7x14 feet area and is still being driven. An extension has been made by a tunnel from the Hillman to the Forge seam 650 feet in length, 7x14 feet area. A tunnel has been driven for ventilation purposes from the Hillman to the Hillman 240 feet in length and 7x14 feet area.

In the No. 4 slope, Nanticoke, the main slope has been extended through the rock from the Hillman towards the Forge seam a length of 350 feet and it is still being driven. The No. 21 tunnel was extended a length of 700 feet from the Mills to the Mills and Tunnel No. 23 driven on from the Hillman to the Mills a length of 500 feet. The area of all is 7x12 feet.

In the No. 2 shaft, Nanticoke, No. 5 slope was extended through an anticlinal from the Lee to the Lee a length of 420 feet and the No. 11 slope was driven through the rock from the Ross to the Lee seam an extended length of 850 feet. A new gravity plane 850 feet in length was made in the Ross seam.

At the No. 6 shaft, Glen Lyon, No. 5 tunnel was driven to a length

Plymouth No. 1.—Foot of shaft in Hillman vein, has been cleared up and very heavily timbered. Large sump driven below shaft in vein, and a duplex Janesville pump, 22x10x36 feet, has been installed. Began pumping October 1. Capacity, 1,000 gallons. This work has all been done preparatory to sinking the shaft down to the Bennet vein.

The Plymouth Pumping Plant.—A pump room, 17x59 feet, with offset 10x15 feet 6 inches. Stone side walls and brick arch. A Janesville compound duplex, 26x50x16x48 inches, with a capacity of 3,000 gallons, has been put in place. This pump is provided with a pump condenser. In connection with it there has been completed a 20-inch more hole for pumping water, which is 585 feet in depth.

Plymouth No. 2.—Car haul at foot of shaft, Red Ash vein, 70 feet long. Elevates empty cars to run back to slope, 400 feet away. No. 2 slope, in 5-foot vein, extended 300 feet. Ten-inch bore hole for flushing culm. High pressure boiler plant, four locomotive type of boilers in use; 78x28 feet 2 inches; brick boiler house, 54x81 feet. Boiler house is large enough for six boilers. Three cylinder boilers added to boiler plant.

Plymouth No. 3.—Completion of sinking shaft to bottom Red Ash vein, making total depth of shaft about 750 feet. Foot opened out about 50 feet on each side of shaft.

No. 7 tunnel through fault in Hillman vein, on shaft E gangway; 207 feet in length.

No. 9 tunnel from Five Foot to Stanton vein, about 400 feet.

No. 10 tunnel from Hillman to Lance vein, 259 feet long. Are driving plane airway in Lance to connect with airshaft. Now up 300 feet.

Abbott slope from outcrop to D. Low line, 450 feet long. Are driving gangways and airways east and west.

Six-inch bore hole for drawing Abbott, Lance, Five Foot and Cooper veins to Bennet vein and Plymouth pump plant at No. 1. Extension No. 1 air shaft to Five Foot vein, about 40 feet.

Plymouth No. 4.—No. 2 slope, in Ross vein, down 300 feet, going. No. 1 slope, in Red Ash vein, extension 200 feet, going. Rope hole for Ross slope. Pair engines, 18x36 inches, first motion. Frame engine house, 20x32 feet. Rope haulage, 900 feet long. Endless rope transporting cars from No. 4 to No. 5. Engines, pair 10x12 inch.

Plymouth No. 5.—Completion of No. 3 plane, in Red Ash vein, to connect No. 4 colliery. Plane, 2,200 feet long, operated by pair engines, size 22x48 inches, at No. 4 colliery. Rope is taken down No. 4 air shaft. No. 4 plane in No. 4 tunnel, Five Foot vein, 400 feet long. Connection of top split working with air shaft and hoisting shaft for second opening.

Boston.—Extension of No. 4 plane in top split of Red Ash through.

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Plymouth No 2

Wanamie Colliery.—Tunnel top to bottom split, Baltimore, 44 yards. Tunnel Red Ash to Ross, 85 yards.

Maxwell Colliery.—Opening Red Ash vein in deep shaft. Two tunnels from bottom to top split Red Ash vein, each 30 yards. Remodelled portion of breaker and installed jigs. Two hundred and fifty horse-power Babcock & Wilcox boilers installed.

Improvements by the Delaware and Hudson Company During the Year 1900.

Baltimore Slope—Sinking No. 5 shaft, which is the old Meadow shaft, enlarged from 9 feet 6 inches x 19 feet to 12x28 feet from surface to Baltimore vein, 385 feet. This shaft will be continued in solid, same size to Red Ash vein.

Baltimore No. 2.—No. 6 slope, in Red Ash vein, sunk 700 feet, operated by 10x12 inch engines, with air, only temporary.

Washery relieving breaker and saving small sizes. Refuse is taken down a new 10-inch bore hole 530 feet deep to Red Ash vein.

Baltimore Tunnel.—No. 6 slope, Red Ash vein, extended 800 feet, with a total depth of 1,400 feet.

No. 10 plane completed 3,300 feet, and is operated by pair of 16x36 inch engines, the rope running through bore hole 132 feet deep. New engine house, brick, 20x40 feet, for No. 10 plane engines.

Conyngham.—No. 6 plane, in Abbott vein, now up 1,450 feet.

No. 2 slope, in Baltimore vein, down 900 feet, completed.

Rope haulage operating No. 6 Abbott and No. 7 Kidney planes and delivering coal to foot of No. 1 Hillman slope. Operated by 14x30 inch engines, located on surface, ropes running through 8-inch bore hole, 477 feet deep, to Hillman vein. Haulage is 4,750 feet long.

Plymouth No. 1.—This shaft is completed to the Bennett vein. Plymouth pumping plant.

Another pump room, 22x54 feet, stone side walls and brick arch, is completed.

A compound pump steam cylinder, one 26-inch and two 38-inch, with three plungers 11x48 inches, built by the Dickson Manufacturing Co., has been set up, and will soon be in running order. This pump has a capacity of 3,000 gallons per minute.

New fan 10x28 feet, brick house 48x48 feet .

Fan driven by two engines, 16x36 inches, to ventilate Plymouth No. 2, Red Ash vein.

Plymouth No. 2.—New set hoisting engines, 26x48 inches, with half cone drums. Engine house brick, 42x38 feet.

Washery, relieving breaker and saving small sizes; refuse is taken down a new 10-inch bore hole, 600 feet long, to Bennett vein. No. 13 tunnel to top split in 200 feet; still driving.

Inside: New openings in Cooper seam, Shaft No. 1, in two places in No. 13 tunnel.

Enlarged main gangway from foot of No. 1 North Shaft to head of No. 9 Slope, and to No. 13 tunnel.

New bore hole, 960 feet deep, from surface to Lee seam, for No. 10 Slope hoisting rope.

Improvements at the Delaware and Hudson Collieries During 1902.

Plymouth No. 2.—Tunnel in G vein through fault 200 feet long, 7′x12′. Tunnel from Red Ash to top split, 275′ long, 7′x16′.

Outside: A Norwalk compressor, 24″x14½″x22″x24″, was installed for furnishing air for pumping.

Shaft No. 1.—A Dickson compound triple expansion pump, with a capacity of 3,000 gallons per minute, size of pump 15″x26″x16″x48″.

Shaft No. 3.—Tunnel from Red Ash seam to top split, 275′ long, 7′x16′. A 10″x48″x24″ Jeanesville pump was installed at the foot of shaft.

Outside: A new breaker engine, 16″x30″, was attached to the old one, changing it into a double engine.

Boston: Reopened tunnel and sank slope in the Bennett seam, and put in a pair of 24″x48″ haulage engines to take coal from the slope to the breaker.

Outside: Installed nine new cylinder boilers, 34″x36′ in length.

Placed one pair of engines, 26″x48″, at the bore hole to hoist out of plane from top split of Red Ash.

Improvements at the Alden.

A slope in the Cooper seam 550′ long to reach the basin.

Tunnel 100′ long from the Cooper to Hillman seams, 14′x7′ through the rock.

There has also been provided for cases of emergency two "Vajen's" improved head protectors.

Improvements at the Delaware, Lackawanna and Western Collieries During 1902.

Woodward.—A new steel trestle connecting the breaker with the shaft, and four batteries of Sterling boilers have been installed. One electric hoist and one electric motor have also been installed at this colliery.

Avondale.—One electric motor has been placed inside.

Auchincloss.—An electric breaker of 500 tons daily capacity has been placed in operation and is giving perfect satisfaction.

this most dangerous enemy to the underground worker. I am glad to be able to report to you at this date that we are led to believe that we have succeeded in surrounding this affected district with incombustible material to prevent further spreading of the fire, and expect to be able to report in the near future that this destructive fire has been taken care of.

Woodward Colliery

Outside.—The improvements at this breaker during the year consist of labor-saving machinery, automatic slate pickers, conveyors, elevators, shakers, etc., together with a 15-foot dust fan which is materially assisting in improving the conditions at this breaker.

Inside.—The installation of two 7½ ton electric locomotives, two electric hoists. Cooper and Abbot veins have been opened at No. 2 shaft, which will materially assist in increasing the output of this colliery in the future.

The condition of the colliery has been improved by a general cleaning up, white washing and painting of the buildings, on the outside, and the cleaning and ballasting of the roads on the inside.

DELAWARE AND HUDSON COMPANY

Plymouth No. 2 Colliery

Reopening Hillman vein, repairs to No. 1 shaft, concreting, etc., making branches, etc., at foot of No. 9 plane; electrical machinery for lighting this division, buildings, etc., two large boilers added to the present boiler plant, extension of boiler house Hillman vein improvements; pump room and tunnel; additions to the washery, fifty new mine cars.

Plymouth No. 3 Colliery

Tunnel from bottom to top split of Red Ash vein. Additional compressor with house additions, etc. Additional boilers; fifty new mine cars.

Plymouth No. 4 Colliery

Mountain plane in the outcrop, conveyor for fuel to boiler house; fifty new mine cars.

Plymouth No. 5

Fifty new mine cars; coal conveyor.

Boston Colliery

No. 4 plane, bottom to top split Red Ash; one additional compressor; compressor house, addition to boiler house; rope haulage and extension, 100 new mine cars; chain hoist from tunnel to foot of shaft.

PARRISH COAL COMPANY

Parrish Colliery

One Knowles pump, 18½x8x18 inch (inside); one compressor, 20x30 inch (Duplex); Norwalk compressor, 20x24 inch, set on concrete foundations; new compressor room, 46x56 feet, old Duplex compressor 24x36 feet moved from old building to new compressor building; one 12 foot fan for breaker; four new emery pickers for breaker; retimbering No. 1 slope for 206 feet from day-light to rock with 12x16 inch Georgia pine, with the exception of about 40 feet near surface, size 12x12 inch (inside); conducted 8 inch line for distance of 500 feet down slope, from air receiver at compressor room, size 36x36 feet (inside); elevated tracks from head of surface slope to foot of breaker plane 1,000 feet; all the above compressors located in new building on concrete foundations.

Buttonwood Colliery

Outside.—One engine 24x36 inch; two Norwalk compressors 28x30 inch; one engine, 12x14 inch, for carpenter shop; planers, etc., for carpenter shop; one Knowles pump, 14x7x12 inch; two 72 inch by 18 foot tubular boilers, 300 H. P.

Inside.—One tunnel 300 feet long from Hillman to Hillman; one pipe line 400 feet from boiler to head hoisting shaft.

DELAWARE AND HUDSON COMPANY

Plymouth No. 2

No. 10 plane driven through fault 350 feet, top Red Ash vein; No. 7 plane Stanton vein extended 650 feet; No. 4 slope extended 590 feet to boundary of Red Ash vein; No. 6 slope Stanton vein extended 200 feet; No. 7 slope Red Ash vein driven 300 feet to limit against fault; No. 8 slope Hillman slope driven 850 feet.

A new plane is being graded and equipped in Bennett vein through old outlet to No. 5 slope.

Pump room in Red Ash vein has been arched with masonry and brick.

Hillman landing has all been retimbered and planked preparatory to flushing culm over timbering.

Jeanesville pump, 22x12x36 inch, installed at Plymouth No. 1 in Hillman vein, pumping water to surface.

Plymouth No. 3.—New rope hole drilled and new engines 12¼x15 inch installed for No. 1 Cooper slope which has just been reopened after squeeze of 1903.

Inside.—Two bore holes from surface for steam pipes, two car hoists at foot of shaft, two compressed air motors for haulage.

Wanimie No. 18 Colliery

Inside.—No. 7 rock slope Baltimore to Ross, No. 12 tunnel extended, Baltimore to Cooper.

DELAWARE AND HUDSON COMPANY

Plymouth No. 2

No. 10 plane, Top split Red Ash, extended 800 feet.
No. 6 slope, Stanton, extended 300 feet.
No. 8 slope, Hillman vein, extended 150 feet.
No. 12 Rock plane, Stanton to Kidney vein, driven 330 feet.
Eight inch rope hole for No. 7 Stanton vein plane, 246 feet deep, and 12¼ inch x 15 inch engines installed.
Eight inch culm hole and crusher plant for flushing refuse into the mines.

Plymouth No. 3

Crusher plant installed, to break up refuse from breaker to be flushed into the mines.

Plymouth No. 4

No. 10 plane, Ross vein, extended 150 feet, and 10 inch x 12 inch engines installed for operation of same.
No. 9 plane, Bennett vein, driven through old workings 600 feet, and pair of 10 inch x 13 inch engines installed for operation of same.
Crusher plant installed for flushing purposes.

Boston

No. 12 Rock plane, from Upper to Lower Ross, 250 feet.
No. 9 plane, Top split extended 315 feet.
No. 10 plane, Top split extended 100 feet.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Avondale

Extensive breaker improvements made at this colliery. When repair work was begun on this structure it almost became necessary to rebuild the entire building, costing a large amount of money, with the result that the company has what might be considered a modern breaker on a small scale.

The work of changing the location of steam boilers from the Ross shaft to the main shaft will be completed early during the year 1906.

Connection is being made with the colliery to the Nanticoke Power Station, which will generate electric current for operating locomotives and hoists in this mine.

A 7x12 rock tunnel connecting Red Ash and Ross vein, 743 feet long on a 5 per cent. grade has been completed.

Mules

March 21, Nottingham, No. 8 East Red Ash vein, Stanley Dudeck, miner was fatally injured. The driver was pulling a car out of the victim's chamber. The mule balked and would not pull the car. Dudeck came forward and struck the mule on the hips with a piece of iron. The mule kicked him. Dudeck came forward again and struck the mule a second time with the iron. The mule kicked him again, this time in the stomach. He died the same evening at his home from the result of his injuries.

Miscellaneous, Inside

February 18, Nottingham, 11 West, Red Ash vein, Thomas McDaniels, inside conductor, was fatally injured. He was helping to charge the air locomotive when the coupling on the charging station came loose, permitting the escaping air to strike him. He died from the result of his injuries in the City Hospital, March 11.

December 28, Lance, Bennett vein, David Jones, laborer, was fatally injured. He was at the foot of the shaft, entering the cage to come to the surface, when a small piece of rock fell down the shaft and struck him on the head and crushed his skull at the base of the brain. He died a few minutes afterward.

Miscellaneous, Outside

June 29, Plymouth, No. 3, John Sweeney, slate picker, was electrocuted. He was playing about the breaker before starting time, and got hold of a steam pipe that was charged with electricity. It is supposed that the electric wire came in contact with the feed wire of the Traction Company, caused by the storm the night previous.

CONDITION OF COLLIERIES AND IMPROVEMENTS

DELAWARE AND HUDSON COMPANY

Plymouth No. 2

No. 11 Plane driven through rock from Stanton to Hillman vein 230 feet.

No. 10 plane extended 300 feet and finished.

No. 7 Slope, Bottom, Red Ash vein, extended 170 feet.

No. 6 Slope, Stanton vein, extended 475 feet.

Condition of colliery is good.

Plymouth No. 3

No. 8 Plane, Lance vein, driven 300 feet.

New steel tower erected over main hoisting shaft to take place of frame structure.

Condition of colliery is good.

Plymouth No. 4

No. 8 Plane, Top Split, Red Ash vein, extended 250 feet.

Condition of colliery is good.

Plymouth No. 5

No. 6 Slush hole continued from Bennett to Bottom Red Ash vein, a distance of 225 feet.

New steel tower erected over main shaft to take place of frame structure.

Condition of colliery is good.

Improvements were made to the boiler plant and were completed by the installation of a 1250 feed water heater and 2 feed water Duplex pumps, 18x16x8, making this steam plant equal to any other in the district.

A steel bridge crossing the railroad tracks near the breaker was built during the year and is a great improvement over the old wood trestle formerly in use.

Concrete retaining walls have been erected around the colliery, which greatly improve its appearance.

Woodward Colliery.—The work of sinking slope from Surface to Abbott vein has been completed. The work of development for second opening is now going on in this slope.

A rock tunnel was driven from Cooper vein to Five Foot vein and connection made with No. 1 shaft for second opening.

A rock slope was sunk through fault from Hillman vein to Hillman vein a distance of 600 feet on a 15 degree dip, and it is also connected with No. 1 shaft for second opening.

Five new air bridges were erected which have greatly improved ventilation.

The work of installing an electric sub-station near the head of No. 2 slope, Cooper vein, is now under way. The high tension lines will be carried from the Nanticoke power plant to this station through a 10 inch bore hole, sunk from the surface to the Red Ash vein, about 1000 feet west of No. 1 shaft. The current will be transformed at this point and used by the electric locomotives, slope hoists, etc.

The work of sinking what is known as Woodward No. 3 shaft was begun September 13. This is a four compartment shaft, containing one airway, one pump way and two hoist ways. It will be used to mine the coal in the upper seams and to lower the coal to No. 1 Tunnel level. From No. 1 Tunnel level the coal will be hauled to the foot of No. 1 shaft by electric locomotives and then hoisted to the surface. This opening will be very beneficial to the colliery, as it will result in releasing a large quantity of explosive gases that are now pent up under a very high pressure.

The work of sinking the caisson is being done by the Foundation Company of New York City, under the supervision of Mr. R. V. Norris, Consulting Engineer for the D. L. and W. R. R. Company. This, I presume, is the first time that work of this kind has been attempted in connection with the sinking of a coal mine shaft.

The work of sinking the caisson almost to the rock was very successfully carried on with but little trouble. However, a sudden rise in the river of about 10 feet in about ten hours, resulted in forcing considerable water through the clay and down along the caisson into the bottom of the shaft. The Foundation Company people did not think the matter a very serious one, but very little progress has been made within the last two or three weeks, as a large amount of water and sand is being pumped daily from this opening.

DELAWARE AND HUDSON COMPANY

Plymouth No. 2. Colliery.—Outside.—Pumping plant, 62′x26′, completed for entire division with tunnel to river 186 feet long, 8 feet wide and 7 feet high, to furnish water for boilers. Boiler house enlarged 36′x54′ and two new 72″ boilers, locomotive type, installed.

No. 2 shaft.—Concrete for 79 feet from surface to rock, also retimbered from concrete to bottom, and head frame replaced.

New brick oil house erected 18'x28'.

No. 6 slope in Stanton vein extended 90 feet and stopped in fault.

No. 14 rock plane driven from Stanton vein 550 feet, cutting Hillman, Lance and Abbott veins, and intersecting a 8 by 6" bore hole from surface to rock a distance of 203 feet, for use of rope to operate place.

Plymouth No. 3 Colliery.—Red Ash sump lengthened 450 feet.

No. 6 slope in Red Ash vein opened and driven 260 feet.

No. 15 rock tunnel driven 460 feet from bottom to top Red Ash vein.

Rock tunnel driven 100 feet from Stanton vein to tap shaft for ventilation.

Plymouth No. 4 Colliery.—No. 11 plane, Top Red Ash vein, extended 170 feet.

Plymouth No. 5. Colliery.—Boiler house erected 50'x60' and two Sterling 300 H. P. water type boilers installed.

Boston Colliery.—No. 13 plane, in Bottom Red Ash vein, extended 300 feet.

PARRISH COAL COMPANY

Parrish Colliery.—A rock plane driven from Baltimore vein to the Five Foot vein for ventilation, a distance of 279 feet, size 7' by 18' on a grade of fifteen degrees.

Sank No. 6 slope Baltimore vein a distance of 200 feet.

Buttonwood Colliery.—Sunk No. 4 slope, Stanton vein, a distance of 300 feet, to the boundary line.

Installed a new engine on top of Stanton plane, for plane and slope, geared 18" by 30" (double engine) 460 H. P.

Sank a slant slope from top of No. 2 slope Hillman vein 600 feet, to mine coal in a synclinal between two rolls.

A new plane driven on the Abbott vein 900 feet long, and a pair of geared engines 12" by 16", 124 H. P., installed.

A tunnel driven from the Kidney vein to the Abbott vein, to strike the vein at the southern boundary line, a distance of 470 feet size 7' by 12.

KINGSTON COAL COMPANY

Gaylord Colliery.—The old cylinder boiler plant has been dispensed with and 900 H. P. B. and W. boilers have been erected and installed in brick house. Said plant has been completed with duplicate feed pumps, Cochran water heater, etc.

A new brick house has been erected for electric generator and air compressor.

Two new 7½ ton electric locomotives have been purchased and electric haulage is in course of construction between the foot of the Bennett slope and the Red Ash.

A new washery or wet side addition to the breaker is in course of construction and almost completed, with three banks of shakers, duplicate rolls, duplicate elevator.

A Compound Duplex 28"x36" pump is being installed.

New brick blacksmith and carpenter shop completed; new brick oil house and hospital and new brick warehouse completed.

Fifty foot addition to stable.

Addition of 300 H. P ; B. and W. boilers completed for washery.

Electric haulage is now in service between the Red Ash vein and foot of slope.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Woodward Colliery.—The work of sinking Woodward No. 3 Shaft on the Kingston flats has progressed to a depth of 450 feet. The shaft will be completed during this year to the Baltimore vein.

The rock tunnels have been driven from the Cooper to Five Foot vein for development.

The work of installing the sub-station mentioned in last year's report has been completed, but it is not yet in operation.

The No. 2 Shaft hoisting engines have been equipped with new drums and clutch arrangement; also steam brake and reverse.

The three slide valve breaker engines have been replaced with three compound Corliss valve engines, in order to economize in the consumption of steam with very good results.

Four new concrete and steel air bridges have been built during the year.

Avondale.—The work of installing an inside sub-station mentioned in last year's report is now completed and is in operation and running order.

The Ross shaft has been abandoned as a hoistway and will be used hereafter as an air shaft only.

One concrete and steel air bridge has been erected on 4½ East lift, No. 2 Slope, Red Ash vein.

A rock tunnel was driven from Ross vein to surface for second opening to Ross and Red Ash veins.

DELAWARE AND HUDSON COMPANY

Plymouth No. 2 Colliery.—Rope hole, 93 feet deep, drilled for No. 7 plane.

Air shaft to Lance vein sunk 40 feet.

No. 9 slope, Top Ash vein, driven 340 feet.

Plymouth No. 3 Colliery.—Air shaft to Lance vein sunk 40 feet deep.

No. 9 plane, Station vein, extended 450 feet.

Plymouth No. 5 Colliery.—Slush hole for ashes drilled 448 feet deep.

No. 2 slope Cooper vein, rope hole drilled 177 feet deep.

Rock slope from Bennett to Cooper vein completed 350 feet long.

Four Emery slate pickers installed in breaker.

Boston Colliery.—New plane No. 6 driven from Boston to Plymouth No. 5 in Bottom Red Ash 4,200 feet long, to take Boston coal to Plymouth No. 5 breaker. Rope hole 446 feet deep drilled, and pair of 22 x 48 inch Dickson engines installed. Boston breaker has been abandoned.

"An era in the history of mining anthracite in the Wyoming coal field has been inaugurated by the success of the Dundee Coal Company in reaching a superior vein of eleven feet in thickness at a depth of nearly 800 feet below the surface.

From a distance we have watched the progress of this shaft with anxious eyes, and we are sure that the pleasure to us of their success can very little be less than to the members of the company. Much credit has been thrown on our coal field by the partial and unsuccessful exploration for coal in Hanover and Newport. Borings have been abandoned at a depth of three or four hundred feet, leaving doubt about the existence of coal, in the minds of strangers, and, indeed, in the minds of some of the less sanguine of our own citizens.

The Dundee Coal Company, composed principally of our own citizens, resolved to sink its shaft to a depth of 1,000 feet if coal could not sooner be obtained. The largest vein cut had been but four feet, with many smaller ones. Still, without hesitation, yard after yard was cut. Mr. F. Koerner, an intelligent and energetic man, had charge of the work, which progressed as rapidly as the hard rock would permit, until 780 feet had been passed. Then indications of coal appeared and an auger was put down three feet to a small eight-inch seam of slate below which was a vein of fully eight feet of beautiful coal. To the bottom of the vein is 792 feet, and to provide for the dropping of the water from above the shaft was sunk a few feet deeper, probably 800 feet in all."

The story is continued with a narrative of the personal experiences of the editor in a descent of the shaft. A large stream of water entered at a depth of 250 feet, but was cared for by pumps. The editor mined a few specimens of coal at the bottom with illumination furnished by a few gas jets pouring forth from the vein itself. He says, in his story, that the vein was supposed to be the Mills vein, found at Nanticoke, and that other veins of greater thickness were believed to be underlying it. This belief was well founded, for the territory in which this vein was located is now considered the richest in the Wyoming coal field, and the lower veins are found at a depth of from 1,800 to 2,000 feet. The ancient chronicler also tells of the gas found in the vein, for it was the presence of this gas in large quantities and the lack of knowledge of proper ventilating methods in those days that caused the subsequent abandonment of the mine.

LEHIGH AND WILKES-BARRE COAL COMPANY

Lance No. 11 Colliery, Inside.—Tunnel, Cooper to Five Foot, No. 1 Slope, 5th West.

Nottingham No. 15 Colliery, Outside.—Corliss breaker engine.

Reynolds No. 16 Colliery, Inside.—Rock plane, Ross to Ross, No. 4 tunnel East.

DELAWARE AND HUDSON COMPANY

Plymouth Nos. 1 and 2 Colliery.—A return airway was driven from No. 14 plane, Abbott vein to No. 1 shaft.

An air shaft was sunk 55 feet from surface to Lance vein workings and 300 feet of return airway was driven in vein.

A 50,000 gallon water tank was erected and pipe connections made for boiler supply.

Plymouth No. 3 Colliery.—Extensive repairs were made to breaker and the timbering in main shaft was replaced by concrete from top to bottom. A new 8-inch rope hole was drilled 425 feet from surface for No. 6 plane, Red Ash vein.

Plymouth No. 5 Colliery.—No. 7 plane, Bennett vein, was driven 1,200 feet and an inch rope bore hole was sunk 290 feet from surface.

No. 3 plane, Bennett vein, was driven 250 feet.

Boston.—No. 14 plane was driven from the Boston Split Red Ash 250 feet through rock to the Top Red Ash and 600 feet in the latter vein.

No. 15 plane, Bottom Red Ash vein, was driven 1,100 feet.

The Boston breaker was torn down and the coal is now being prepared at No. 5 breaker.

PARRISH COAL COMPANY

Buttonwood and Parrish Collieries.—Safety conditions, ventilation and drainage, good.

PLYMOUTH COAL COMPANY

Dodson Colliery.—Safety conditions, ventilation and drainage, good.

GEORGE F. LEE COAL COMPANY

Chauncey Colliery.—Safety conditions and drainage good. Ventilation fair.

WEST NANTICOKE COAL COMPANY

West Nanticoke Colliery.—New opening, just opening up from surface.

BRIGHT COAL COMPANY

Hillside Colliery.—Safety conditions and ventilation good. Drainage fair.

IMPROVEMENTS

KINGSTON COAL COMPANY

Kingston No. 2 Colliery.—Inside: A tunnel was driven from Cooper vein to Lance vein for haulage and second opening. Two 2-inch drainage holes were bored from Cooper vein to Bennett vein. Two electric hoists were installed in Bennett vein. A new 6-inch hole was completed from the surface to Red Ash vein, a distance of 550 feet, through which electric wires are conducted, the old ones having been removed from the shaft.

At No. 3 shaft a 15-degree rock plane was completed from Ross vein through the Eleven Foot vein to Bennett vein, making a second opening between Nos. 1 and 3 shafts.

In the slope and tunnel a new manway and muleway completed from Eleven Foot vein to the surface, and a new second opening completed from Eleven Foot vein to Bennett vein on the west side.

Outside: Rebuilt empty car trestle at head of No. 3 shaft extended No. 2 shaft boiler room to install 600 horse power additional B. and W. boilers. New blast fan has been purchased. New 10-inch steam line constructed from boiler house to No. 3 shaft and fan engines.

Gaylord Colliery.—An 18 by 30 by 27¼ by 24 inch Ingersoll-Rand Corliss, valve two-stage air compressor was installed.

DELAWARE AND HUDSON COMPANY

Plymouth No. 5 Colliery.—At Boston Red Ash, No. 17 plane air return from No. 13 plane 7 by 12 by 132 feet, 18 degree pitch, and work on concrete stables completed.

Plymouth No. 2 Colliery.—Two 24-inch bore holes drilled from surface to Bennett vein, 640 feet deep. Concrete reinforcements to pumping rooms Nos. 1 and 2 in Bennett vein. Tunnel, 7 by 12 feet, 422 feet long, driven from No. 7 plane in "G" vein to top of Plymouth No. 5 Shaft. Established Mine Rescue Station for Plymouth Division, equipped with Draeger Apparatus and other appliances.

GEORGE F. LEE COAL COMPANY

Chauncey Colliery.—Safety conditions, ventilation and drainage good.

WEST NANTICOKE COAL COMPANY

West Nanticoke Colliery.—Safety conditions, ventilation and drainage good.

BRIGHT COAL COMPANY

Hillside Colliery.—Safety conditions, ventilation and drainage good.

IMPROVEMENTS

LEHIGH AND WILKES-BARRE COAL COMPANY

Nottingham No. 15 Colliery.—Inside: Completed remodeling of pumping plants on No. 1 slope.

Lance No. 11 Colliery:—Inside: Completed concreting of shaft walls and installed fire doors at top of hoisting shaft.

Outside:—Completed power house.

Buttonwood No. 22 Colliery.—Completed No. 1 tunnel from Stanton to Baltimore vein; also tunnels from Hillman to No. 1 tunnel and No. 1 tunnel to Stanton, for haulage. Completed concrete walls at top of hoisting shaft.

Inman No. 21 Colliery.—Inside: Completed tunnels on both sides of Baltimore shaft to Hillman vein for landing.

DELAWARE AND HUDSON COMPANY

Plymouth No. 3 Colliery.—Completed outlet of G or Stanton vein to Plymouth No. 3 shaft, 7 by 12 by 80 feet, on 14 degree pitch.

Completed tunnel 7 by 12 by 280 feet, light car road, to G or Stanton vein; tunnel, 7 by 12 by 320 feet, light car road, to Cooper vein; plane, 7 by 12 by 60 feet, on 18 degree pitch, for car haul; also car haul, 60 feet, on 18 degree pitch.

Plymouth No. 5 Colliery.—Completed tunnel 7 by 12 by 400 feet, G or Stanton vein, to Plymouth No. 5 shaft; also tunnel 7 by 12 by 90 feet, G or Stanton vein, through fault.

Concreted car haul, G or Stanton vein, 145 feet on 8 degree pitch.

Installed electric hoist on No. 2 plane, Cooper vein, operated by Flory 150 H. P. engine.

Installed 16 by 20 inch Flory steam hoist engine to operate No. 13 plane in Red Ash, in Boston section.

Completed pump room in Red Ash vein 11 by 18 by 38 feet, of concrete and steel; also bore hole, 16 inches by 325 feet, Red Ash vein to surface for pumping.

Plymouth No. 2 Colliery.—Completed air return and outlet from Snake Island to surface 7 by 16 by 170 feet long; air return Abbott to Snake Island 7 by 12 by 130 feet on 35 degree pitch; air return Lance to Abbott 7 by 12 by 130 feet on 30 degree pitch; also tunnel 7 by 12 by 300 feet G or Stanton vein to Plymouth No. 2 shaft.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Woodard Colliery.—Are installing a 20-foot multi-blade ventilating fan on No. 2 shaft, a duplicate of the one installed in 1912.

Driving rock tunnels from Cooper to Lance vein for development and ventilation.

tunnel airway, Abbott to Abbott; No. 15 tunnel, Baltimore to Five-Foot; No. 9 rock plane, Stanton to Hillman, and rock slope on shaft level.

Outside: Completed an oil and lamphouse, washhouse, lumber shed and motor house. Installed a 27 by 40 by 22½ by 30 inch air compressor and fuel conveyor.

At the Parrish, changes were made to breaker so as to connect with washery operations. Completed lamphouse and inside foreman's office, oilhouse and blacksmith shop.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Avondale Colliery.—Completed rock tunnel from Ross vein across measures to Hillman vein, a distance of 1650 feet, and made a second opening for same; also rock tunnel through fault in No. 10 slope and rock return airway, parallel with No. 2 slope, to assist in ventilating the live workings. Built a blacksmith and carpenter shop of concrete and brick. Installed pumps for unwatering the mine workings flooded in November, 1910, and pumping equipment in No. 5 slope section of Ross vein. The installation of this pumping equipment has been very costly and the expense of reopening the colliery shows that to mine anthracite coal in the Wyoming Valley requires capital, as the dangers from flooding are quite imminent.

Loomis Colliery.—This colliery is, perhaps, the most wonderful operation of its kind in style and construction, that has ever been erected in the anthracite region. The breaker building and annex or washery is practically fireproof, and is constructed of concrete, steel and wire glass, and all the other buildings are most modern in their equipment. The breaker will be completed during the year 1916. It is electrically operated, with separate units, and is expected to have a large capacity. There are already miles of gangway developed, so that a large tonnage might be expected as soon as the breaker is placed in operation. The work of sinking No. 3 shaft, near the Susquehanna River, is underway. The shaft will be sunk to a depth of about 660 feet to the Hillman vein. The old Dundee shaft is also to be widened and sunk to the Ross vein bed.

Woodward Colliery.—Preparations are now being made to reconstruct the breaker of concrete, steel and wire glass; this building was placed in operation during the year 1888. It has been a large producer for the past ten years. It was the first breaker that prepared 1,000,000 tons of coal in a year, which was accomplished in 1905. Side walls are being built and "I" beams placed for roof support, instead of ordinary mine timber along the haulage roads. This is in line with the progressive movement established some years ago by this company. Completed the driving of rock tunnels for the necessary development and transportation of the coal.

DELAWARE AND HUDSON COMPANY

Plymouth No. 2 Colliery.—In November the breaker was abandoned and the coal is now being prepared at Plymouth No. 5 breaker. Completed a tunnel, 290 feet, from the Stanton vein to the Hillman vein.