

cept what were necessary for development of territory to supply their quota of coal to the market.

Pennsylvania Coal Company.

This company have sunk a new shaft in Dunmore borough on what is known as the Gilbert Dunning tract, called No. 1 shaft. Commenced sinking in rock on November 26, 1885, and finished on November 18, 1886. Shaft is $171\frac{3}{4}$ feet from surface to bottom of first Dunmore vein, $218\frac{5}{8}$ feet to bottom of second Dunmore vein, $272\frac{1}{2}$ feet to bottom of lower Dunmore vein, and $289\frac{1}{8}$ feet to bottom of sump. No coal has been shipped yet. They are opening up the mine and preparing to build a large breaker in connection with the shaft 600 feet east of it. No coal will be shipped until the latter end of year.

Spencer's Shaft.

Spencer Bros. have extended their underground slope 1,280 feet; angle of pitch, 3° ; sectional area, 90 square feet.

Richmond Shaft.

This shaft has been sunk 60 feet to a lower vein; size of shaft, 12×24 feet. They are opening out the mines at present.

Pancoast Shaft.

The company sunk a new slope 550 feet long in mines on a pitch or angle of 6° ; also had a new tunnel driven 128 feet long in rock from top to bottom split of 14-foot, or G, vein; sectional area of tunnel, 60 square feet.

Marshwood Colliery.

This is a new colliery, owned and operated by the Moosic Mountain Coal Company. It is located in Olyphant borough, and 3 miles southeast of Lackawanna river. It consists of one drift driven into crop of first Dunmore vein; slope sunk across the measures, cutting the second Dunmore vein, and to the bottom of the lower Dunmore vein. It is 292 feet long; angle of pitch, $19^{\circ} 25''$; sectional area, 8×12 feet = 96 square feet. The breaker is not finished yet. It will have a capacity of 1,000 tons of coal per day. There are eight boilers in place, also one pair of hoisting engines and one breaker engine. The company have also built several houses for their employés. From present appearances, it is intended for a first-class colliery. John R. Davis, general manager; B. F. Fillmore, assistant; James R. Wilson, mine foreman. The company will be ready to ship coal as soon as the main outside track is finished to the colliery. They are sinking an air shaft 12×16 feet to cut all the veins of coal.

Capouse Shaft.

A new plane has been graded at an angle of 15° and 450 feet long.

Jessup Coal Company—Filer's Slope.—This company is sinking a new slope in coal; it is now down 900 feet. Sectional area, 96 feet.

Hillside Coal and Iron Company—Glenwood Shafts.—The work on the two shafts and breaker, reported in last year's report, 1886, under the head of Erie colliery improvements, has been advanced as follows: The shaft to top vein has been completed at a depth of 100 feet. The shaft to bottom vein has reached a depth of 160 feet. Work is being pushed rapidly forward in this shaft. The breaker to prepare the out-put of these two shafts for market is about finished, and is expected to prepare coal from the top vein about February 1, 1888. This Company is also sinking the Clifford shaft, at Forest City, as rapidly as possible.

John Jermyn—Jermyn No. 4 Shaft has built a new reservoir for spring water to supply the boilers. Started sinking a new slope November 5, 1887, and are down 170 feet. Slope opening, 14'x7'; pitch, 1 foot in 3 feet. Has set three new boilers in place; one pair of engines, 10"x10"; one fan engine, 12"x12", and one pumping engine.

Wm. T. Smith—Mount Pleasant Slope.—Sinking a new shaft to Clark vein. Size of shaft opening is 30'x11'. Depth of shaft from surface to bottom of little vein, 27 feet; Diamond vein, 139 feet; Rock vein, 171 feet; G or Big vein, 241 feet; new County vein, 292 feet; and to Clark vein, 365½ feet.

Moosie Mountain Coal Company—Marshwood Colliery have everything ready to ship coal when branch track to breaker is finished. Are now pushing the work rapidly forward.

William H. Richmonds—Richmond Shaft.—Finished sinking shaft reported in 1886, and are now mining coal in No. 2 vein.

Winton Coal Company—S. V. White Mine has sunk a new shaft and built a new furnace.

Pennsylvania Coal Company—Shaft No. 1 Dunmore.—The second opening of this shaft is not yet completed.

William Connell & Co.—Stafford Shaft has been put in good working order. A new hoisting tower and new engine and boiler houses have been erected. A new nine foot diameter fan has been put in place, and a new railroad track has been laid connecting this shaft with the National breaker, where the coal is prepared for market.

Watkin's Son & Co.—Watkin's Colliery.—This company has erected a new breaker, having a capacity to prepare 500 tons of coal per day of ten hours. Have also erected a boiler house, blacksmith shop, barn and office, etc. Also sunk slope, opened a tunnel, sunk air shaft, and built air stack and furnace for ventilating purposes.

6'x17', equal to 112 square feet. We are, also, driving a rock tunnel from one split to the other in the Clark vein, 330' long.

Providence shaft.—Finished new slope 300' long; sectional area 6'x10', equal to 60 square feet on a dip of 1' in 5'.

Richmond colliery No. 3.—Commenced sinking shaft in October, 1888, through quicksand. Reached rock at a depth of 93'. Shaft opening 12'x24', when finished will be 11'x21'. Expect to mine Diamond, G and all the veins below, on the Pulaski Carter estate. Intend to build breaker with a capacity for preparing for market 1,000 tons of coal per day. Have boiler house built with six (6) cylinder boilers 40'x34" in diameter. Also, set in place one locomotive boiler rated at 100 horse-power. Have nine pumps in position, but are not all in use at the same time.

Rushbrook shaft.—Are driving both sides of shaft, testing the coal. Finished second opening shaft.

S. V. White tunnel.—Constructed one new plane 800' long.

Simpson colliery.—Built one mile of railroad track for mine locomotive between breaker and coal slope. Finished building a new side on breaker. Drilled an 8" bore-hole from surface to bottom of Carbondale vein, in basin which is now being used to pump water through to surface. Are erecting a nest of three new boilers; also, sinking a new slope on dip of vein, which is now down 1,500'. Expect to reach basin in 550' more. Sectional area of slope 7'x14', equal to 98 square feet. The dip is on an angle of 6°.

Clifford Colliery.—Finished one plane in mines.

Erie Colliery.—Graded planes on west side of shaft from Bengough's heading through old chambers to Gilhool's heading.

Shaft No. 2, Forest City.—Finished plane in mines.

Glenwood No. 1 Shaft.—This shaft has been sunk through the "Grassy Island" to what is known as the Carbondale top vein, 60' below the Grassy Island Vein. Permanent mining has not yet commenced.

Keystone Tunnel.—We are improving the breaker by enlarging it, also by putting in place one pair of rolls 26" x 22" and one pair 26" x 12", for the purpose of breaking coal down to small sizes. They will be in place January, 1891.

Elk Creek Mines.—Have sunk a shaft to third vein of coal.

Marshwood Mines.—Finished one inside plane

Ontario Mines.—Finished one inside plane 300' long.

Pancoast Mines.—Finished rock tunnel and proved good coal.

Richmond No. 3.—Shaft down to the "G" vein of coal, they have not commenced opening out the mines yet. A breaker is in course of construction. They have not commenced to open up any of the veins of coal yet.

MT. JESSUP COAL COMPANY, LIMITED,
WINTON, PA., *January 8, 1891.*

Mr. PATRICK BLEWITT, *Inspector of Mines, Scranton, Pa.:*

DEAR SIR: Herewith I hand you our yearly report for 1890.

Regarding explosion of boiler at our fan shaft on night of January 21, 1890, by which Michael J. Murley lost his life, I would respectfully refer you to the evidence at coroner's inquest, of which you doubtless have a copy, and also to the verdict of coroner's jury.

As to our improvements for the year, we have concentrated all of our boilers at the breaker and abandoned the old plant at fan shaft; having put in three (3) new steel boilers 30" diameter by 36' long, and two iron boilers 40" diameter by 35' long, all in first class condition. Steam is conducted through a new line of 5" gas pipe to our big pump, a distance of 2,000', and from thence through four and three inch branch lines to our hoisting engines and pumps and up the fan shaft to fan engine.

The total distance from boiler house to our lowest pump on underground slope is 3,900'. We made connection with the Olyphant Water Company's main by laying 2,500' of 2" gas pipe and have now a good supply of pure water.

We put in a line of perpendicular elevators in our breaker for hoisting screenings and pickings, also put in a set of small "pony" rolls for reducing pickings. Besides which, we have made other minor improvements on breaker.

Yours truly,

ELI T. CONNER, *Superintendent.*

Hillside Coal and Iron Company.

At Glenwood a new air shaft was sunk to the Archbald seam, a distance of 136 feet. Three new planes were also completed, the length of which are 425, 500 and 525 feet respectively.

At Erie a new air shaft was sunk, sectional area of which is 64 square feet, and a depth of 19 feet.

At Keystone a new tunnel was driven from the surface to the Archbald seam, a distance of 175 feet.

At Forest City a new air shaft was sunk, having an area of 144 square feet, and a depth of 180 feet. A new "Broadbent" fan was also erected at this place 25 feet in diameter, driven by an horizontal engine, cylinder 20" × 36" directly connected to the fan shaft.

At Clifton a new plane 300 feet long, with a sectional area of 84 square feet, and a gradient of 15° has been completed.

Murray Carney and Brown.

A new plane 2,500 feet long with a grade of 6 feet to the 100 feet has been completed; they have also enlarged their breaker thereby increasing its capacity from 75 tons to 250 tons per day. Three new boilers have also been placed in position.

Pancoast Coal Company.

This company sunk its main shaft to the bottom split of "G" vein, a distance of 295 feet, area 10' × 34'. It is intended to sink the main shaft to the same seam this year for a second opening.

Northwest Coal Company.

At Simpson slope a new fan 15 feet in diameter was erected to ventilate the coal slope workings, exhausting 75,350 cubic feet of air per minute, with a working speed of 70 revolutions per minute. It is run by an horizontal engine cylinder 12" × 24".

Moosic Mt. Coal Company.

At Marshwood a new slope has been sunk a distance of 850 feet on a gradient of 10½ degrees, with an area of 72 square feet.

Elk Hill Coal and Iron Company.

At **Richmond No. 3** a new air shaft, which was also a second opening, was sunk from the surface to the 14-foot vein, a distance of 155 feet. Sectional area 63 square feet.

This company is also sinking a new shaft and building a breaker in Fell township.

Mt. Jessup Coal Company, Limited.

At this company's colliery a new slope has been sunk through old workings to an abandoned levee opening up work in solid coal and pillars. Eight boilers were replaced by new ones.

Pennsylvania Coal Company.

At Gypsy Grove a new shaft to be used as a second opening was sunk from the surface to the third Dunmore vein a distance of 60 feet; area of shaft, 80 square feet.

Murray Coal Company.

Completed the slope begun in 1892, total length of which is 2,500 feet, with an area of 117 square feet; angle $3\frac{3}{4}$ degrees.

Pancoast Coal Company.

Sunk their hoisting shaft to within a few feet of the Clark vein, making a total depth of 428 feet; size of shaft is 10x34 feet.

They also sunk their man shaft to the bottom split of "G" vein, and intend to continue sinking it until the Clark vein is reached.

Delaware, Lackawanna and Western Railroad Company.

At Storrs, No. 2, a tunnel from the big vein to the Diamond is being driven; length, 444 feet; area, 72 square feet.

At Storrs, No. 3, a new slope 1,450 feet long, having an area of 98 square feet and an angle of 4 degrees was completed and put in operation.

Jones, Simpson & Co. sunk a new air shaft 40 feet deep; area, 100 square feet, which made a much needed improvement in the condition of the ventilation in the drift workings.

A new slope was also sunk by this company a distance of 550 feet on a grade of 8 degrees, with an area of 104 square feet.

The Sterrick Creek Coal Company completed two new planes; length, respectively, 175 and 280 feet, each on a grade of $8\frac{1}{2}$ degrees.

New York and Scranton Coal Company sunk a new air shaft a distance of 250 feet, with an area of 120 square feet.

A new tunnel was also driven by this company from the surface to the Dunmore vein, a distance of 1,000 feet.

The Elk Hill Coal and Iron Company, at **Richmond**, completed their new plant begun in 1892, including a new breaker, a shaft and slope.

The latter is a second opening, having a depth of 350 feet on a grade of 20 degrees; area, 84 square feet. The shaft is 12x26 feet and 220 feet deep. Two good veins of coal are being opened, one at the bottom of the shaft, the other fifteen feet above. A new fan 14 feet in diameter, 6 feet face, run by an horizontal engine, cylinders 12x24 inches, was also erected.

This company is also sinking their **Richmond No. 3 shaft** to the Clark vein from the 14-foot, a distance of 150 feet; size, 11x24 feet.

The Blue Ridge Coal Company completed two new slopes, one 300 feet long, the other 210 feet; the area of each is 75 square feet; grade, 15 and 12 degrees respectively.

The Mt. Jessup Coal Company sunk a short air shaft near the face of the workings; depth, 25 feet; area, 60. A new slope, 538 feet long, on a grade of $8\frac{1}{2}$ degrees, was made through old workings, and another slope, 1,038 feet long, with an area of 60 feet is being continued towards the basin.

A tunnel from the surface to the lower Dunmore vein was driven by the Moosic Coal Company. It is 600 feet long, with an area of 72 square feet, and will be used as a water course.

At Carbondale a new breaker was built by the Boyer Coal Company on the foundations of the old Butler breaker; capacity, 200 tons a day.

A new breaker was also built by the Thomas Waddell Coal Company at Winton, Pa.; capacity, 500 tons a day.

Breakers Burned.

Two breakers were burned to the ground during the year. The Moosic Mount Coal Company's at Marshwood, and the Stroud and Chamberlain at Carbondale, neither of which will be rebuilt.

The Moosic Mount coal will hereafter be prepared for market at the Mt. Jessup breaker in Winton, which is being enlarged for this purpose. The coal formerly prepared by the Stroud and Chamberlain breaker will in the future be prepared for market by the new Boyer breaker.

Pennsylvania Coal Company.

A new shaft 12x24 feet and 55 feet deep was sunk by this company. It is used as an air shaft and also for hoisting coal from the third Dunmore vein, which is five feet thick. An exhaust fan 17½ feet in diameter, with a five-foot face, run by a horizontal engine having 14x26 cylinder has been put in.

A new tunnel was also driven from the surface to the second Dunmore vein which vein is also five feet thick.

Elk Hill Coal and Iron Company.

Completed the sinking of their **Richmond No. 3** shaft from the 14-foot vein to the Clark. Also sunk their second opening from 14-foot to Clark vein, a distance of 160 feet. Dimensions 10x12 feet.

Moosic Mount Coal Company.

A new shaft was sunk by this company from the surface to the Lower Dunmore vein, a distance of 175 feet. Dimensions 14x20½.

The vein here is three feet eight inches thick.

They also drove a tunnel from the surface to the same vein, a distance of 1,000 feet. Dimensions 6x12 feet.

The tunnel will be connected with the shaft workings in course of time. In the meantime a new air shaft has been sunk to ventilate the tunnel workings.

Waddell & Son sunk a new air shaft to the Archbald vein. Depth 98 feet. Area 120 square feet.

Pancoast Coal Company.

This company sunk their main hoisting shaft, also their man shaft from the bottom split of the "14-foot" to the Clark vein, a distance of 160 feet. Dimensions of the former 10x34 feet; of the latter 10x14 feet. They are opening up the Clark vein, which is of excellent quality, and runs from five to five and a half feet thick.

Hillside Coal and Iron Company,
Scranton, Pa., April 10, 1895.

Mr. Edward Roderick,

Inspector of Mines, Scranton, Pa.:

Dear Sir: The following is a statement asked for about the drum and fan, the drawing of which I gave you some time ago:

The drum with fan attached, as shown in adjoining illustration, is for the purpose of handling coal on self-acting planes without the use of a brake, except for the purpose of holding up the trip when it ar-

Two new tunnels have been driven at Coal Brook, one from the top vein to the surface, a distance of one hundred and sixty feet, and one from the third vein to the surface, a distance of one hundred and seventy-five feet.

At Clinton two new slopes have been driven; one is 3,100 feet long, the other 700 feet. The first has an average grade of 8 feet in 100, the other 6 feet in 100.

Richmond No. 3 shaft has been sunk from the Clark to Dunmore Nos. 1 and 2 veins, a distance of 132 feet. Its size is 10x22 feet.

At Richmond No. 4 a new plane 800 feet long has been made.

At Mt. Jessup a tunnel 464 feet long has been completed from the Clark to the No. 3 Dunmore vein.

Near their No. 1 colliery the Pennsylvania Coal Company has erected six Babcock and Wilcox water tube boilers of 900 horse power. The pressure carried per square inch is 110 pounds.

Steam is supplied for No. 1 colliery breaker and shaft, to Gypsy Grove colliery breaker and its two shafts, and have supplanted the 27 cylindrical boilers 36x30 feet formerly used at these places.

The Lackawanna Coal Company has sunk an air shaft, having a sectional area of 120 feet and a dept of 55 feet.

A new air shaft was sunk from the surface to the Dunmore vein by the Johnson Coal Company. Its depth is 310 feet and has 120 feet area.

A tunnel 7x14 feet and 1,300 feet long has been driven from the big vein to the Dunmore.

At Pancoast a new slope 800 feet long has been sunk in Clark vein and another is being sunk in No. 3 vein.

The Dolph Coal Company has sunk two new slopes, one 350 and the other 650 feet deep. One is 6x16 and the other 6x12. They have also made a new plane 500 feet long, and sunk two new air shafts each 62 feet deep.

The Riverside Coal Company has made a new slope 900 feet long.

Many other small air shafts, tunnels, slopes and planes have been made during the year for the purpose of properly ventilating the workings and to keep up the output of coal, but they are not reported.

A FEW REMARKS ON THE STATISTICS FOR FIVE YEARS.

By a retrospective glance at the mining statistics of this district for the five years ending December 31, 1896, we find that there were 30,702,284 tons of coal produced and 29,367,733 tons shipped; 79,645 persons were employed for 939 days, during which time 1,056,055 kegs of powder of 25 pounds each, were consumed.

Of the total number employed 243, or a small fraction more than three-tenths of one per cent. were killed. Of the 243 killed, 154 lost

second opening, which had been but recently completed. As the only other way of escape was cut off by the fire at the head of the main shaft.

The Riverside Coal Company's breaker of 1,000 tons a day capacity was destroyed by fire on May 11, since which time a new one has been erected on the site of the old one.

The Delaware and Hudson Canal Company has built a new breaker of 2,000 tons a day capacity at Olyphant. A new coal washery has also been erected by the same company, and a new air shaft has been sunk for the Morvine and Dickown shafts, and a 20-ton air locomotive has been installed at Leggett's creek.

Compressed air coal drills have been introduced by the Elk Hill Coal and Iron Company at **Richmond No. 3.**

The tail rope system of haulage has been adopted by the Delaware, Lackawanna and Western Railroad Company at Storrs No. 1 with good results.

Many other improvements have been made by other companies for facilitating and increasing the output of coal.

The ventilating facilities are ample throughout the district, and on the whole the air currents are well conducted to the faces of all working places.

Culm is being successfully flushed into the old workings of Grassy Island and Eddy Creek by the Delaware and Hudson Canal Company. Also by the Mt. Jessup Coal Company into their slope workings.

Considerable "pillar robbing" has been done during the year by several companies, but the number of accidents attending this critical work has been remarkably few.

The Russel B., formerly the Old Buffalo mine, was abandoned in August.

The general condition of the collieries is good, and I am pleased to say that the provisions of the mine law are being very generally observed by those in charge of the mines.

The report contains the usual statistical tables, together with a brief description of each accident, but in view of the fact that a monthly narrative report of the daily performance of my duties has been made to the Chief of the Bureau of Mines, containing suggestions and recommendations from time to time as the circumstances required, the report is not as lengthy as heretofore.

Respectfully submitted,

EDWARD RODERICK,

Inspector First Anthracite District.

The annual examination of applicants for mine foreman and assistant mine foreman certificates of qualification, was held at Carbondale on July 12 and 13 by the Board of Examiners, consisting of

At Clinton colliery a new tail rope system of haulage has been introduced 2,500 feet long, which hauls cars from eight different stations and replaces at least eight mules and drivers.

A new slope has been sunk in Clifford or lower vein, and an air shaft 200 feet deep has been sunk.

Delaware, Lackawanna and Western Railroad Company.

At Storrs No. 2 a rock tunnel through "fault," in Big Vein, has been driven. It is $6\frac{1}{2}$ x10 feet, and 435 feet long.

Elk Hill Coal and Iron Company.

At **Richmond No. 3**, main shaft has been sunk to Dunmore No. 3 vein, a distance of fifty feet. The air shaft has been enlarged and a fan erected at head of it, with very good results.

Pancoast Coal Company.

The main shaft is being sunk to lower veins and is now down about 121 feet. Commenced sinking about the middle of June.

Also, drove slope in Clark vein, about 1,600 feet through "fault" to coal, and two rock planes through "fault."

The Temple Iron Company's Improvements.

During the year 1899 the following improvements have been made at the collieries north of Scranton:

At Sterrick Creek colliery there has been erected a 20-foot fan, with 16x26 engine, and an air shaft 12x12 sunk in order to properly ventilate the Dunmore vein. There has been erected a double culm plane 300 feet long and 100 feet high, with a pair of 100 horse-power engines. There has been built a $22\frac{1}{4}$ x22x24 air compressor and 8,000 feet of 8x10-inch cast pipe laid from this air plant to the Dunmore vein workings, where there has been erected a pair of 100 horse-power engines to operate the slope in this vein, and with this air they are also doing the necessary pumping. A compressor house, 40x38, of brick has been built; also, a blacksmith and car shop, 30x60, with a 30x30 addition. A locomotive house, 20x40 has been built and there has been graded and built 5,880 feet of track and switches connecting the colliery with the Nay-Aug, D., L. & W. branch.

Two 225 horse-power Stirling boilers have been erected, with a boiler house 50x42. There have been placed in the breaker 24 jigs, 8 shakers and 8 screens, 2 sets of rolls, 2 sets elevators and 4 sets of conveyors, and an addition has been built to accommodate the machinery from the north and south sides of the breaker, 27x42. A pair

Condition of Collieries

The mines in this district are in a safe condition. As to ventilation and drainage, I report the following:

Scranton Coal Company

Johnson No. 1.—Dunmore vein gives off some gas, and for this reason the ventilation is good. Diamond vein is practically a non-gaseous seam; the ventilation is fair, but was being improved on my last inspection.

Johnson No. 2.—This is a non-gaseous mine. A large portion of it is dependent upon natural ventilation, and for this reason the ventilation is bad for a few days at a time, particularly when the weather changes. The officials have done everything in their power to improve this condition. By placing doors on all chambers they have greatly improved the conditions.

Raymond.—The mining at this colliery consists principally in taking down what is called "top coal" in abandoned chambers, and while it would be impracticable to establish a systematic arrangement of air currents on account of the openness of the workings, the men are well provided with pure air. This is due to the unusual thickness of the vein at this locality, and the arranging of small groups of men at different places throughout the mine.

The haulage and drainage at this colliery are in excellent condition. Much attention is paid to maintaining room along tracks, and keeping the roads surfaced with ashes.

Ontario.—The veins at this colliery are very thin. The ventilation is good. The connecting of Jermyn No. 6 and Klondyke workings, has improved the ventilation, haulage and drainage considerably.

On account of the thinness and irregularity of these veins, it requires tact and good judgment to successfully mine them, and their condition is the best endorsement of the management.

Richmond No. 3.—This colliery has seen a complete reformation during the year. The ventilation has been very much improved, the roads cleaned, with ample room for the handling of cars, and the colliery throughout is in a very satisfactory condition.

Riverside.—Mining in the lower vein at this colliery is not very extensive, but one of the upper veins is being developed.

Richmond No. 4.—Operations at this colliery are not in any way extensive, but the ventilation is good.

Delaware and Hudson Company

Coal Brook Colliery.—On December 1, a mine fire was discovered under the culm bank in the workings of the Coal Brook tunnel that had been abandoned some forty years ago.

with the old drift fire room, and be a considerable saving in fuel with improved service.

At Ontario a slope has been sunk from the tunnel level, to take out the pillars and some solid coal from the Ontario tunnel workings.

A Scranton duplex plunger pump 18x8x18 has been installed in the above slope.

The working of the old Jermyn No. 6 has been connected to the Klondyke working by tunnel, which made it possible to abandon the Jermyn No. 6 shaft, and favored the haulage of these two mines so that coal and water are delivered to one surface opening by gravity. This was a great saving to the colliery; it improved the service and was a good move in mining.

On May 7, the tower and fan house of the Blue Ridge opening were destroyed by fire; the effect on production was only temporary, and the buildings were rebuilt as soon as possible.

At **Richmond No. 3**, a gravity plane 700 feet long, running four cars on each track, was built in the Clark vein, which will deliver coal from a newly acquired tract.

DELAWARE AND HUDSON COMPANY

At Coal Brook colliery, a rope haulage 6,300 feet long, has been installed, delivering coal to surface from Coal Brook tunnel. It is an up to date haulage; great care was exercised in the alignment, and there is ample room along the track everywhere.

An electric plant of 450 Kilowatt capacity has been installed at this same colliery, furnishing light for the Company's Carbondale railroad yard, lighting the coal taken outside, and furnishing power for three fans where it was quite impracticable to use steam as a power.

The engine room is a substantial brick building with a concrete floor. The equipment and building present a substantial appearance.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

At the Storrs colliery, the wooden towers at Shafts Nos. 1, 2 and 3, have been replaced by substantial steel towers.

A rock slope 300 feet long has been sunk, to connect the Big and New County veins in No. 1 shaft.

The 25 pound rail track on nearly all main headings, has been re-laid with heavier rails, using the lighter rails in the chambers where motors with reel attachments haul cars.

In relaying tracks, great care was taken to modify grades and curves, also to provide more room along tracks.

CONDITION OF COLLIERIES

	Ventilation.	Drainage.
Scranton Coal Company.		
Johnson,	Good.	Good.
Raymond,	Good.	Good.
Ontario,	Good.	Good.
Richmond No. 3,	Good.	Good.
Riverside,	Fair.	Fair.
Richmond No. 4,	Fair.	Fair.
Delaware and Hudson Company.		
Coal Brook,	Good.	Good.
Leggitts Creek,	Good.	Fair.
Marvine,	Good.	Good.
Hillside Coal and Iron Company.		
Forest City,	Good.	Good.
Clifford,	Good.	Fair.
Glenwood,	Fair.	Fair.
Delaware, Lackawanna and Western R. R. Company.		
Storrs,	Good.	Good.
Temple Iron Company.		
Lackawanna,	Good.	Fair.
North West,	Fair.	Good.
North End Coal Company.		
North End,	Fair.	Fair.
Morss Hill Coal Company.		
Morss Hill,	Fair.	Fair.

The conditions as to safety at all the collieries are good.

IMPROVEMENTS

SCRANTON COAL COMPANY

At **Richmond No. 3** a new shaft, known as No. 2 shaft, has been sunk from the surface to No. 3 Dunmore vein. It is 12x30 in the clear, with two hoistways and an upcast. The depth from the surface is 519 feet, 70 feet of which, from the surface down through a bed of quicksand and other porous material, is lined with re-inforced concrete. This concrete also forms the foundation for a steel tower, built by the Fort Pitt Bridge Co., and connected with the upcast by a masonry air duct is a thirty foot Guibal fan driven by a 24x48 single engine. The hoisting engines are 24x48, first motion, built by the Finch Mfg. Company, and are housed in a brick building 40x41.

The old steam plant is being replaced by a brick boiler house 36x54, having a steel truss roof covered with corrugated iron. Steam will be furnished by three 200 H. P. Maxim boilers.

The surface landing of the shaft, as well as the foundation of all buildings, have been raised to a point seven feet above the surrounding surface of the ground as a precaution against high water from the river.

As soon as these improvements are completed, probably about the first of April next, the present hoisting shaft will be abandoned for that purpose and used as a second opening and supply shaft. Extensive inside alterations and improvements have been made to meet this change.

IMPROVEMENTS

SCRANTON COAL COMPANY

Johnson—No improvements reported.

Ontario.—The portion of the breaker blown down by the tornado last fall, has been rebuilt and is expected to resume operations about March 12. The Raymond washery was torn down and moved to this colliery and is now being rebuilt. This will necessitate an increase in the power plant, and it is intended to add two boilers to the present plant for this purpose.

Richmond No. 3.—An additional 200 H. P. Maxim boiler has been added to the present plant. The new shaft has been named in honor of General Manager John R. Bryden, and is now known as Bryden Shaft.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs.—Seven hundred feet of the Clark Vein Slope at No. 3 shaft have been graded; average thickness 5 feet. This was done in order to enable them to run the cars to the bottom lift of the slope.

The floors of the boiler house have been concreted; also concrete fronts at their No. 3 shaft. Four new Emery Pickers were installed in the breaker. A scraper line was constructed to convey the culm from the breaker to the washery in order to do away with the handling of cars.

DELAWARE AND HUDSON COMPANY

Eddy Creek.—Grassy Island No. 2 shaft sinking completed to the No. 4 Dunmore vein, a distance of 117 feet. The sinking of No. 4 shaft has been started and is down a distance of 50 feet. This shaft is to be used as a second opening to the No. 2 shaft.

One 78 inch locomotive boiler has been installed at the Grassy Island Washery, also a 10 inch x 14 inch engine and a 600 foot scraper line for feeding bank to washery.

Miles slope extended in rock from the Rock Vein towards the No. 4 Dunmore Vein, a distance of 750 feet. This slope is to be used as a second opening to the Eddy Creek.

A 28 foot Guibal fan has been installed at the Eddy Creek. The shaft has been widened from 10 feet x 24 feet to 12 feet x 33.4 feet from surface to the 14 foot vein.

PENNSYLVANIA COAL COMPANY

No. 1 Colliery.—In 1904 work was commenced on a new brick building 16x36 to contain three rooms; office for the outside foreman, shifting shanty for the fireman and a shifting shanty for the breaker men. This work has been completed.

No. 2 Shaft, Outside.—The following buildings have been erected during the year: a new concrete building 14 feet x 40 feet with three rooms; office for the inside foreman, shifting shanty for the fireman and a shanty for the miners. Two additional locomotive boilers have been installed and a new corrugated iron boiler house 40 feet x 60 feet has been built.

Blue Ridge Tunnel.—Condition as to safety good, drainage and ventilation fair. They are robbing pillars.

Richmond No. 3 Colliery.—Condition as to safety good, drainage fair, ventilation good.

DELAWARE AND HUDSON COMPANY

Olyphant Colliery No. 2 Shaft.—Condition as to safety and drainage good, ventilation generally good.

Grassy Island Slope.—Condition as to safety and drainage good, ventilation good with the exception of the Four Foot vein. This vein is very difficult to ventilate as it is thin and the roof is continually falling in the air courses.

Grassy Island Shaft.—Condition as to safety and drainage good, ventilation fair. There is room for improvement.

Eddy Creek Colliery, Birds Eye Mines.—Condition as to safety, drainage and ventilation good.

No. 4 Drift.—Condition as to safety good, drainage and ventilation fair.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery No. 1 Shaft.—Condition as to safety, drainage and ventilation good.

No. 2 Shaft.—Condition as to safety and drainage good, ventilation fair. There is room for improvement.

PENNSYLVANIA COAL COMPANY

No. 1 Colliery No. 1 Shaft.—Condition as to safety and drainage good, ventilation fair.

No. 2 Shaft.—Condition as to safety and drainage good, ventilation fair.

Gipsy Grove Colliery.—Condition as to safety, drainage and ventilation good. This mine has been very much improved.

STERRICK CREEK COAL COMPANY

Sterrck Creek Colliery.—Condition as to safety, drainage and ventilation good. Six air bridges were built during the year, which improved the ventilation.

LACKAWANNA COAL COMPANY

Lackawanna Colliery.—Condition as to safety, drainage and ventilation good.

DOLPH COAL COMPANY

Dolph Colliery, Hackley Slope.—Condition as to safety, drainage and ventilation good.

Hannah Bell.—Condition as to safety good, drainage and ventilation fair.

MOUNT JESSUP COAL COMPANY

Mount Jessup Colliery, Peck's Shaft.—Condition as to safety good, drainage fair, ventilation good.

plane and branches. A car haul, steam driven, 140 feet long, is in course of construction in the Clark vein for the same purpose. Extended Rock slope No. 14, 300 feet on pitch of 12 degrees, in Dunmore vein, through big fault from top of Eddy Creek anticlinal into Miles basin. An air shaft, 10 by 10 feet, 40 feet deep, and fan drift 75 feet long were completed, connecting with up-cast of Eddy Creek shaft for proposed emergency fan.

Olyphant Shaft.—A second opening and return airway, 7 by 18 feet, was driven from Clark vein to Rock vein, 700 feet on 28 degree pitch. An intake shaft, 12 by 12 feet, to Rock vein, was sunk through 60 feet of wash at face of No. 25 plane near crop.

Bird Eye.—Extended No. 4 slope 150 feet through fall and graded 1,200 feet of slope in Clark vein.

Olyphant Breaker.—Installed a central power plant, comprising one 1,000 K. V. A., 25 cycle alternating generator, directly connected to a Hamilton-Corliss cross compound engine. The voltage is 2,300, and power will be furnished to mine motors in Archbald, Olyphant and Scranton districts. Steam for the plant is provided by two batteries of Sterling boilers, yielding 1,800 H. P. The whole is housed in a brick and steel structure.

Marvine Colliery.—Extended Rock plane 7 by 12 feet, from 14 foot vein to the Diamond vein 1,000 feet on a pitch of 12 degrees to lower coal to 14 Foot landing at shaft. This plane is operated by a 14 by 20 inch Flory engine, located on surface. Extended Rock plane 400 feet on pitch of 12 degrees from No. 4 Dunmore to No. 3 Dunmore vein. Built a new pump room in Clark vein, 17 by 32 by 11 feet, for locating plant to deliver water to 14 Foot vein level.

Legitts Creek Colliery.—Extended Rock plane from Rock to Diamond vein 350 feet on 12 degree pitch for handling coal in latter vein on northwest end of property.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery.—Installed one 18 by 6 foot fan, including engine and fan house. Remodeled scales. Added two 5 by 6 inch plunger pumps with motors, and one haulage electric motor with reel.

Brisbin Colliery.—Installed one 18 by 6 foot ventilating fan, including engine and house. Built brick and concrete oil house. Made second opening shaft from four foot to five foot vein.

Cayuga Colliery.—Installed one 7-ton electric motor with reel in Dunmore No. 2 vein.

SCRANTON COAL COMPANY

Johnson Colliery.—Built a hospital, 12 by 14 feet, equipped with steam heat, electric lights, hot and cold water, cots and First Aid outfit.

Richmond No. 3 Colliery.—Built a hospital, 14 by 15 feet, equipped with steam heat, electric lights, hot and cold water and First Aid outfit.

West Ridge Colliery.—Built a hospital, 10 by 12 feet, equipped with steam heat, hot and cold water and First Aid outfit.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery.—Installed the following: Conveyor for handling rock from breaker; four 1,000 gallon centrifugal pumps, and one track pump; electric hoist at the Clark vein. At No. 2 shaft; one 7-ton electric locomotive with reel attachment; also one 10 by 10 compressor with drills in the Dunmore vein.

SCRANTON COAL COMPANY

Johnson Colliery.—Installed 2 Maxim water tube boilers, normal rated capacity 300 H. P., also 2 improved locomotive type boilers, rated capacity 175 H. P. each.

Richmond No. 3 Colliery.—Installed one 10 by 20 by 36-inch duplex pattern pump, rated capacity 800 gallons per minute.

Erected 2 air-bridges in Clark vein for ventilation purposes. Graded the Clark slope to improve haulage system.

Erected 4 air-bridges in No. 3 Dunmore vein for ventilation. Installed 2 3-stage electrical driven centrifugal pumps with a capacity of 800 gallons per minute.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery.—Completed second openings connecting Nos. 2, 3, and 4 drifts. Installed one 7-ton electric locomotive.

No. 1 Shaft. One 7 by 12 by 63 feet rock tunnel driven from No. 1 Dunmore to No. 3 Dunmore vein. One 7 by 10 by 133 feet rock tunnel driven through fault in Clark vein. Installed one 7-ton electric motor.

No. 2 Shaft. One 7 by 12 by 108 feet tunnel driven from Top Split to Bottom Split 14 foot vein for development. Installed one 7-ton electric motor.

No. 3 Shaft. One 7 by 12 by 132 feet rock tunnel driven from Clark vein to New County vein for development. One 8 by 8 by 42 feet shaft from Clark to New County vein for ventilation. Installed one 7-ton electric motor.

DELAWARE AND HUDSON COMPANY

Olyphant Colliery.—Grassy-Island Shaft. A rock tunnel was driven from New County vein to Clark vein 588 feet long. One rock return tunnel driven from Top Clark to New County vein 99 feet long. Concreted No. 1 shaft 9 feet above surface and 35 feet below surface. Installed electric hoist at No. 15 plane to lower coal from 14 foot and New County veins to Clark vein shaft landing.

Miles slope. A gangway and airway 950 feet long driven up pitch in No. 4 Dunmore vein for ventilation. No. 34 plane 100 feet long driven from Bottom rock to Top rock vein. No. 35 plane 72 feet long driven from Bottom rock to Top rock vein for development.

SCRANTON COAL COMPANY

Johnson Colliery.—Erected a new wash house, and two B. and W. 300 H. P. boilers. Outside. Installed one duplex pump 24 by 10 by 36.

Richmond No. 3 Colliery.—A rock tunnel 7 by 10 feet driven from No. 2 Dunmore vein to No. 1 Dunmore vein for second opening.

SPENCER COAL COMPANY

Spencer Colliery.—The breaker of this operation was destroyed by fire February 3. Erected coal pocket and the coal from the mine is loaded into railroad cars and is taken to the Minooka breaker for preparation.

MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held in Scranton, May 8 and 9. The Board of Examiners was composed of D. T. Williams, Inspector, Scranton; Joseph P. Jennings, Superintendent, Moosic; James W. Reese, Miner, and William J. Jenkins, Miner, Scranton.

The following persons passed a satisfactory examination and were granted certificates: