

veins; the shaft opening is 10 by 36 feet; the Delaware, Lackawanna and Western railroad company are sinking it, under the supervision of Benjamin Hughes, general mine superintendent; they employ about 18 sinkers, 6 head and plate men, 2 company men and 6 mechanics; in all 32 men.

CAYUGA COLLIERY.

This shaft is located in the city of Scranton, and lying one-half of a mile north-west of the Lackawanna river; it is 368 feet to the G or 14-foot vein: shaft opening is 32½ feet long and 10 feet wide; it is operated by the Delaware, Lackawanna and Western railroad company. William R. Storrs is general coal agent, E. R. Walter is general outside superintendent, B. Hughes is general inside foreman, Thomas Watkins is mining boss and J. C. Bowman is outside foreman.

Description.—They have a breaker connected with this mine, attached to shaft tower; they mine, ship and prepare about 450 tons of coal per day; they employ 52 miners, 52 laborers, 19 drivers, 3 door-boys and 14 company men in the mine; 49 slate pickers, 9 head and plate men, 2 drivers, 18 company men, 8 mechanics and 2 bosses outside; in all 228 men and boys; they are working the G or Big vein, average thickness 9 feet; they work headings 12, air-ways 15 and chambers 27 feet wide; they leave pillars from 6 to 7 yards wide to sustain the roof; they leave cross-entrances 20 yards apart for the purpose of ventilation; the roof is slate; the mine is in a good working condition.

Ventilation.—The ventilation is produced by means of a fan adjoining the main opening; the intake is located at the main opening, area 230 feet; the upcast is located in one side of main shaft, area 90 feet; the average supply of fresh air per minute is 18,900 cubic feet; they have a little noxious, inflammable and poisonous gases evolved in the mine; the main doors on headings and air-ways are hung so that they will close of their own accord, so as to assist ventilation, and they have attendants to keep them closed, so as to keep up a steady current of air; they have double doors on main travelled roads, and an extra door in case of accident; the air is circulated to the face of the working places in 2 splits; they work 50 men in one split, and 54 in the other; the amount of ventilation has been measured and reported according to law; ventilation is good.

Machinery.—They use 1 pair of hoisting engines, 120-horse power; 1 breaker engine, 60-horse power, in shaft engine house; 1 fan engine, 60-horse power, in fan engine house; 1 donkey engine at bottom of shaft, 25-horse power, and 1 fire pump, 20-horse power, in a brick building about 100 feet from boiler rooms; they have a metal speaking tube in shaft; they have 2 hoisting carriages in shaft, with all the modern improvements; they have flanges of sufficient dimensions on the hoisting drums; they have an adequate brake on hoisting drum; they use clevis, cones and standard ropes, in good condition; the boilers, feed pipes and water gauge cocks are in good condition; they have a steam gauge and safety valves for safety and to indicate the pressure of steam per square inch.

Remarks.—They have furnished a map of mine; they have a second opening about 1,200 feet from main opening; they have a house for men to wash and change their clothes in; the mining boss seems to be a practical and competent man; there are no boys working in the mine under 12 years of age; they do not allow more than 10 men to ride on a loaded carriage or cage at one time in the shaft; the persons having charge know their duty in case of death or serious accident; the breaker machinery is boxed and fenced off so that operatives are safe; the shaft landings are protected by safety gates.

VON STORCH COLLIERY.

This colliery is located in Scranton city, and situated on the west bank of the Lackawanna river; it is operated by the Delaware and Hudson canal company—E. W. Neston, general superintendent; J. M. Chittenden, general outside breaker superintendent; Andrew Nicol, general mine superintendent; J. C. Simpson and A. B. Nicol, assistant mine superintendents. The above named gentlemen have charge of all the collieries operated by the Delaware and Hudson canal company

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-

15 MINE REP.

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.

other points of shipment are Jermyn No. 4, at Price, and the Lackawanna, at Olyphant, both mines having now been in operation a little more than one year.

JOHN JERMYN, *General Manager.*

SCRANTON, PA., *March 19, 1884.*

P. BLEWITT, Esq.,

DEAR SIR: Our improvements for 1883 are as follows: Cayuga plane from G to Diamond is finished, and working about twenty places in the Diamond vein. Brisbin has the third plane, that I alluded to last year, completed on the west mountain side. We are also sinking a new shaft, (near Tripp slope, called Tripp shaft,) 10'×35' proposed to reach the Clark vein. Hyde Park shaft in F vein have driven a dip heading about one thousand feet; intend to put an engine there to hoist the coal up, then let it down the gravity plane to foot of shaft G vein. Continental shaft—we have a gravity plane in progress a thousand feet long, which we intend to get in operation early this year. We have partly sunk a shaft in Bellevue, under the tower of breaker, where the slope and shaft coal are hoisted to top of breaker, so as to hoist the coal direct from Clark vein to top of breaker at once, making the old shaft the pumping-way and place to put down all the supplies, &c.

• Respectfully yours,

B. HUGHES.

PATRICK BLEWITT, Esq.,

Mine Inspector, Scranton, Pa.:

DEAR SIR: Referring to our conversation in regard to Pancoast shaft, we commenced sinking shaft 10×34 feet in May last. At a depth of thirty feet we cut two feet five inches in coal. Below this, at a depth of ninety-nine feet, we cut the rock vein, nine feet and four inches thick. Coal good. Below this thirty feet, we cut two feet seven inches in coal—very good—and forty-three feet five inches more, the rock vein seven feet, very nice clean coal, making the shaft from top of brace two hundred and twenty-four feet deep. We have erected a tower-engine and fan-house, with machinery complete, all first class, furnished by the Dickson Manufacturing Company; also a new machine, carpenter, and blacksmith-shop, which is furnished with machinery and tools of the latest pattern. The second opening shaft, located two hundred and ten feet from main shaft, 10½×14 feet, was commenced the 14th day of January and is now down one hundred and twenty-three feet, and we expect to reach the Diamond vein next week. We are now building another wing to the breaker, which we expect to have finished by the 15th of April, which will give us a capacity of twenty thousand tons per month or more.

Very truly yours,

C. M. SANDERSON,
President.

Total number of employés,	21,269
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.

COLLIERY IMPROVEMENTS FOR YEAR 1888.

Delaware, Lackawanna and Western Railroad Company.

Bellevue Shaft.—A new fan was erected close to the old one, size 16 feet diameter by 4½ feet width of face. A pair of new hoisting engines were put in place at head of inside slope 12"x30" to replace old ones removed.

Bellevue Slope.—A new tunnel was driven from Rock to Diamond vein, 150 feet long.

Cayuga Shaft.—A new shaft was sunk for second opening about one mile north from main shaft, size 10'x37½'; area of opening 375 square feet, and sunk to G or Big vein, a distance of 436 feet.

Central Shaft.—A new slope driven in G or Big Vein 500 feet long on a dip of 1' in 6'. Also a new pair of first motion hoisting engines 24"x60".

Hyde Park Shaft.—A new tunnel was driven from New County to Clark Vein.

Pyne Shaft.—A new fan 14 feet diameter by 4 feet face was put in to replace old fan which was not sufficient to ventilate the mine.

Tripp Shaft.—A new slope was driven in Clark vein about 500 feet in length. Dip is 1' in 6'. A new pair of engines, second motion, dimensions 10"x30", was placed outside at Diamond for hoisting culm.

Delaware and Hudson Canal Company.

Dickson Shaft.—Built new fan 20 feet diameter by 5 feet face, closed periphery, run by direct motion engines, one on each end of shaft to replace a fan of 12 feet diameter and 3 feet face, which was not of sufficient capacity to ventilate the mines. They sunk a slope in Clark vein 600 feet in length and placed in position a pair of hoisting engines 12"x16" at head of slope.

Leggetts' Creek Shaft.—Sunk main shaft 10x26 feet, 177 feet from 14 feet or G to Clark vein and made connection with Von Storch mine workings for second opening.

White Oak Mines.—Reopened old No. 5 drift near head of No. 27 plane on the Gravity railroad with a tunnel through hard pan 365 feet in length to coal. Sunk an air-shaft in rock 11 feet in diameter and 36 feet deep to coal. Built a furnace with a fire surface of 64 square feet. Built 3,900 feet of railroad track to head of plane which plane is 1,328 feet long, having a gauge of 2½ feet, to take coal to the breaker, for which a small locomotive is used.

Pennsylvania Coal Company.

Shaft No. 1.—A second opening has been made in "Top Vein" by making a connection with Shaft No. 3 or Gypsy Grove. An air-shaft was sunk from top to "Second Vein," giving a second opening to this

system, mules and boys are not employed in great numbers on main roads, where the most traffic is being carried on, except at stations where the trips are made up. During the year 1899 a number of electric haulages have been introduced into the mines of this district. No accidents have resulted which can be traced to the use of electricity.

A number of automatic mine doors have been introduced into the mines since the passage of an act to amend the tenth section of article ten of the Anthracite Mine Law of 1891, in April, 1899. In the locations which have been selected, these doors appear to be yielding satisfactory results.

As has been noticed in reports of past years, there are a number of bodies of water in abandoned workings in the district. One side only of the pillars against which they rest is accessible for the purpose of ascertaining their condition, and no means are available by which their thickness may be ascertained except by boring; old surveys and maps in most cases being inaccurate. Where these bodies of water are to the rise of adjoining mines, even if it has been demonstrated that they are comparatively safe under the conditions now prevailing, in case of an extensive squeeze taking place in one or more of the adjoining mine workings, should this approach the barrier pillar, it is possible that the result would be detrimental to the interests of the adjoining operators, even if all persons had been withdrawn.

I am pleased to note that one such body of water has been drained during the year, namely, the Rockwell slope workings. These workings are on a pitch of twenty-five degrees, furthermore no map of them could be found. The Delaware, Lackawanna and Western Railroad Company's Cayuga Clark vein workings and the Delaware and Hudson Company's Von Storch Clark vein lie immediately below the workings referred to. The water was tapped from the Cayuga mine by a bore hole, and allowed to drain off, and the old workings surveyed and mapped as far as falls would permit, for future reference.

The Scranton Coal Company's Capouse mine, Clark vein workings, have been filled with water to the level of the New County vein above, for years past. This water rests against the pillars dividing the mine from four adjoining mines. I am pleased to report that this also is in the course of being pumped out.

Flushing is being done at many of the mines of the district. Old workings which are above and below those in course of operation are being filled up in a systematic way from the large culm dumps outside. In most cases this is being done in connection with the preparation of coal from the culm dumps in washeries. As a measure to prevent a general movement of the strata in the shape of squeezes,

stroyed by fire in April, 1898, is about to be rebuilt by the People's Coal Company, of Scranton, which will operate the colliery in the future.

Washeries.

A number of washeries have been built during the year, and others are in course of construction.

Colliery Improvements During the Year 1899.

Following will be found a brief description of the improvements made in and about the mines of the district during the year. Other items of similar work have been omitted, owing to the inability to collect the particulars of the same. Therefore, the statement does not cover all the new work done during the year to facilitate development, transportation, ventilation and drainage.

Delaware, Lackawanna and Western Railroad Company.

Archbald Mine.—The work of installing a main and tail system of haulage in the Rock vein is in progress. This will require 9,000 feet of rope; the grade is regular for the most part, and in favor of the loaded trips. The engine which will be used is 16x36 inches.

A pair of first motion engines have been erected and are ready for use to hoist in the main shaft; dimensions 22x48 inches. These will take the place of the geared engines formerly used.

A new tunnel is in course of construction, its dimensions are as follows: 7 feet by 14 feet by 300 feet long. It will connect the Rock and Diamond veins on a grade of 5 per cent. when finished.

Sloan and Central.—These shafts have been sunk from the Clark to the Dunmore vein. The work of developing the latter named vein has not yet been commenced beyond the sinking.

Cayuga.—There has been installed at the above mine an electric haulage plant, which is now in operation. The power house is located on the northerly side of breaker on the same elevation as the hoisting engines.

The engine is a McEwing design and built by the Ridgway Engine Company, of Ridgway, Pa. Its rated horse power is 305, stroke 16 inches; bore of cylinder, 10 inches; speed, 240 revolutions per minute. The dynamo or generator is of the Westinghouse Electric Company make. Its speed is 500 revolutions per minute, voltage 250, amperes 600.

The current generated is transmitted to the interior workings of the mine by a four naught insulated wire, where three electric motors of the General Electric Company's make, weighing thirteen tons

each, rated horse power of which is 120 each. Two heading roads have already been wired for a distance of 7,700 feet with contemplated extensions of about 1,600 feet more in the near future. A plane is also being driven from the Big vein to the Diamond vein on a grade of thirteen degrees, the length of which will be 475 feet. There is also in process of construction a boiler plant, consisting of four 250 horse power Sterling boilers to take the place of a number of old cylinder boilers.

Brisbin.—A second opening tunnel has been driven from the Big vein to the Rock vein on a pitch of 40 degrees, length 70 inches, size 7x10 inches.

Diamond.—There is in course of erection a washery, capacity 1,000 tons per day to wash coal from the Diamond dump, the culm to be deposited in the mine by means of a 6-inch bore hole. It will be completed for operation by March 1, 1900.

The Delaware and Hudson Company.

Dickson Mine.—The Delaware and Hudson Company has sunk a shaft at the Dickson to a depth of 305 feet, and 50 feet more will reach their Clark vein workings. On this shaft a ventilating fan 20 feet diameter by 5 feet face, will be erected to ventilate the Clark vein workings. The two fans now in use will ventilate the Dunmore veins. Two thousand feet of road has been graded for an engine plane. The bore hole for the rope is down, and the engine to be used is already in position. The South East plane in the No. 4 Dunmore vein has been extended 700 feet during the year.

Von Storch Mine.—At the Von Storch mine a plane has been driven from the four "foot" vein to the five "foot" vein; its dimensions are as follows: 14 feet by 7 by 445 feet on a grade of 1 in 5, for the purpose of developing the latter named vein.

In the Fourteen "Foot," or Big vein, preparations are being made to install a rope haulage. The Clark and Big veins are connected by a rock tunnel. The new haulage system will take all the coal from the Clark vein pitch workings to the "foot" of the main slope. This system will be about 7,500 feet long. The engines are now in position.

Green Ridge Coal Company.

Green Ridge Slope.—A rock plane 10 feet by 6 feet, on a grade of 12 degrees, has been driven, connecting Nos. 1 and 2 Dunmore veins. An air shaft, 9 feet diameter, has been sunk from Middle Dunmore to the Bottom vein. The shaft will be used for ventilation and as an additional escape way for the men.

An electric hoist has been installed on the dip workings of the

CONDITION OF COLLIERIES

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

With but few exceptions the ventilation in the mines of this company is good. The roads and drainage are properly attended to. The conditions as to safety are good.

SCRANTON COAL COMPANY

Mines are well ventilated. Roads are good and properly drained.

DELAWARE AND HUDSON COMPANY

Ventilation good. Roads and drainage good.

PEOPLE'S COAL COMPANY

The ventilation has been re-established during the year, and will now compare favorably with any mine in the district. Roads are well drained.

PENNSYLVANIA COAL COMPANY

The ventilation is fair to good. Drainage good. Conditions as to safety are also good.

GREEN RIDGE COAL COMPANY

Ventilation fair to good. Drainage good.

A. D. AND F. M. SPENCER

Ventilation fair to good. Drainage good.

NAY AUG COAL COMPANY

Ventilation and drainage are good.

BULLS HEAD COAL COMPANY, J. J. GIBBONS, MOUNTAIN LAKE COAL COMPANY

The mines of these operators are ventilated by natural means. The employes work in scattered groups. Ample ventilation is provided under the circumstances.

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Hyde Park Shaft.—During the year the Hyde Park Breaker was rebuilt and equipped with mechanical pickers. There is also in course of erection a small annex to prepare the smaller sizes of coal.

There was installed in the mines one 80 H. P. electric hoist on Slope No. 2, New County Vein.

Cayuga.—A washery was built at this colliery to take care of all the refuse from the main breaker.

A tunnel was driven from the Clark vein to the Dunmore vein, a distance of 300 feet.

The cribbing in the hoisting shaft was replaced by concrete or expanding metal.

Brisbin.—A tunnel was driven from the Clark vein to the Dunmore. This tunnel is 600 feet long, and is located near the center of the property.

Cayuga.—A new Duplex pump, 28x12x36, has been installed in the "Fourteen Foot" vein, and is now in operation.

Bellevue Shaft, etc.—The main shaft (12x18 feet) has been sunk from the Clark vein, a distance of one hundred and thirty-seven feet into the Dunmore No. 2 vein.

The Oxford inside slope has been driven a distance of eighty-eight feet, from the New County vein into the Clark vein. A tunnel has been driven from the Clark into the Big Vein, height sixty-five feet.

Electric Haulage.—An electric haulage system one thousand feet long has been installed in Dunmore No. 2 vein.

The following extensions were made to haulage systems in use before 1904, namely: G. gangway No. 3 tunnel, 900 feet; No. 2 slope, Dunmore No. 2, 1,100 feet; M. gangway and Sloan road, 4,350 feet; No. 1 County vein, 1,000 feet.

Shaft Concreted.—The cribbing in the supply shaft has been replaced by concrete.

New Electric Motors and Pumps.—Four new electric motors have been added during the year, making a total of eight in the mine. A new electric pump has also been installed at the foot of the supply shaft, and two other and similar pumps at other points in the same mine.

PENNSYLVANIA COAL COMPANY

No. 5 Shaft.—A rock plane was driven from No. 3 Dunmore to No. 1 Dunmore vein. Length 330 feet; section 7x14 feet. Also a new car and blacksmith shop was built outside; dimensions 30x60 feet.

A number of the other operators have made similar improvements during the year, but have not thought it proper to report the particulars to appear in this report.

Mine Foremen's Examinations

The annual examinations for candidates for certificates as mine foremen and assistant mine foremen were held June 10 and 11, in the City Hall, Scranton. The following persons were recommended for certificates:

Mine Foremen.—W. W. Inglis, Thomas Barber, Lucien F. Hiorns, Frank E. Shedd, William Campbell, Henry Davies, H. D. Powell, William P. Kelly, Henry J. Williams, William P. Jennings, Martin F. Sheridan, John Moore, George W. Oswald, Isaac Dawe, John H. Watkins, Henry H. Hitchings, Thos. J. Williams, Jos. Morris, James J. Cusick, Thos. W. Watkins, James Tibbs, Peter Comtesse, Jr., Thomas Malloy, Jos. R. Burns.

Assistant Mine Foremen.—Edward Dempsey, David James, James Cooney, Martin Quinn, James D. Robinson, John J. James, Martin Corcoran, John J. McDermott, Wm. Morgan, Anthony Gallagher, Jno. E. Phillips, Fred. E. Carpenter, Benjamin Evans.

NORTH END COAL COMPANY

North End.—Ventilation, roads and drainage fair. Condition as to safety good.

A. D. AND F. M. SPENCER COAL COMPANY

Spencer.—Ventilation, roads and drainage fair. Condition as to safety good. The principal work done is robbing pillars.

CARNEY AND BROWN COAL COMPANY

Carney and Brown.—Ventilation, roads and drainage good. Condition as to safety good. The principal work done is robbing pillars.

CLEARVIEW COAL COMPANY

Clearview.—Ventilation, roads and drainage good. Condition as to safety good.

NAY AUG COAL COMPANY

Nay Aug.—Ventilation, roads and drainage fair. Condition as to safety good. The principal work done is robbing pillars.

BULLS HEAD COAL COMPANY

Bulls Head.—Ventilation, roads and drainage fair. Condition as to safety good. The principal work done is robbing pillars.

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Cayuga Colliery.—Drove a rock slope 7 by 14 by 750 feet, from Clark to Dunmore No. 3 vein. Drove a second opening, 7 by 12 by 750 feet, for the above slope. Erected a new steel and concrete fireproof pump-room in Clark vein.

Brisbin Colliery.—Built new brick wash house to accommodate two hundred employes. Drove a rock tunnel 7 by 12 by 600 feet from Clark to Dunmore vein. Drove rock tunnel, 7 by 12 by 171 feet, from Clark to New County vein; also a second opening, 7 by 12 by 171 feet, for the above tunnel. Erected new concrete pump-house in Clark vein.

Manville Colliery.—Built new annex to breaker and operations commenced November 8, 1910.

PENNSYLVANIA COAL COMPANY

Pennsylvania No. 1 Colliery.—Tore down old wooden head-frame over shaft, and erected a steel head-frame to replace old wooden structure, fireproof in all respects.

NAY AUG COAL COMPANY

Nay Aug.—Ventilation, roads and drainage fair. Condition as to safety, good.

A. D. AND F. M. SPENCER COAL COMPANY

Spencer.—Ventilation good. Roads and drainage fair. Condition as to safety, good.

CARNEY AND BROWN COAL COMPANY

Carney and Brown.—Ventilation, roads and drainage fair. Condition as to safety, good.

BULLS HEAD COAL COMPANY

Bulls Head.—Ventilation, roads and drainage fair. Condition as to safety, good.

CLEARVIEW COAL COMPANY

Clearview.—Ventilation, roads, drainage and condition as to safety, good.

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Diamond Colliery.—Concrete and fireproof barns erected in both the Rock and No. 2 Dunmore veins at Diamond Tripp Shaft. Erected a new annex to the breaker to prepare the finer sizes of coal.

Brisbin Colliery.—Erected concrete fireproof barns in the Four Foot, Five Foot and Clark veins. Installed a new Scranton Duplex steam mine pump, capacity 1,500 gallons per minute.

Cayuga Colliery.—A rock tunnel 7x12x271 feet long on a pitch of 22 degrees was driven through fault from Clark vein to Clark vein. A rock slope 7x10x300 feet on a pitch of 25 degrees was driven from Dunmore No. 1 to Dunmore No. 3 vein for a second opening. A rock slope 7x12x429 feet long on a pitch of 15 degrees was driven from Clark vein to Dunmore vein. Erected concrete and fireproof barns in the Big, Clark and Four Foot veins. Erected a new brick wash-house with shower baths and lockers. Installed one new Duplex Scranton steam pump, capacity 1,500 gallons per minute.

All pump-rooms, engine houses, emergency hospitals, foremen offices inside of the mines are made of incombustible material as required by law.

PENNSYLVANIA COAL COMPANY

Pennsylvania Colliery:

Pennsylvania No. 1.—Added to boiler plant outside two batteries of B. and W. boilers, 300 horsepower each. Added one 250 K. V. A. alternating current 2,300 volt generator to electric plant. Installed one 18-foot fan to ventilate Clark vein slope, housed in building constructed of brick, and one 7-foot Stine fan to ventilate Marcy vein, one 20-foot fan at No. 1 shaft to ventilate Dunmore No. 2, Clark and Fourteen Foot veins. Wooden tower at No. 1 shaft replaced by steel tower. Installed first motion hoisting engines 22x48 at No. 1 shaft, housed in building constructed of brick. New engine house constructed of corrugated iron on surface and old hoistings installed to handle coal in Second and Third Dunmore veins. All mule barns, engine houses, emergency hospitals, foremen offices inside of the mines are made of incombustible material.

THE SPENCER COAL COMPANY

Spencer Colliery.—Ventilation good. Drainage and safety conditions fair.

CARNEY AND BROWN COAL COMPANY

Carney and Brown Colliery.—Ventilation, drainage and safety conditions fair.

BULL'S HEAD COAL COMPANY

Bull's Head Colliery.—Ventilation, drainage and safety conditions fair.

CLEARVIEW COAL COMPANY

Clearview Colliery.—Ventilation and safety conditions fair. Drainage good.

NO. 6 COAL COMPANY

No. 6 Colliery.—Ventilation and drainage fair. Safety conditions good.

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Diamond Colliery.—Erected a new annex to the breaker. Installed boiler feed pump, four flat slate-pickers, rock pulverizer and fuel conveyor.

Brisbin Colliery.—Rock tunnels were driven from Rock vein to Big vein; New County vein to Big vein; Four-Foot vein to Five-Foot vein. A duplex pump and 2 Jeffrey coal-cutting machines were installed.

Cayuga Colliery.—Erected new wash-house and new fan engine-house. A new fan 18 feet by 6 feet by 5 feet 6 inches was installed. Rock tunnel plane was driven from Clark vein to Diamond vein.

PENNSYLVANIA COAL COMPANY

Pennsylvania No. 1 Colliery.—Rock plane was driven 300 feet from the Fourteen-Foot vein up through the fault to the Fourteen-Foot vein above. Erected the following concrete fireproof buildings inside the mine: Mule barn, barn-boss's house, motor-house, foreman's office and hospital.

Additional slate-pickers were installed in the breaker.

SCRANTON COAL COMPANY

Pine Brook Colliery.—Installed 45 horse power electric hoist in the West tunnel. Tunnel was driven from Dunmore No. 2 vein to Dunmore No. 1 vein on the head of No. 4 plane, for a return airway from Dunmore No. 1 vein.

West Ridge Colliery.—Removed 400 feet of roof for grading purposes.

Mt. Pleasant Colliery.—Tunnel was driven from Dunmore No. 3 vein to Dunmore No. 2 vein for transportation purposes.

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.

CONDITION OF COLLIERIES

DELAWARE AND HUDSON COMPANY (INSIDE)

HUDSON COAL COMPANY (OUTSIDE)

Eddy Creek.—Ventilation and drainage good; condition as to safety good.

Von Storch.—Ventilation good; drainage fair; condition as to safety good.

Dickson.—Ventilation and drainage good; condition as to safety good.

Marvine.—Ventilation and drainage good; condition as to safety good.

Legitts Creek.—Ventilation and drainage good; condition as to safety good.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs.—Ventilation and drainage good; condition as to safety good.

Brisbin.—Ventilation good; drainage fair; condition as to safety good.

Cayuga.—Ventilation good; drainage fair; condition as to safety good.

SCRANTON COAL COMPANY

Johnson.—Ventilation and drainage good; condition as to safety good.

Richmond No. 3.—Ventilation and drainage good; condition as to safety good.

West Ridge.—Ventilation and drainage fair; condition as to safety good.

CLEARVIEW COAL COMPANY

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

BULLS HEAD COAL COMPANY

Bulls Head.—Ventilation and drainage good; condition as to safety good.

IMPROVEMENTS

DELAWARE AND HUDSON COMPANY (INSIDE)

HUDSON COAL COMPANY (OUTSIDE)

EDDY CREEK COLLIERY:

Eddy Creek Shaft.—A concrete barn was built in the Dunmore vein near the foot of shaft to hold 24 mules. A car haul, steam driven, 180 feet long, was completed in Dunmore vein to handle light cars from foot of shaft and deliver them to water level and No. 25

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.

Cayuga Colliery.—Installed one 7-ton electric locomotive with reel attachment; also one shortwall coal-cutting machine. Made second opening to New County vein. Installed electric hoist at No. 6 plane, Clark vein.

Brisbin Colliery.—Installed one longwall coal-cutting machine.

BULLS HEAD COAL COMPANY

Church Colliery.—Installed one 75-horse power Western Electric mine hoist, one 75 K. W. 112 H. P. motor generator set, and one Morgan-Gardner coal-cutting machine.

CLEARVIEW COAL COMPANY

Conklin Colliery.—A hoisting tower was built to cross the D., L. and W. track and load the coal from mine to railroad cars. The coal is taken to the Peoples Coal Company for preparation.

CONDITION OF COLLIERIES

DELAWARE AND HUDSON COMPANY

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

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

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Diamond and Cayuga Collieries.—Ventilation, roads, drainage and condition as to safety, good.

BULLS HEAD COAL COMPANY

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

CLEARVIEW COAL COMPANY

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

SCRANTON COAL COMPANY

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

IMPROVEMENTS

DELAWARE AND HUDSON COMPANY

Eddy Creek Colliery.—Completed tunnel, 300 feet long, through fault in Diamond bed; tunnel, 285 feet long, from Clark to New County vein; tunnel, 110 feet long, from Fourteen Foot bed to Rider; tunnel, 230 feet long, from Four Foot to Twenty Inch bed; and rock plane, 185 feet long, through fault in Fourteen Foot bed, Birdseye, and rock plane, 65 feet from Four Foot to Twenty Inch bed.

Legitts Creek Colliery.—The New County vein was opened in No. 3 shaft. Completed a tunnel, 450 feet long, driven through the fault in the Rock bed, and a rock plane, 160 feet long, from Rock to Diamond vein.

Dickson and Von Storch Collieries.—At Dickson mine a rock plane was driven 150 feet, from No. 2 Dunmore to connect with the Clark vein.

In the Von Storch section, a rock plane, 140 feet long, was driven from Top Rock to Diamond vein, and an air shaft 40 feet deep was sunk from Top Rock to Rock vein.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Diamond Colliery.—Installed a new ventilating fan.

Cayuga Colliery.—Installed a new simplex jig; one new Hazleton jig; one new conveyor line and one 50 H.P. motor.

In Tripp shaft an air bridge was constructed of reinforced concrete and steel. In the No. 3 Dunmore vein, West side of the No. 2 Dunmore vein, haulage changed from mule to electric.

Ninety feet of reinforced concrete cribbing, together with concrete buntons put in at Tripp shaft. A 12-inch hole was bored from the surface to the No. 3 Dunmore vein, and cased for the purpose of having electric cables to all veins in the Tripp shaft.

Outside—Erected a brick wash house, 42 feet by 78 feet by 16 feet high; and a brick fan house, 19 feet by 32 feet by 14 feet high. Installed one 12 by 8 foot, Vulcan electric driven fan of latest type, with 200 HP motor; three 200 K. W. transformers and three 100 K. W. transformers.

Cayuga Colliery.—Installed one Chicago pneumatic electric driven air compressor capacity 600 cubic feet per minute, and two 7-ton electric locomotives.