

brake on hoisting drum; they use standard wire ropes; the boilers have been cleaned and examined and reported in good condition according to law; they have a steam-gauge and safety-valve for safety and to indicate the pressure of steam.

*Remarks.*—They have furnished a map of the mine; they use No. 2 shaft as a second 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; he has a fire-boss to assist him; there are no boys working in the mine under twelve years of age; the engineers seem to be experienced, competent and sober men; the men travel in and out the second opening; the parties 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.

#### TRIPPS SLOPE.

This slope is located in the city of Scranton, and lying one-fourth of a mile north-west of the Lackawanna river; it is 800 feet long to coal, and driven on an angle of 18 degrees; it is 84 feet wide by 6 feet high; it is operated by the Delaware, Lackawanna and Western railroad company. E. R. Walter, general outside superintendent; Benjamin Hughes, general inside foreman; Thomas Houser, mining boss; and D. Langstaff, outside foreman.

*Description.*—There is a breaker connected with this slope by a trestling and railroad track 1,000 feet long; they mine, prepare and ship about 325 tons of coal per day; they employ 36 miners, 36 laborers, 20 drivers, 4 door-boys and 20 company men inside; this coal is cleaned and prepared at No. 2 Diamond slope breaker; they work in all 116 men and boys; they are working the E or Diamond vein, average thickness 7 feet; they work headings 12, air-ways 18 and chambers 30 feet wide; they leave pillars from 15 to 21 feet wide to sustain the roof; they leave cross-entrances for the purpose of ventilation, about 60 feet apart; the roof is slate and fire clay; the mine is in a good working condition.

*Ventilation.*—This mine is ventilated by means of a furnace, located about 1,200 feet from main opening; the intake is located at mouth of slope; it contains an area of 51 feet; the upcast is located in furnace air shaft; it contains an area of 36 feet; the average supply of fresh air per minute is 15,000 cubic feet; there are no noxious, poisonous or inflammable gases evolved in this mine; the main doors on headings and air-ways are hung so that they will close of their own accord, so as to assist the ventilation, and they have attendants at them to keep them closed so as to keep up a steady current of air at all times; they have double doors on main traveled roads, but no extra one in case of an accident to the others; the air is circulated to the face of the workings in one volume; the ventilation has been measured and reported according to law; ventilation is good.

*Machinery.*—They use two hoisting engines 200 feet from mouth of slope of 60-horse power; two steam pumps inside, one is 40-horse power, and the other is 20-horse power; they have a metal speaking tube in the slope, and have flanges, of sufficient dimensions, attached to hoisting drum, with an adequate brake. The boilers, feed pipes, water-gauge cocks, etc., have been cleaned and examined, and reported in good condition; they have a steam gauge, to indicate the pressure of steam per square inch.

*Remarks.*—They have furnished a map of mines; they have a second opening; they have a house for men to wash and change in; they have no standing gas, but some water in their mines; the mining boss seems to be a practical and competent man; there are no boys working in the mine under 12 years of age; the engineers seem to be practical, experienced and sober men, and do not allow any person to ride on loaded cars in the slope; the parties having charge know their duty in case of death or serious accident.

#### BRISBIN SHAFT.

This is a new shaft just sinking; it is located in the city of Scranton, and situated about one-half of a mile north-west of the Lackawanna river; it is 208 feet deep to the Diamond vein; they are now sinking between the Diamond and Rock

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

angle of inclination is  $9^{\circ} 35'$ . The slope was driven part of the way through coal, at a cost of \$364, but there were  $28\frac{1}{2}$  yards of rock to cut, from nought up to eight feet, which cost \$283 33, and 77 yards driven through sandstone, which cost \$3,080. The whole cost for sinking the slope was only \$3,952 33. They have a pair of engines, 13-inch cylinder and 18-inch stroke; estimated horse power, 50; the size of their drum is six feet diameter, which has an approved brake attached to it. There is no second opening to the slope, but they are driving for one toward No. 1 drift, and expect to make a connection soon.

#### OTHER NEW OPENINGS AND CONNECTIONS.

The Delaware, Lackawanna and Western railroad company have made connections between the Hampton shaft and the Oxford shaft, at Hyde Park, and between Tripp's slope and the **Brisbin shaft**, in the Third ward, Scranton. They have also sunk an air shaft, at Hyde Park, into the workings of the Oxford shaft, and connects also with the Hampton shaft workings. A fan is to be placed at this air shaft which will assist in ventilating both collieries named.

The Pennsylvania coal company have completed a new slope at No. 1 tunnel, in Pittston township, which is intended for hoisting coal. They have also made a second opening for No. 4 slope, in Jenkins township, which is to be used also for ventilation; and the workings of old No. 10 shaft in the 14-foot seam, have been connected with the new No. 10 shaft, in Pittston. No. 2 shaft, Dunmore, was sunk to the lower seam.

The Delaware and Hudson canal company have made a connection, in the 14-foot seam, between Marvine and Leggetts Creek shafts, Providence; and at No. 1 shaft, Carbondale, an air shaft has been sunk, and two more air shafts at No. 3 shaft, and still another at the Coal Brook colliery. These air shafts are only poor-make shafts, unless mechanical means are used to produce ventilation. There are too many of them in Carbondale. What is needed there is a system of air courses inside of the collieries.

At the Filer colliery, Winton, a drift has been driven from a ravine into the workings, for a traveling way for the men to go to and from their work. A new drift has been opened at the Greenwood colliery for mining coal, and the same company have made an additional opening for coal at the Sibly colliery, in Old Forge township. An opening has been made at the Green Ridge slope for ventilation. The above are all the openings and connections made in the district during the year, so far as I am informed.

#### IDLE AND ABANDONED COLLIERIES.

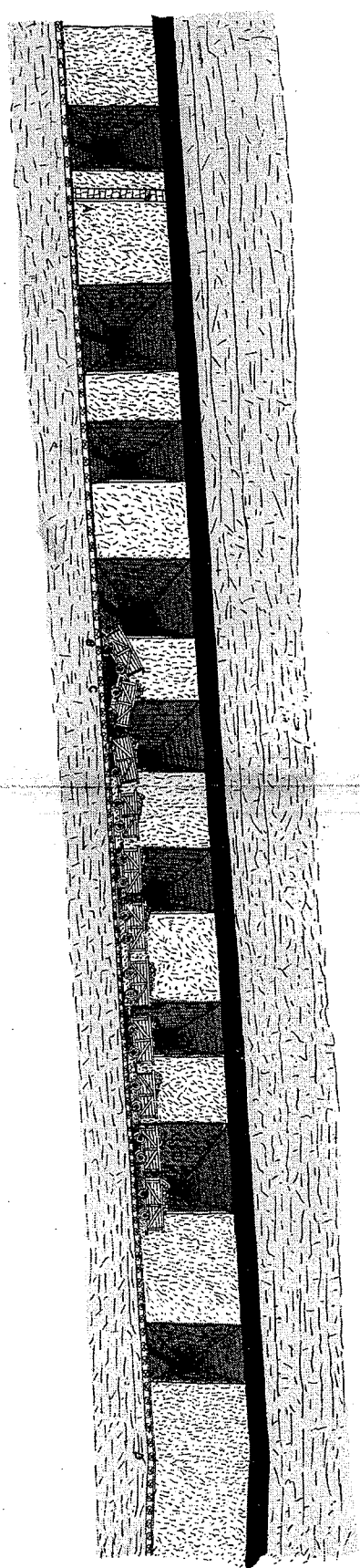
The Archbald shaft, Lackawanna township, and Oxford shaft, Hyde Park, owned by the Delaware, Lackawanna and Western railroad company, were idle all through the year; the last work done at the Hyde Park shaft was done in February, and the Scranton coal company's drifts at Bellevue were idle. Bellevue slope and shaft worked only  $22\frac{1}{2}$  days.

No. 1 shaft, Pittston township, owned by Pennsylvania coal company, was idle; No. 2 and No. 3 shafts were abandoned as hoisting shafts, and are now used as pumping shafts.

The Marvine shaft, Providence; Powderly slope, Carbondale township, and Breaker, Forrest and Jefferson tunnels, Carbondale City, all owned by the Delaware and Hudson canal company, were idle.

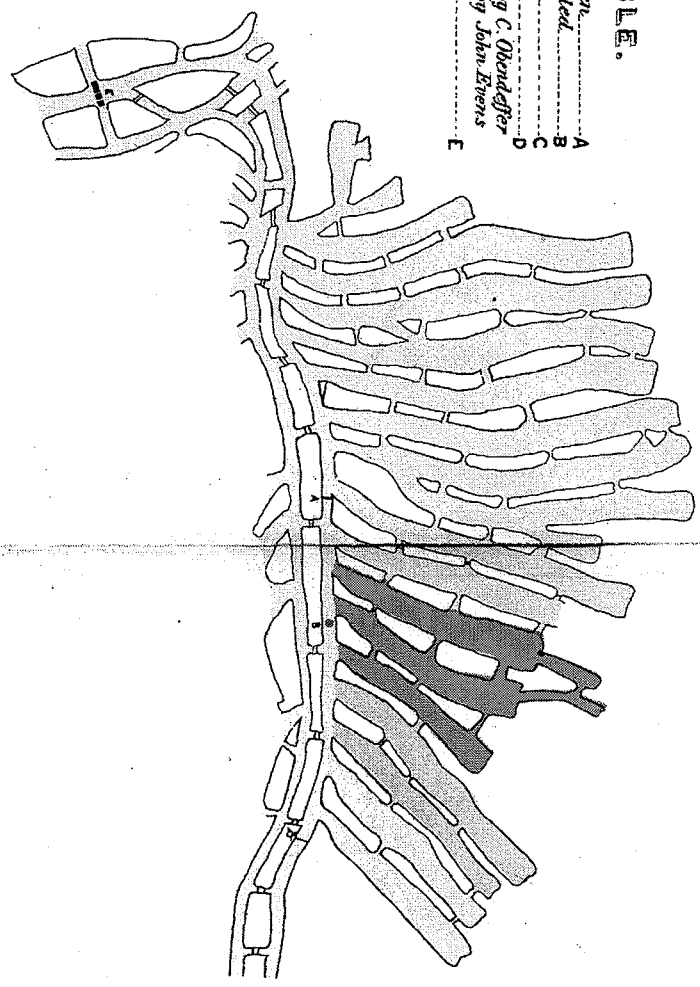
The following collieries have also been idle: Rolling Mill colliery, Scranton, consisting of a slope, tunnel and drift; the Ontario colliery, Pleasant Valley, and the Heidelberg colliery, Pleasant Valley. Spring Brook No. 1

**SECTION OF BRISBIN MINE TRACING  
AND ENLARGED VERTICAL SECTION,  
SHOWING WHERE DOOR BOY, D. HUGHES, WAS KILLED.**



**REFERENCE TABLE.**

- A Door where Boy should have been.....
- B The place where Door Boy was killed.....
- C The Hole killed.....
- D Top of rock where Cars started.....
- E The Blue Chambers were attended by C. Oberdoffer  
The Red Chambers were attended by John Evans  
Shaft.....



Scale 1 inch = 200 feet

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-

**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.*

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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.

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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.*

storage of coal begins." Hence such a case should be excluded to prevent a construction adverse to its usage. But this does not imply that the original affirmative clause included shafts. This is upon the basis that it was a designed omission. It would not, however, be a forced, but a natural, construction to say that no distinction was intended between a shaft and a slope, and the omission was a mere lack of specification where the intent could be inferred. There is no reason why a trestle not filled with screens and machinery for "the preparation of coal," or with bins for the storage of coal, should be inhibited and prevent a connection with a breaker or slope. A new trestle would communicate fire slowly, is easily thrown down, and the exception as to a slope is some indication that the trestle was not to be included, inasmuch as such a possible construction is prohibited.

It is true, as contended by the learned counsel for the plaintiff, who cites *Com. v. Fraim*, 16 Pa. St. R., 153, and *Big Bk. Cent. Imp. Co. v. Com.*, 94 Pa. St., 450, that statutes will be construed so as best to effectuate the intention of the makers, though the construction may seem contrary to the letter of the statute. But even this rule applies only where the intent is clear and the contradiction seeming. If we have read the statute in question right, it intends to guard the health and safety of persons employed in and about the coal mines, but it equally intends to preserve the equities of owners existing at the time of its passage. In this view we enter judgment on the demurrer in favor of the defendant, and dismiss the bill at the cost of the plaintiff.

#### COLLIERY IMPROVEMENTS DURING 1886.

##### Delaware, Lackawanna and Western Railroad Company.

This company reports but very few improvements for the year, except what were necessary for the purpose of keeping their coal property in a condition to supply the market with their quota of coal. They have opened but very little new territory.

##### Brisbin Shaft.

This shaft was sunk from G, or 14-foot, to Clark vein of coal, a distance of 153 feet. Total depth of shaft, 520 feet; size of shaft opening, 35×10 feet. They are opening up the mine so as to be ready to ship coal when the market needs it.

##### Manville Shaft.

This shaft has been sunk 170 feet from the Clark to No. 3 Dunmore vein. Total depth of shaft, 355 feet; size of shaft opening, 27×10 feet. This mine is operated by Delaware, Lackawanna and Western Railroad Company and Delaware and Hudson Canal Company alternate months.

##### Delaware and Hudson Canal Company.

This company does not report any improvements for the year, ex-



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.

*Pyne 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.

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.*

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### COLLIERY IMPROVEMENTS FOR YEAR 1892.

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#### 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  $7^\circ$ , to open up what is known as the Sawyer vein. Mouth of slope situated N.  $74^\circ$  E. and 235' from east corner of No. 1 breaker boiler house and 450' north of Old Smith tunnel. Course of slope N.  $79^\circ$  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.

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.

## 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 fire-proof 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.

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

### SCRANTON COAL COMPANY

Pine Creek, Capouse and Mt. Pleasant Collieries.—Ventilation, drainage and condition as to safety, good.

### DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Hyde Park, **Brisbin** and Manville Collieries.—Ventilation, drainage and condition as to safety, good.

### TEMPLE COAL COMPANY

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

### PENNSYLVANIA COAL COMPANY

Pennsylvania No. 5 Colliery.—Ventilation, drainage and condition as to safety, good.

### PEOPLES COAL COMPANY

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

### GREEN RIDGE COAL COMPANY

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

### DELAWARE AND HUDSON COMPANY

Manville Colliery.—Same as Manville under Delaware, Lackawanna and Western Railroad Company.

## IMPROVEMENTS

### DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Hyde Park Colliery.—Completed tunnel from "E" gangway, Clark vein, to No. 1 Dunmore vein. Driven from "B" gangway, No. 1 to No. 3 Dunmore vein, length, 250 feet; rock plane 15 Degrees pitch from Bottom split of Four Foot to Five Foot vein, length 186 feet.

Lined a bore hole with 6-inch pipe.

Installed 4 coal-cutting machines; one 7-ton locomotive for Rock and Diamond veins and a 10-ton locomotive for the Four Foot vein.

Outside:—Erected a new office building.

**Brisbin Colliery.**—Installed five turbine driven blowers.

## MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held in Scranton, June 6 and 7. The Board of Examiners was composed of Jenkin



## CONDITION OF COLLIERIES

## DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Manville, **Brisbin** and Hyde Park Collieries.—Ventilation, drainage and condition as to safety, good.

## SCRANTON COAL COMPANY

Pine Brook, Capouse and Mt. Pleasant Collieries.—Ventilation, drainage and condition as to safety, good.

## PRICE-PANCOAST COAL COMPANY

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

## PENNSYLVANIA COAL COMPANY

Pennsylvania No. 5. Colliery.—Ventilation, drainage and condition as to safety, good.

## PEOPLES COAL COMPANY

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

## GREEN RIDGE COAL COMPANY

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

## DELAWARE AND HUDSON COMPANY

Manville.—This colliery is worked alternate months by the Delaware, Lackawanna and Western Railroad Company and the Delaware and Hudson Company.

## IMPROVEMENTS

## DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Manville Colliery.—Constructed one fireproof air bridge in the New County vein. Completed a rock cut, 4 feet by 12 feet by 1000 feet long to improve the haulage and drainage east of the shaft. The sump in the Clark vein has been enlarged and 6 concrete walls built to improve pumping capacity. Installed one pair of 8 foot by 10 foot engines, for the purpose of handling coal on the hill east of the shaft to take the place of mule haulage.

**Brisbin Colliery.**—Completed a 7 foot by 12 foot tunnel, 750 feet from the Rock vein to the Diamond vein, for the purpose of getting some pillars from the Diamond vein.

Hyde Park Colliery.—Completed a second opening from Five Foot vein to the surface in the crop of vein; also second opening was driven from No. 3 Dunmore vein west of shaft on mountain side into the Continental No. 3 Dunmore vein.