

each lift. A building thirty feet wide by ninety feet long is to contain the blacksmith, carpenter, and machine shops, and a 9×12 engine will run the shops.

The above, of course, is only a rough outline of this new enterprise, which, before the close of another year, will be fully developed, and will be in full operation.

STORR'S SHAFT.—The Delaware, Lackawanna and Western Railroad Company having broken ground for a shaft at Dickson borough, which is to be ten by forty feet, and about three hundred feet deep to the Big or "G" vein. The company has a large territory to be developed here, which will require other shafts in the near future. The reason given by B. Hughes, Esq., for the large size of the shaft, is an excellent one, and it is recommended to the consideration of others who contemplates sinking. He says: "The reason of its being so long is, I want more area for our upcast. We find, generally, more friction in the upcast alone than in all the workings of the mine"

This company have also extended the Continental shaft and its air-shaft to the Clark vein, a distance of sixty-three feet below the Big or "G" vein. In sinking, another vein was penetrated, but it is not large enough to be workable at this point, but at other points it is workable. The Clark vein here is eleven feet thick, eight feet being clean coal of an excellent quality, better than any of the veins above it that have been developed at this shaft.

Prosecutions for Violation of Law.

There were but two cases prosecuted for violations of law in my district during the year, and both cases were pending at the close of 1870. As I have always stated, this is the most unpleasant duty that devolves upon an inspector, and one that I would be glad to shirk, if I were not bound by a solemn oath to perform it. These cases were very effecting ones, for one of the parties was an unfortunate old gentleman, who has been fearfully burned by an explosion of gas, though that misfortune overtook him through his own heedlessness, to use the mildest term possible. He held the important position of mining boss in the No. 6 shaft, Jenkins township, under the Pennsylvania Coal Company. The charges entered against him were for neglecting to "provide that all doors used in assisting, or in any way affecting the ventilation of the mine, were so hung and adjusted as that they would close of their own accord, and could not stand open," and for neglecting to provide an attendant at a door. Because of this neglect a certain door was left open, and remained open through the night of October 29, 1879, whereby a large quantity of gas accumulated in a heading that the door was put to turn the air into, which was found by the fire boss on making his rounds the next morning. Considerable excitement was caused at the time by finding of the gas there, and because of the door being left open, and search was made for the person who left the door open, and the guilt(?) was attached to a young man named Timothy Ford, who was laboring in one of the cross-headings. Ford was suspended from work as a pun-

work the Rock seam out that was left in the Oxford shaft. The rock seems to be of better quality east of the shaft than on the west.

Central Shaft.

This shaft has been re-timbered, as to new buntons and guides, from bottom to top, and also a new fan put in to re-place the old one.

Oxford Shaft.

Put in new cribbing on top of shaft, and are now in process of sinking from Rock to big and Clark seams of coal about one hundred and sixty feet deeper.

Oxford Air-Shaft.

Has connected with G or big seam workings in Central mines. Put in two new hoisting engines, also a fan engine; also a new fan, twelve feet diameter by three and a half feet face. The intention is to lower the coal from the Diamond and Rock seams to the Big and hoist it up the Central main shaft. The distance to be lowered is one hundred feet. Also put in new cribbing on top of shaft.

Scranton Coal Company's Slope.

This mine has been cleaned and new rails re-laid preparatory to commence to work the Clark seam of coal, are now ready to operate. This slope has been idle for years.

No. 2 Diamond Shaft E or Diamond seam.

Are sinking a new slope from the Diamond to the Rock or F seam. The opening is seven by eleven feet in the clear. More than half the distance is already sunk.

Tripp Slope

Made an extra opening in the West mountain, by driving up the pitch about 40° for ninety feet, then sunk a shaft fifty-seven feet deep. It gives an intake for air in the extreme end of the mine workings, and an opportunity for the men to come out that way, if they feel so disposed. This shaft is one and three fourths miles from the mouth of the slope.

Brisbin Shaft.

A heading has been driven to the outcrop on the West mountain from the level gangway, and they are now grading three gravity planes to let the coal down the steep grades from the West mountain side.

Cayuga Shaft.

This shaft has been overhauled, and new cribbing put in to a depth of about sixty feet from the surface.

Storr's Shaft.

This is a new shaft, located in Dickson City borough. It is about two thousand feet northwest from the Lackawanna river. The sinking is pro-

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gressing slowly. It is not developed enough at present to give it an extended notice here. It will be fully reported next year.

DELAWARE AND HUDSON CANAL COMPANY.

No. 3 Jermyn's Shaft, Green Ridge.

This colliery is operated by the Delaware and Hudson Canal Company and the Delaware, Lackawanna and Western Railroad Company, in partnership. They are now grading a slope in coal inside, which will be eight hundred feet long, when completed, on the northwest side of the shaft, also a new gravitation plane, four hundred feet long, on the east side of the shaft.

Von Storch Slope.

They are erecting another ventilating fan at this colliery in addition to the fan which they have there at present. The new fan is seventeen feet diameter by four feet face. This is to ventilate the fourteen feet and Diamond seams of coal. The old fan, which is twenty feet diameter by five feet face, will be used exclusively for the Clark seam of coal. They have just finished a slope, six hundred feet long, in coal in the Clark seam, on the southeast side of shaft.

Legitt's Creek Shaft.

They have re-opened the Diamond seam of coal, which has been idle for four years. They are now ready for operation.

Marvine Shaft.

They are now building a gravitation plane, six hundred feet long, in the fourteen feet seam of coal, on southeast side of shaft. Also sinking a slope in coal on northwest side of shaft, which will be about twelve hundred feet long when finished. They are also driving for second opening in Diamond seam, by connecting with Diamond seam in Legitt's Creek shaft. The connection is now made.

Olyphant, No. 2.

They have built a new breaker over second opening shaft of this colliery, and call it Eddy Creek breaker. They have cut and graded a new gravitation plane to bring coal to foot of shaft from the northwest side of the property.

Grassy Island Shaft.

They are sinking a new air shaft at this colliery. It is timbered down to the rock, a distance of twenty feet from the surface. The size of shaft opening is eleven by fourteen feet. They are now drilling a bore-hole in the air shaft to let the water down through to the mine workings. They expect to finish bore-hole in a few days. The contract for sinking shaft is already let. The intention is to put up two fans on the same shaft, seventeen feet diameter by four feet face, each. They are to be run by two

Belmont Mines.

There has been a new fan erected here during the year, which gives general satisfaction.

Delaware, Lackawanna and Western Railroad Company's Oxford Shaft.

Sunk main shaft from Rock vein to Clark, a distance of about 165 feet, and sunk a new air-shaft from surface to Clark vein, 354 feet; 10×26 feet for ventilation, and to hoist men and let down material. We will set a fan over this one, and a fan at the old, or main shaft, to ventilate part of it and all of Bellevue slope, so as to leave Bellevue fan for Bellevue shaft alone. The slope at Diamond shaft E vein is completed, and working all right. At the Brisbin shaft we have two of the gravity planes we alluded to last year, all ready and working. The third one is very near ready. At Cayuga shaft we are driving a tunnel, or plane, from G to Diamond vein, to let down the coal to G vein. Expect to be ready in 1883. At Sloan shaft we are resinking from G vein to Clark; are also sinking a second opening from G to Clark—size, 8×10 feet in the clear. We intend to make this to that men can go up or down. **Storrs** shaft being sunk 416 feet, we are now opening gangways in G or big vein 285 feet down. Not developed yet.

Yours, respectfully,

B. HUGHES.

SCRANTON, *March 6, 1883.*

PROVIDENCE, *February 23, 1883.*

PATRICK BLEWITT, Esq.,

Inspector of Coal Mines:

DEAR SIR:—The following are the improvements made in and around the D. & H. C. Co.'s mines for the year ending December 31st, 1882:

Coal Brook Mines.

Have graded a new gravity plane to let coal down on north-east side. Have driven seventy feet of rock tunnel, 7×9 feet, to open No. 3, or four-foot vein from Lackawanna tunnel, in bottom coal on a level with breaker. Have about 600 feet of heading cut in coal.

No 1 Shaft.

Have graded a new gravity plane to let coal down on north-west side.

Powderly Slope.

Commenced pumping out water October 20th; are also building schutes and outside plane.

Jermyn No. 1.

Have finished sinking inside slope to basin. Put up a new 17-foot fan, by four-foot face, on air-shaft that was being sunk last year.

Grassy Island Shaft.

Have sunk fan-shaft, 11×14 feet, 252 feet deep to the Grassy Island vein.

Total number of employés,	21,260
Tons of coal mined for each employé,	401
Total number of persons working in mines,	14,729
Tons of coal mined for each,	579
Total number of miners and laborers,	10,199
Number of tons of coal mined for each,	836
Ratio of employés per life lost,	373
Ratio of employés for each personal injury,	95

Respectfully submitted.

PATRICK BLEWITT,
Inspector of Mines.

Colliery Improvements During 1887.

Delaware, Lackawanna and Western Railroad Company.—This company reports but very few improvements during the year, except driving headings and airways to open up their different mines, so as to mine sufficient coal to supply the market.

Cayuga Shaft.—The company is sinking a new shaft about one mile north-east of the main shaft for a supply shaft and for the purpose of lowering and hoisting persons into and out of the mines.

Sloan Shaft.—Sunk a new slope in coal in mine; and are also building a new plane in mine.

Storr's Shaft.—Are sinking a new shaft for second opening and supply shaft.

Delaware and Hudson Canal Company have not reported any improvements during the year 1887, except the usual advancement of their workings to supply the coal demand and sinking the two shafts at Dixon mines from G or Big to Clark vein of coal.

A. Langdon & Co.—*Belmount Colliery* put in place three new boilers, erected a double elevator and built two new pockets in breaker.

Bridge Coal Company—Bridge Shaft Mines.—This company made second opening in new County vein, and are now finishing new foot for same.

Lackawanna Iron and Coal Company—Capouse Shaft Mines.—This company is driving a tunnel from rock to Diamond vein; size, 14x6 feet.

Dolph Coal Company—Dolph Mine.—This company is driving a rock tunnel.

Hillside Coal and Iron Company—Forest City Mines.—The shaft reported as being sunk 160 feet to bottom vein in last year's report (1886), has reached a depth of 199 feet. Suspension of work for some months accounts for it not being finished. Work is now going rapidly forward to completion.

Number of tons of coal sold for local consumption in 1888,	205, 308.02
Number of tons of coal sold for local consumption in 1889,	197, 805.16
Decrease in local sales in 1889,	<u>7, 502.06</u>

There were 266,631 kegs of powder used in mining 8,621,980.16 tons of coal, which would give $32\frac{1}{2}$ tons of coal mined for each keg of powder used.

There are in this district 2,707 horses and mules and 31 mine locomotives for the transportation of coal in mines, and between mines and breakers. There are 881 steam boilers which supply steam for 392 hoisting, breakers and fan engines, having 21,465 horse-power; also for 253 pumping engines and steam pumps, with a horse-power of 8,621.

There are 67 breakers which have a capacity for preparing, cleaning and shipping 52,685 tons of coal per day for market, there are also three chute buildings for cleaning and dividing coal into various sizes and also for shipping it.

Respectfully submitted.

PATRICK BLEWITT,
Inspector of Mines.

COLLIERY IMPROVEMENTS FOR YEAR 1889.

Delaware, Lackawanna and Western Railroad Company.

Brisbin shaft.—Finished a new plane in mines 790' long; sectional area 7'x15', equal to 105 square feet.

Central shaft.—New shaft was sunk for second opening from Fourteen Foot to Clark vein, size of opening 10'x28' and 84' deep.

Holden shaft.—Finished a new plane 414' long on a grade of 1 in 3; sectional area 7'x16', equal to 112 square feet.

Hyde Park shaft.—New rock tunnel driven from 14' to new county vein 69' long; sectional area equal 7'x11' or 77 square feet.

Pyme shaft.—New plane finished, 250' long; sectional area 7'x14', equal 98 square feet and on a grade of $7\frac{1}{2}^{\circ}$.

Sloan shaft.—New plane finished, 600' long; sectional area 7'x14', equal 98 square feet.

Storrs.—The Storrs colliery with a capacity of from 1,200 to 1,500 tons per day was completed in 1889. It is one of the most thoroughly equipped breakers in this part of the anthracite region, having all the modern improvements for the preparation, separation and cleaning of coal.

Depth of main shaft to new county vein 370', size of shaft 10x40. Pair of first-motion hoisting engines 24"x60." Open fan for ventilation 16' diameter, 4½ blades. Eight feet diameter intake, driven by a 20"x36" engine, second-motion belt connection.

The breaker being 200' from main shaft, the loaded and empty mine cars are handled between shaft and breaker by a locomotive. The cars are hoisted at the breaker by a pair of second-motion engines 16"x36" up a tower 85' to dump chute. The rolls, screens, etc., in breaker are driven by a 16"x42" engine, wire rope connection with main driving shaft. Steam is furnished for all the above engines by a battery of 12 cylinder boilers, 34" diameter, 40' long.

The second opening shaft about 900' from breaker. Size 35'x10' and 302' deep to Big vein, is operated by a pair of first-motion engines 24'x60' and has an open fan for ventilation 16' diameter, 6' wide blades, 12' diameter intake, driven by a 20"x36" engine second-motion, belt connection. The coal for this shaft is handled between breaker and shaft by locomotive, same as between main shaft and breaker. Steam is furnished to these engines by a battery of three tubular boilers. The water accumulating in the mines is taken care of by Knowles' piston and plunger pumps.

Both main shaft and second opening have walls of concrete 3' in thickness from surface to rock, a depth of about 40'.

Both the Big vein and New County vein are being opened up so that in the course of the coming year the breaker can be worked to its full capacity.

Water for steam purposes is supplied by the Providence Water Company, and stored at the mines in a brick reservoir 45' diameter and 9' deep.

DELAWARE AND HUDSON CANAL COMPANY.

Clinton colliery.—Consists of a slope which is now being sunk, and two tunnels which are already opened. The slope is sunk 600' on an angle of 6° at a distance of 500', the first lift is turned off and connections made with the fan tunnel for the purpose of ventilation. It is expected that on or about the first day of June there will be sufficient coal opened to commence mining operations.

The coal from these openings will be prepared for market in the new breaker just completed, it is situated in Clinton township, Wayne county, on the line of the Jefferson branch of the Erie railway, at a distance of one thousand feet from the head of the slope. The superstructure of the breaker was commenced in the month of June, 1889. It has a capacity of 1,000 tons of coal per day, and is constructed on the most modern plans, containing all the latest improvements which are so essential to the preparation of coal, together with the necessary machinery for transporting the coal from the mouth of slope to the dump

There are also 75 fans and 14 furnaces for the purpose of ventilation. There are four mines where they are drawing back pillars, that are not ventilated mechanically.

Respectfully submitted.

PATRICK BLEWITT,
Inspector of Mines.

COLLIERY IMPROVEMENTS FOR YEAR 1892.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.

Hyde Park Shaft.—Sunk an air shaft from Big vein to New County vein $6' \times 10' = 60'$ and 28' deep; also sunk an air shaft from New County to Clark vein $6' \times 10' = 60'$ and 78' deep, and drove a tunnel from Big to New County vein $7' \times 11'$ and 146' in length.

Tripp Shaft.—Extended slope towards the river 700' in length.

Dodge.—Opened from New County from Big vein.

Brisbin Shaft.—Drove new plane up the west mountain in Clark vein 700' long.

Storrs No. 1 Shaft.—Driving a slope south; also opened a drift in the Richmond vein and put up a new fan, but they will not get much coal as it is too near the outcrop; also sunk No. 3 Storr's, formerly called Cayuga No. 2, from G or Big 155' deep to the Clark vein, and they are opening in the Clark and Diamond veins.

Pyne Shaft.—Opened a new plane in the New County vein 530' long.

DELAWARE AND HUDSON CANAL COMPANY.

Leggett's Creek Shaft.—Are now working coal in Clark vein.

Olyphant No. 2 Shaft.—Finished a new lowering plane in 14' vein.

Jermyn No. 1 Shaft.—Drove a new second opening from daylight and connected inside with both veins.

PENNSYLVANIA COAL COMPANY, DUNMORE, PA., 1891.

Mr. PATRICK BLEWITT,

Mine Inspector of Second Anthracite District:

We have during the year started a slope on a grade of 7° , to open up what is known as the Sawyer vein. Mouth of slope situated N. 74° E. and 235' from east corner of No. 1 breaker boiler house and 450' north of Old Smith tunnel. Course of slope N. 79° W. We have driven on above grade and course 175'. Uncovered the coal at a distance of 137' from mouth of slope. When finished it will be from 900' to 1,200' long.

New York and Scranton Coal Company.

Sunk the Sturges shaft from Clark vein to Dunmore vein, a distance of 86 feet. Sectional area 319 square feet. An air shaft was also sunk from the surface to the Dunmore vein, a distance of 180 feet. Size 11'×12'.

Delaware, Lackawanna and Western Railroad Company.

At **Storrs** No. 1 a new inside slope was sunk a distance of 550 feet on a grade of 13½ inches in ten feet; sectional area 66 square feet. A tunnel was also driven from the Diamond seam to the upper split of "G" vein; length, 484 feet; area, 72 feet.

At **Storrs** No. 3 a new slope, which is not yet completed, has been sunk a distance of 1,327 feet on a grade of 4 degrees. A new plane, 200 feet long, on a grade of 2" in 10', has also been made.

Blue Ridge Coal Company.

A new air shaft was sunk by the company a distance of 67 feet; sectional area, 120 square feet. This also served the purpose of a second opening.

Sterrick Creek Coal Company.

This company has sunk its No. 1 shaft from the Grassy Island vein to the Clark vein, a distance of 169 feet, and has increased its size from 10'×22' to 12'×28'.

The breaker has been changed over and enlarged to meet the requirements of hoisting by shaft instead of by plane as heretofore. A new Guibal fan, 14"×54", run by belts by a 14"×25" engine, has already been erected.

A new boiler house has been erected, and 9 new steel boilers, 40"×34", have been placed in position.

The annual examination of persons desiring to qualify for assistant mine foremen was held in this district at Olyphant on April 9.

The examiners were Edward Roderick, mine Inspector, H. P. Patton, superintendent, James E. Morrison and Vaughan Richards, miners. The following are the names of those who were recommended to receive certificates of qualification:

John H. Bexon,	Scranton.
John M. Killaway,	Scranton.
Joseph Duacle,	Scranton.
John Reese,	Scranton.
T. E. Hodgson,	Scranton.
Robert S. Proudlock,	Scranton.
William Jenkins,	Scranton.
James Eckersly,	Scranton.
Thomas H. Powell,	Scranton.

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.

At the Marvine the Clark vein which is five feet 6 inches thick and of very good quality was opened up. The second opening slope which was begun in 1893 was completed from the 14-foot vein to the surface, a distance of 384 feet.

It has an area of 98 square feet and a grade of "one in four." It is also used for a down cast for air.

At the Grassy Island mine a new plane 400 feet long on a grade of 12 degrees was completed.

A new tunnel was driven from the surface to the number 2 vein at White Oak. It is 507 feet long.

The vein here is 3 feet 6 inches thick.

A new fan is also in course of erection to ventilate all the White Oak workings.

At Coal Brook, near the face of the present workings, a new shaft was sunk a distance of 87 feet, for the purpose of ventilation.

A new tunnel was also driven at this mine from the surface to the bottom coal, cutting a five-foot vein at a distance of 100 feet.

Lackawanna Coal Company.

A tunnel 550 long having a sectional area of 84 square feet was driven by this company from the surface to the lower Dunmore vein, which is four and one-half feet thick.

A shaft for the purpose of ventilation was also sunk from the surface to this vein, a distance of 190 feet.

Delaware, Lackawanna and Western Railroad Company.

At **Storr's** mine, a tunnel 6x12 and 750 feet long was driven from the "big" vein to the Diamond.

A new plane 450 feet long on a grade of 11 degrees was also made.

At **Storrs** No. 3 two new planes were made, one 450, the other 500 feet long.

John Jermyn.

At Jermyn No. 3 a tunnel is being driven north across the measure. It is now 600 feet long and is expected to go 900 feet more to cut the lower Dunmore vein.

The coal from this new opening will be brought to the surface through the slope.

A shaft through which the tunnel workings will be ventilated has been sunk to the vein, a distance of 120 feet.

The vein at this point is reported seven feet thick and of good quality.

A new plane 450 feet long has also been made in this mine. It has a pitch of 12 degrees.

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

At their Ontario Colliery the Blue Ridge shaft has been sunk from the Clark to the Dunmore vein, a distance of 90 feet, cutting 4 feet of very fine coal.

At Raymond Colliery, Archbald, a second shaft has been sunk to the Rider or New County vein, and equipped with a 22 horse power gasoline engine, driving a ten-foot fan.

Delaware, Lackawanna and Western Railroad Company

Storrs Mines.—An electric motor system has been installed. Four motors at Storrs No. 1. Three motors at Storrs No. 2. Two motors at Storrs No. 3.

Also two generators to furnish power for Storrs Nos. 1 and 2, and one generator at Storrs No. 3.

A washery annex, with a capacity of 500 tons daily.

Also three steel towers, one each at Storrs Nos. 1, 2 and 3.

Mine Foremen's Examinations

The annual mine foremen and assistant mine foremen's examinations were held at Carbondale, October 8 and 9. Thirty-seven persons were recommended for mine foremen's certificates, and 24 for assistant mine foremen's certificates.

Mine Foremen

George Smith, Wm. E. Lewis, Aneirin L. Morgan, Joseph A. Scharar, Wm. Pugh, George Imes, Thomas Lewis, David J. Llewellyn, Evan H. Evans, David G. Thomas, Edward Lewis, John Sirwatka, Theobald Field, Gomer Parry, James Jones, Benjamin F. Bowen, David S. Jones, Patrick Parks, Solomon Jones, Patrick J. O'Hara, Walter H. Vizeard, John Morgan, John Moore, Patk. B. Gilmartin, John H. Bexon, David A. Beynon, Thomas C. Harvey, Ivor E. Davies, Patk. J. McAndrew, George E. Maxey, Charles Richards, John J. Renshaw, Joseph Vickers, Arthur C. LaMonte, Thomas Haddock, George C. Knight, Thomas Sullivan.

Assistant Mine Foremen

William D. Johns, George Evans, John T. Watkins, David Parry, Charles J. Arnold, Phillip W. Foster, John V. Fadden, Thomas Woods, Robert Reid, Wm. Rooke, Edward Reid, Thomas Robinson, Wm. P. Kelly, John Elderkin, Joseph Rafferty, David J. Davies, Wm. I. Richards, Thomas Taylor, Wm. J. Williams, Wm. Miles, John F. Jones, Jacob Evans, William A. Stephens, Wm. J. Davies.

From indications it must have been burning some time, but was not discovered until snow was seen to melt on the surface over the affected territory, when an examination inside revealed the presence of the fire.

Operations were commenced to extinguish it, and a short slope was sunk from the surface to a point near the fire, which opening was to be used as a base of operations to fight the fire.

In the meanwhile work was in progress conducting an air current to the fire, and when the ventilation was within a short distance of the fire, it moved a quantity of after-damp that it was thought would get to the Coal Brook fan, but instead went to the live workings and in to the men. Some consternation followed, and had it not been that the workings were well ventilated, serious consequences might have followed.

Fuller examinations were made, which showed that the maps made some forty years ago, were very incomplete, and were not to be relied on. The conditions were made more complicated by the fact that another vein only four feet above had been partially mined out; whereupon it was decided to make an accurate survey, so that the true conditions might be known.

At first it was decided to get into the upper vein, and allow the water to play on the fire, but when an idea of the extensiveness of the fire was formed, this plan was abandoned. The idea of flooding was discussed, but on examination it was found that on account of the caved condition of the workings, this would not be practicable.

It was then decided to mine around the base of the fire, and to fill this place with some non-conducting material.

A small fan was installed at one of the surface openings, so that it might ventilate the fire affected territory, and also protect the men from any danger that might arise. They are still fighting this fire.

The ventilation and drainage at this colliery are in good condition; five separate fans are provided, and furnish ample ventilation for these extensive workings, and the haulage is also in good condition.

At Marvine and Legitt's Creek, the ventilation is in good condition. The returns at these mines receive a great deal of attention. Both of these mines give off considerable gas, and it is absolutely necessary to provide the best of ventilation.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery.—This is a very extensive colliery, being one of the greatest producers in the region, and throughout is in good

condition; while great attention is paid to production, equal attention is given to ventilation, and no expense or labor is spared in providing adequate ventilation and a healthy atmosphere for the employes.

On February 6, an explosion of fire-damp caused a mine fire in the Diamond vein workings of No 1 Shaft. Evan Gabriel, the Fire Boss, had noticed a squeeze in this vein, and held the men at the Fire Boss station until he made the second examination. On the second examination he invited William Jones, James and Edgar Weber and Albert Simms, to accompany him, all using naked lights. They walked up the rock plane, and had proceeded a short distance inside of a door when an explosion occurred, killing Gabriel, and injuring Jones so that he died in a few days.

The explosion set fire to the timbers, but it was impossible to reach it on account of the after-damp. They immediately set to work to conduct the air to the fire, and at the same time preparations were made to get a supply of hose and water.

The first day of the fire was extremely dangerous, as the true condition of the Big vein was not known, and also the danger of an accumulation of a large body of gas coming back to the fire and causing a second explosion.

Qualified men were sent in different sections, to examine and report conditions, when it was found to be safe to proceed and extinguish the fire which proved to be very extensive, but which was put out without any serious accident, owing largely to the skilful manner in which the work was conducted.

HILLSIDE COAL AND IRON COMPANY

Forest City Colliery.—The ventilation in the solid workings of this colliery is good, and has been much improved recently by placing doors in the chambers.

Robbing of pillars is an important part of the work at this colliery, and in some places it is decidedly difficult to maintain ventilation such as there is provided in the solid workings, but it is the best that can be expected.

The success attending the robbing of pillars at this mine deserves more than passing notice, and for this reason, a plan of a certain portion of the workings and also showing their method of working them, is attached hereto.

Ninety-eight per cent. of the coal is taken out, and the output from one of the workings is wholly dependent upon robbing.

No delays are occasioned by caves, turning the road, building cogs, moving gobs, and several other delays that occur when robbing a territory of workings that have been unsystematically mined; the output at this place goes right ahead the same as though working in the solid.

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.

DELAWARE AND HUDSON COMPANY

Coal Brook Colliery.—One 13-ton and three 4½-ton electric motors have been installed at the Wilson Creek opening. Also one 17 foot and one 20 foot fans to ventilate the Grassy and Top Coal workings, the electric power being supplied from the power plant at the breaker.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.

Storrs Colliery.—A nest of eight boilers with a total horse power of 2400. Also one locomotive boiler at No. 3 plant rated at 125 horse power. Also No. 1 shaft has been sunk from the Big Vein to the Dunmore a distance of 330 feet.

TEMPLE IRON COMPANY

Lackawanna Colliery.—The 12x30 shaft commenced in 1903 has been completed; it was sunk from the surface to the Dunmore vein a distance of 580 feet, and the veins are now being opened out.

The Lillibridge shaft, which was sunk from the surface to the Grassy vein, has been moiled out where it was too small, and is now being sunk from the Grassy to the Dunmore vein; it is 10x12 feet, and large enough for one cage and counter balance.

Permanent head frames have been erected over each shaft, and a brick engine house 38x60 feet built to accommodate the engines of both shafts.

A pair of 26x48 foot hoisting engines have been ordered from the Exeter Machine Works, and are now about completed.

An 8x20 foot fan, driven by an 18x30 inch engine has been erected at the head of of the main shaft to ventilate the workings of the Dunmore vein.

The tracks have been laid between the breaker and the shaft, also the branches and connections with the new shaft.

All of these improvements are for the purpose of developing a tract of coal that it was impracticable to take through the present openings.

The 250 H. P. Maxim boilers have been erected at the breaker in connection with the present plant, and an 8 inch steam line has been laid between the boiler plant and the new shaft.

Mine Foremen's Examinations.

During the year certificates of qualification were granted as follows:

Mine Foremen

Alfred Baileys, David Parry, Fred K. Derby, John A. Robinson, Thomas Muldowny, Joseph W. Wilce, James W. Nicholls, George S. Cooper, Richard Walsh, David B. Thomas, David M. Williams Thomas Butler.

Assistant Mine Foremen

Patrick McNulty, David Morris, Craddoc Morris, James Watson, David P. Thomas, Evan B. Williams, William T. Pearce, Thomas R. Jones, James Cook, Stephen C. Middleton, Michael Kane, John Davison, James B. Loftus, Martin J. McGowan, William S. Davis, William F. McCrone.

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

Sterrick 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.

MOOSIC MOUNTAIN COAL COMPANY

Marshwood Drift.—Condition as to safety good, drainage poor, but it is being improved. Ventilation fair.

BLAKELY COAL COMPANY

Blakely.—Condition as to safety, drainage and ventilation good.

MOTT HAVEN COAL COMPANY

Mott Haven.—Condition as to safety, drainage and ventilation good.

IMPROVEMENTS

SCRANTON COAL COMPANY

Johnson.—Man shaft tower rebuilt.

Ontario.—Three new locomotive type boilers installed. New washery built.

Bryden Shaft.—Fourteen foot fan constructed in brick and concrete.

DELAWARE AND HUDSON COMPANY

Olyphant.—No. 16 Rock Plane driven from Diamond to Four Foot, a distance of 103 feet.

No. 18 Rock Plane driven 475 feet through fault in Diamond vein.

No. 10 Rock Slope (Miles) driven 842 feet from Rock to No. 4 Dunmore vein.

Grading 400 feet of No. 3 Tunnel from Rock to Fourteen Foot vein.

No. 9 Rock Plane driven 108 feet from Fourteen Foot toward Rock vein.

Grassy Island.—At Grassy No. 1 Rock Tunnel from New County to Fourteen Foot vein, driven 210 feet for second opening.

Rock Plane from Four Foot to No. 2 vein driven 200 feet.

Shaft from surface to No. 2 vein sunk 36 feet for second opening.

No. 4 Dunmore vein opened in Grassy No. 2 Shaft, 250 feet on east side and 100 feet on west side, and Clark vein opened 75 feet on east side.

Grassy Island No. 4 shaft sinking down a distance of 611 feet, not completed.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs No. 3.—A new ventilating fan has been placed and is in operation at Storrs No. 3 steel casting and brick building.

PENNSYLVANIA COAL COMPANY

No. 1 Colliery Outside.—A brick building 18 feet x 18 feet to be used as an electric light plant, containing one 8 x 10, 40 H. P. engine, 100 ampere, continuous current 250 volts. Also one brick building 24 feet x 38 feet, with an annex 9 feet x 23 feet. This building contains one pair 12 x 24 hoisting engines to operate two inside slopes in No. 1 Shaft, one in the third Dunmore vein and one in the second Dunmore vein, which is being driven.

Rock plane 300 feet from Four Foot to No. 2 vein.

Eddy Creek Colliery.—Tunnel, 500 feet from Diamond to No. 2 vein was completed.

In the Miles Slope, a combined pipe and traveling shaft was sunk 45 feet from surface to Rock vein.

Birds Eye Drifts.—A 12-inch water hole and an 8-inch cable bore hole were drilled 130 feet, and an electric pump installed.

Legitts Creek Colliery.—A new sump completed 600 feet in Four Foot vein; foot of shaft rebuilt in No. 3 Dunmore vein; pumping plant completed in Clark vein. Began grading and driving tunnel from Four Foot vein, for the development of Five Foot vein, north of Legitts Creek fault.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery.—Installed a Duplex pump, capacity 3,500 gallons; also a 12-inch column line from pump to surface.

A rock slope, 7x12 feet, driven 700 feet, from Clark vein, is now being completed to No. 2 Dunmore vein.

A tunnel, 7x12 feet, driven 400 feet but not yet completed, through "fault" on the east side of Storrs No. 1 Shaft. Considerable repairs were also made to the breaker.

SCRANTON COAL COMPANY

On the 15th of June a new breaker commenced operations at Johnson Colliery. This was to replace the old breaker, which was considered beyond repair.

MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as Mine Foremen and Assistant Mine Foremen was held in the City Hall, Scranton, June 29 and 30. The Board of Examiners was composed of the following persons: L. M. Evans, Mine Inspector, Scranton; Frank G. Wolfe, Mining Engineer, Scranton; David R. Evans, Miner, Olyphant; William F. Malloy, Miner, Carbondale.

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

Mine Foremen

Edward R. Edwards, Robert L. Taylor, Thomas D. Thomas, John J. Barrett, John Johns, Nathan Dodgson, Hugh Archbald, Thomas J. Kennedy, George Watkins, Joseph Dodgson, John S. Thomas, Patrick A. Walsh, David J. Davies, Sydney Owens, William J. Gilroy, James J. Deeble, David J. Thomas, Richard Bowen, David Bowen, Thomas M. Owens, John Brooks, John Murrin, Frank Murrin.

Assistant Mine Foremen

Richard T. Williams, Frank B. Newlands, John J. Thomas, Frank Bennie, Michael J. Collican, Roy C. Craig, E. W. Searing, Thomas S. Williams, Richard Evans, Jr., Frederick Goyne, Charles F. Beecham, Samuel R. Nichols, Thomas Griffiths, William J. Myrick, Lewis A. Jones, John Richards, John Metters, William J. Evans, John J. Griffiths, Jerry F. Stantor

CONDITION OF COLLIERIES

DELAWARE AND HUDSON COMPANY AND HUDSON COAL COMPANY

Olyphant.—Safety, ventilation and drainage good.
 Eddy Creek.—Safety, ventilation and drainage good.
 Legitts Creek.—Safety good; ventilation and drainage fair.
 Marvine.—Safety, ventilation and drainage good.

SCRANTON COAL COMPANY

Johnson.—Safety, ventilation and drainage good.
 Ontario.—Safety, ventilation and drainage good.
 Richmond No. 3.—Safety, ventilation and drainage good.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs.—Safety, ventilation and drainage good.

LACKAWANNA COAL COMPANY, LIMITED

Lackawanna.—Safety, ventilation and drainage good.

MOUNT JESSUP COAL COMPANY, LIMITED

Mount Jessup.—Safety, ventilation and drainage good.

DOLPH COAL COMPANY, LIMITED

Dolph.—Safety, ventilation and drainage good.

MOOSIC MOUNTAIN COAL COMPANY

Marshwood.—Safety good; ventilation and drainage fair.

STERRICK CREEK COAL COMPANY

Sterrick Creek.—Safety, ventilation and drainage good.

IMPROVEMENTS

SCRANTON COAL COMPANY

Johnson Colliery.—The Man shaft tower at No. 2 shaft has been rebuilt; also the approach to the fan leading from this shaft. Installed two 60-inch locomotive boilers; also constructed an inclined fuel conveyor from the new breaker to the boiler room, a distance of 450 feet.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery.—One new brick locomotive house. One brick fire pump house.

Storrs No. 1 Shaft.—Made rock tunnel from Clark to Clark through fault on east side of Storrs No. 1 shaft, size 7 by 12 by 600 feet.

Storrs No. 3 Shaft.—Made second opening, 45 degree pitch, from Dunmore No. 1 to Clark vein, size 7 by 12 by 100 feet.

Grassy Island No. 2 Shaft.—Completed grading motor road about 3,000 feet toward No. 1 shaft in Dunmore vein.

Installed 4 air motors, 2 in Clark vein and 2 in Dunmore vein, for haulage.

Completed 12 inch reinforced concrete partition wall between intake and return compartments of No. 4 shaft, about 760 feet.

Bored 8 inch hole to flush ashes from boiler house directly into Rock and 14 Foot veins.

Installed new 22-36 by 25-16.5 by 12.5-7.5 by 42 inch stroke Laidlaw-Dunn-Gordon four-stage air compressor for use in motor haulage.

Miles Slope.—Replaced 150 feet of timbering with concrete and I beams, at mouth of main slope, under O. and W. Railroad.

Eddy Creek Colliery.—Placed 12 inch reinforced concrete partition wall between intake and return compartments of shaft, about 690 feet.

Completed rock plane for return of Clark vein.

Olyphant Shaft.—Completed rock plane 200 feet. Four Foot to No. 2 vein east of plane to fault.

Completed No. 12 rock slope, Rock vein to Clark vein 800 feet, cutting New County vein and 14 Foot vein.

Installed 16-25 by 25-16 by 24 inch two-stage Laidlaw-Dunn-Gordon air compressor for general use, pumping, haulage and rock-cutting.

Installed 24 by 24 first motion winding engine on surface in Smoke-town to operate No. 12 rock slope.

Birdeye.—Completed No. 7 rock tunnel, 200 feet from surface to bottom split 14 Foot vein.

Installed 5 by 4 Buffalo fan, and fan house, to ventilate bottom split of 14 Foot workings.

Drove rock tunnel 225 feet from Clark vein to New County vein off No. 3 slope and also rock return from same 75 feet.

Legitts Creek Colliery.—Rock plane, 12,300 feet long from Dunmore No. 3 to Dunmore No. 2 vein, for the purpose of opening Dunmore No. 2 vein.

Headings Nos. 42 and 39 to Rock vein graded to foot of No. 13 plane, for transportation.

Gangway from landing in Clark vein to pumping plant was bricked and I beams set. The same improvement was also begun in pipe-way from No. 2 pump.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery.—Installed fan engine; hoist, motor, etc., at Storrs No. 3 shaft, Clark vein.

Remodeling Jeffrey locomotives. New waterway, West slope, No. 1 shaft. New plane in Fourteen Foot vein, No. 2 shaft.

Throughout the district there has been a decided improvement in the equipment. Fireproof barns have been erected at the various collieries.

MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held in City Hall, Scranton, June 5 and 6. The Board of Examiners was composed

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.

CONDITION OF COLLIERIES

DELAWARE AND HUDSON COMPANY

Eddy Creek and Marvine Collieries.—Ventilation, roads, drainage and condition as to safety, good.

Von Storch and Legitts Collieries.—Ventilation, roads and drainage, fair. Condition as to safety, good.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs and Brisbin Collieries.—Ventilation, roads, drainage and condition as to safety, good.

Cayuga Colliery.—Ventilation and condition as to safety, good. Roads and drainage, fair.

SCRANTON COAL COMPANY

Johnson and Richmond No. 3 Collieries.—Ventilation, roads, drainage and condition as to safety, good.

West Ridge Colliery.—Ventilation, roads and drainage, fair. Condition as to safety, good.

BULLS HEAD COAL COMPANY

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

CLEARVIEW COAL COMPANY

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

IMPROVEMENTS

DELAWARE AND HUDSON COMPANY

Eddy Creek Colliery.—Completed the rock slope through the fault and started tunnel through Smoketown, Diamond vein. Installed a Goodman mining machine in the Dunmore vein. Drove rock slope to Rock and 14 foot veins in Birdseye drift.

Marvine Colliery.—The mouth of No. 1 rock slope was concreted. Rock vein was opened from No. 1 slope and also from No. 9 rock plane.

Von Storch Colliery.—A rock plane 400 feet long was driven from the Clark to the New County vein.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery.—Built a fireproof machine shop. A bore hole was made for suspending a cable at No. 3 shaft. Built a new washery. A tunnel was driven from top to bottom split of 14 foot vein, at No. 2 shaft. New transmission line from Hampton power plant. One shortwall coal-cutting machine was installed.

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:

made to the electric sub-station in the Clark vein, the room being arched so as to provide more space. The drainage road that is being driven towards Underwood Colliery was driven 1,221 feet during the year.

Underwood Colliery.—Office building was erected on the surface for the use of the superintendent, outside foreman and colliery clerks. Two 6-inch 1,200-gallon capacity centrifugal pumps were installed to deliver water to the breaker, to replace two 8-inch 700-gallon pumps. Rock tunnel 300 feet long was driven to make car haul to run cars back to tunnel level at foot of No. 1 shaft. New air bridges were built across slopes in the New County and Clark veins, making each lift a separate split of air. Clark vein slope was graded from 4th to 6th lift through basin. Mine foreman's office was built at Clark vein. Hospital was built at Pittston and Rock veins at foot of No. 3 shaft. One Scranton centrifugal pump was installed at lower end of property to discharge water to the surface.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery: No. 2 Shaft.—Rock tunnel 7 by 12 by 120 feet long was driven from Top Split to Bottom Split of the Fourteen Foot vein for development, and rock tunnel 7 by 12 by 110 feet long was driven from Top Split of Fourteen Foot to Rock vein. Installed one 9 by 12 Ingersoll-Rand portable air compressor for general rock work, and one 7½-ton General Electric locomotive.

No. 3 Shaft.—Rock tunnel 7 by 12 by 110 feet long was driven from Clark to New County vein for development. Installed two 7½-ton General Electric locomotives for transportation.

No. 3 Drift.—Installed one 7½-ton General Electric locomotive for transportation.

QUINN COAL COMPANY

Quinn No. 6 Colliery.—A new coal breaker was erected, with a capacity of 300 tons per day. This breaker is provided with all necessary modern equipment, having an electrical hoist and patent roller pickers, also facilities for unloading coal from railroad cars. A new 1,800-foot haulage road was made from the head of the slope to the new breaker. The old breaker was abandoned August 1.

SPENCER COAL COMPANY

Spencer Colliery.—A new coal breaker was erected, with a capacity of 400 tons per day, to replace the one destroyed February 3, 1917. New concrete blacksmith, carpenter and machinist shop was erected. New concrete engine room was made at No. 1 Shaft to replace the wooden one.

MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held in Scranton, April 23 and 24. The Board of Examiners was composed of D. T. Williams, Mine Inspector, Scranton; Joseph P. Jennings, Superintendent, Moosic; James W. Reese and William J. Jenkins, Miners, Scranton.