

Description.—They have a double breaker attached to the shaft tower; they mine and prepare 550 tons of coal per day; they employ 68 miners, 64 laborers, 33 drivers, 10 door-boys and 18 company men in the mine; 55 slate pickers, 12 head and plate men, 4 drivers, 27 company men, 9 mechanics and 2 bosses outside; in all 302 men and boys; they are working 2 slopes in the mine, which are worked by machinery; one is 420 feet long, and the other 575 feet long, each driven on an angle of 7°; they are working the Diamond vein, average thickness 5½ feet; they work headings 12, air-ways 12 and chambers 30 feet wide; they leave pillars from 5 to 6 yards wide to sustain the roof; they leave cross-entrances 20 yards apart for the purpose of ventilation; the roof is good slate; the mine is in a good working condition.

Ventilation.—The ventilation is produced by means of a furnace located about 1,000 feet from main opening; the intake is located in Central and Sloan shafts; it contains an area of 100 feet; the upcast is located at furnace shaft; it contains an area of 80 feet; the amount of fresh air is 25,225 cubic feet per minute; there is very little noxious or poisonous gas evolved in the mine; the main doors on headings and air-ways are hung so that they will close of their own accord; they have attendants at main doors; they have double doors on main travelled roads, and an extra one in case an accident should happen to any of the others; the air is circulated to the face of the workings in 2 splits; 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, and 1 pump—ing, 100-horse power, in hoisting engines' rooms; 1 breaker engine, — horse power; 2 hoisting engines inside. — horse power each; 4 steam pumps inside. — horse power; they have a metal speaking tube in the shaft; they have 2 safety carriages, with all the modern improvements; they have an adequate brake, and flanges of sufficient strength and dimensions for safety attached to the side of the hoisting drum; they use standard wire ropes, with clevis and cone attachment; the boilers have been cleaned and examined and reported in good condition; they have a steam gauge to indicate the pressure of steam.

Remarks.—They have furnished a map of the mine; they are connected with Continental, Sloan and Central shafts, which can be used as second openings; they have no house for men to wash or change their clothes in; they have no standing gas, but some water in their mine; the mining boss is a practical and competent man; there are no boys working in the mine under 12 years of age; the engineers seem to be experienced, competent and sober men; they do not allow any persons to ride on loaded carriages in the shaft or on loaded cars in the slope; they do not allow more than 10 persons to ride on safety carriage in the shaft at one time; the parties having charge know their duty in case of death or serious accident; the shaft landings are protected by safety gates; the breaker machinery is fenced and boxed off so that operatives are safe.

HYDE PARK COLLIERY.

This colliery is located in the city of Scranton, lying about 1½ miles north-west of the Lackawanna river. It is 148 feet deep to the Diamond, 183½ feet deep to the Rock and 265 feet deep to the G or Big vein; the shaft-opening is 18 feet by 11 feet. It is operated by the Delaware, Lackawanna and Western railroad company. D. W. Moser is mining boss and Robert E. Ruthven is outside foreman.

Description.—There is a double breaker attached to the shaft tower; they have 2 patent safety-carriages with all the modern improvements; they mine and prepare about 450 tons of coal per day; they employ 61 miners, 61 laborers, 23 drivers, 9 door-boys and 14 company men in the mine; 80 slate pickers, 9 head and plate men, 3 drivers, 20 company men, 8 mechanics and 2 bosses outside; in all 290 men and boys; they are working the G or Big vein, average thickness 12 feet; they work headings 12, air-ways 18 and chambers 30 feet wide; they leave pillars from 6 to 7 yards wide to sustain the roof; they leave cross-entrances 60 feet apart for the purpose of ventilation; the roof is good slate; the mine is in a good working condition.

Ventilation.—Ventilation is produced by means of a fan located in Central shaft; the intake is located in air-shaft about 1,000 feet from main shaft; it contains an area of 120 feet; the up-cast is located in Central shaft, it contains an area of 110 feet; the average supply of fresh air per minute is 30,880 cubic feet;

there is but very little noxious or inflammable gas evolved in this mine; it is very seldom ever seen in the mine except when a door or gate is broken, and then not to any dangerous extent; the main doors are all hung so that they will close of their own accord, with an attendant at each; they have double doors on main traveled roads so as to keep up a steady current of air, and they have extra doors in case that any of the others get broken; they do not work over 50 men in any split of air; the amount of ventilation has been measured and reported according to law; ventilation is good.

Machinery.—The engines in use at this colliery are 1 pair of hoisting engines of 120-horse power, 1 breaker engine of 60-horse power, 1 steam fire pump of 30-horse power, (all the above are in the shaft engine room,) and 1 steam pump at the foot of shaft of 80-horse power; they have a metal speaking-tube in the shaft; the flanges on the sides of the hoisting drums are of sufficient strength and dimensions for safety; they have an adequate brake on hoisting drum; they use clevis cones and standard wire ropes; the boilers have been cleaned and examined and reported in good condition according to law; they have a safety valve and steam gauge attached to their boilers for the purpose of safety and to indicate the pressure of steam; the breaker machinery, screens, shaftings, cog-wheels, beltings and pulleys are boxed and fenced off so that operatives are safe.

Remarks.—They have furnished a map of mine; they have second openings in Central and Continental shafts; they have a house for men to wash and change their clothes in; the mining boss seems to be a competent and practical man; there are no boys working in the mine under 12 years of age; the engineers seem to be practical, experienced and sober men; they do not allow more than 10 men to ride on the safety-carriage at one time; the parties having charge know their duty in case of death or serious accident; the shaft openings are protected by safety-gates.

CAPOUSE COLLIERY.

This colliery is located in the city of Scranton and situated one and one-fourth miles north-west of the Lackawanna river. The shaft is 130 feet deep to the Diamond and 169 feet deep to the bottom of the Rock vein. They are sinking a new shaft to the lower veins, which is located about 350 feet west of main shaft; it is operated by the Lackawanna iron and coal company. Charles F. Mattes is general superintendent, R. J. Brooks is mining boss and D. Brooks is outside foreman.

Description.—There is a breaker attached to the shaft tower; they mine and prepare 600 tons of coal per day; they employ 68 miners, 64 laborers, 40 drivers, 8 door-boys and 20 company men in the mines; 40 slate pickers, 8 head and plate men, 6 drivers, 9 company men, 7 mechanics and 2 bosses outside; in all 270 men and boys; they are working the Diamond and Rock veins; average thickness of the Diamond 6 feet and of the Rock vein 8 feet; they work headings 15, air-ways 15 and chambers 30 feet wide; they leave pillars 15 feet wide to sustain the roof; they leave cross-entrances from 50 to 60 feet apart for the purpose of ventilation; the roof is rock in both veins; the mines are in a good working condition.

Ventilation is produced by a suction fan; the intake is located at north side of main shaft, area 140 feet; the upcast is located in south side of main shaft, area 70 feet; the amount of pure air in the Diamond is 13,000 and in the Rock 13,300 feet per minute; they have double doors on main traveled roads and an extra one in case of an accident to any of the others; the main doors are hung so as to close of their own accord; they have attendants at main doors; the air is conducted systematically to the face of workings by the aid of check-doors; they have two splits of air in each vein; the amount of ventilation has been measured and reported; ventilation is good.

Machinery.—They use one breaker engine of 40-horse power, two hoisting engines of 80-horse power, one pumping engine of 70-horse power, one fan engine of 10-horse power; they have a metal speaking tube in the mines; they have two safety-carriages with all the modern improvements; they have an adequate brake and flanges of sufficient strength and dimensions for safety attached to the hoisting drum; the ropes, links, chains and connections are in good condition; the boilers have been cleaned and examined and reported in good condition; they have a steam gauge to indicate the pressure of steam; the breaker machinery is boxed and fenced off so that operatives are safe.

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.

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

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.

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.

Diamond No. 2 Shaft has been enlarged from 10 x 40 feet to 12 x 40 feet from the surface to the New County vein, and extended from New County vein to the Clark vein at 12 feet by 33 feet 5 inches, and is now being sunk at these dimensions to the lower "Dunmore" veins.

A new fan has been erected, dimensions 6 x 16 feet.

Hyde Park Shaft. A new plane was driven on a grade of one and one-half inches on ten feet. Sectional area, 7 x 14 feet; length, 395 feet. Another plane was driven on a grade of one inch in ten feet; sectional area, 7 x 12 feet; length 310 feet.

Manville Shaft. A new slope of the following dimensions was driven: Length, 1,100 feet; sectional area, 84 square feet; gradient, two and one-half degrees.

Holden Shaft. A plane of the following dimensions was driven: Length, 112 feet; sectional area, 60 square feet; grade, 27 degrees.

Delaware and Hudson Canal Company.

This company is opening up No. 3 Dunmore vein, and preparing for the installation of an extensive system of tail top haulage at their "Dickson" mine.

Von Storch Mine. A plane of the following dimensions has been completed during the year: Length, 238 feet; sectional area, 14 x 7; gradient, 2 in 10.

Lackawanna Iron and Steel Company.

A tunnel has been driven from this company's "Pine Brook" mine from No. 2 Dunmore vein through a fault a distance of 820 feet, and it was intended to reach the same vein, but the vein they found resembles Dunmore No. 3.

William T. Smith.

Mount Pleasant Mine. A tunnel was driven from the four-foot to the five-foot vein; length, 200 feet; sectional area, 7 x 8 feet.

Pennsylvania Coal Company.

At No. 5 Dunmore shaft two planes have been driven, one in the Clark vein, 400 feet long, 90 square feet sectional area, 9 degrees gradient.

One in the Bottom vein 760 feet long; 90 square feet sectional area, 5 degrees gradient.

A slope is being driven in the Second Dunmore vein, and another in the Third Dunmore vein.

Three Babcock & Wilcox water tube boilers of 450 H. P. are in course of erection.

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.

Hyde Park Colliery.—Ventilation and drainage good, except a portion of the New County slope where the ventilation can be improved.

Dodge Colliery.—Ventilation and drainage fair.

Holden Colliery.—General condition as to safety good.

Taylor Colliery.—Ventilation and drainage are good in the Clark and New County veins, but poor in the Big and Rock veins.

Bellevue Colliery.—General condition as to safety good.

National Colliery.—Ventilation fair, drainage good.

PEOPLE'S COAL COMPANY

Oxford Colliery.—Ventilation good, drainage fair.

DELAWARE AND HUDSON COMPANY

Greenwood No. 1.—General condition good.

Greenwood No. 2.—Ventilation good, drainage fair.

SCRANTON COAL COMPANY

Capouse Colliery.—General condition as to safety good.

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Pyne Colliery—Completed July 9 the installation of an 18 x 10 x 12 inch underwriters' fire pump, capacity 1,000 gallons per minute and equal to 4 1-8 nozzle streams. Fire proof brick building for pump and hose cart. Also fire alarm signals installed in breaker. Erected a new Mine Hospital in a more convenient place inside.

Archbald Colliery.—One rock plane tunnel from New County vein to Big vein, west of shaft about 3,000 feet, 7 feet x 14 feet, pitch 10 degrees, length 280 feet. One rock plane tunnel from New County vein to Big vein, 2,000 feet southwest of shaft, 7 feet x 14 feet, pitch 10 degrees, length 315 feet. One rock tunnel from Rock vein to Diamond vein, 1,800 feet south of shaft, 7 feet x 14 feet, pitch 10 degrees, length 510 feet. One rock plane tunnel about 3,000 feet west of shaft, from Rock vein to Diamond vein, for second opening, 7 feet x 12 feet, pitch 10 degrees, length 230 feet.

Continental Colliery.—One rock plane tunnel from Rock vein to Diamond vein, 7 feet x 14 feet, pitch 10 degrees, length 200 feet.

Hyde Park Colliery.—A new washery annex was completed and put in operation April 23; capacity 600 tons per day. Installed in breaker 3 tandem 5-foot slate pickers. Took out the wood floor in breaker engine room and replaced it with concrete. Removed the old boilers and boiler-house on account of being too close to the breaker. This has improved the condition of this colliery very materially. In September the wood cribbing in the main shaft and the central air shaft was taken out and replaced with concrete and expanded metal. One rock plane tunnel from Rock vein to Diamond vein, 7 feet x 14 feet, pitch 10 degrees, length 200 feet. One rock tunnel from No. 2 Dunmore vein to Clark vein for return air and second opening, 7 feet x 12 feet, pitch 20 degrees, length 250 feet.

Hampton Colliery.—Idle since October 20 for extensive repairs on breaker. When completed the breaker will be almost entirely equipped with new machinery which includes 12 of the latest improved 5 foot tandem slate pickers. The wood cribbing in the shaft was taken out and replaced with concrete and expanded metal. A new fire proof mine Hospital and Foreman's office were also completed inside.

Sloan Colliery.—One rock tunnel was driven from the New County vein to the Big vein for return air.

Central Mines.—A new 8x6x24 foot diameter fan with steel casing on concrete foundation has been installed at this mine to replace the old 14 foot diameter belt-driven ventilating fan. Also a fire proof brick building for engine room. Class and size of engine: Corless Tandem, high pressure cylinder 14x36 inches; low pressure cylinder 22x36 inches, 84 horse-power. The engine is connected direct to the fan. The fan was connected to the mine May 26.

Central Boiler Plant.—Installed a modern 6,000 horse-power open Cochrane water heater and a new fire proof brick building for water feed pumps, store room and Foreman's office.

Electrical Machinery Installed

Pyne Colliery.—One 10 ton electric motor on west gangway Clark vein. One 1,000 gallon electric centrifugal pump at foot of slope in Clark vein; induction motor, alternating current 400 volts. One 450 gallon electric centrifugal pump in west side dip; induction motor; alternating current 400 volts. Power is taken to these pumps from the surface through bore holes.

Archbald Colliery.—One 6½ ton electric motor in the Big vein.

Continental Colliery.—One 100 horse-power electric motor hoist on Dunmore slope; induction motor; alternating current 400 volts.

Hyde Park Colliery.—One 100 horse-power electric hoist on Dunmore slope; induction motor; alternating current 400 volts.

Sloan Colliery.—One 5½ ton electric motor in surface vein.

Central Water Shaft.—Installed during the year at the foot of the shaft in the Clark vein, an 800 horse-power six-stage electric centrifugal pump. Capacity 5,000 gallons per minute; alternating current; 3 phase; 2,100 volts. Column pipe 16 inch diameter. Lift 480 feet. This pump was put in operation the latter part of December, and to date is apparently working satisfactory. This pump is used in connection with the automatic bucket water hoist that was installed and commenced operation in August 1905.

Bellevue Colliery.—Grading and cutting rock at foot of Main shaft No. 2 Dunmore vein to improve the foot. Installed electric hoist in No. 2 Dunmore vein to operate No. 2 slope. Installed electric motor on V gangway Clark vein. Installed electric motor in New County vein. Rock cut in New County vein to take Big vein coal to New County vein. Tore down old boiler house. Installed new middle rolls in breaker. New water line reservoir to pump house. Erected new brick office for foremen, also new brick pump room. Erected a new brick oil house.

Dodge Colliery.—Installed 3 electric motors, one in Diamond vein, and two in New County vein. Tore down old boiler house.

CONDITION OF COLLIERIES AND IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Archbald.—A new washery annex was completed and put into service on September 13, capacity 600 tons per day.

Hyde Park—One rock tunnel 6 x 12, length 125 feet, from Rock vein to Diamond vein, to be used as a second opening.

One 10 x 18 shaft, east of the breaker, sunk to the Surface vein a depth of 80 feet, to be used as a second opening and air shaft. This shaft has been completed, but the ventilating fan has not yet been installed.

One 12 x 12 air shaft, to be sunk to the Dunmore veins, has been sunk to a depth of 35 feet, and is now in progress of sinking. This shaft will be equipped with an 8 x 24 Guibal fan with a steel casing.

Hampton.—One rock tunnel 7 x 12, length 159 feet, from Rock to Diamond vein, to redeem bottom coal in Diamond.

Sloan.—One rock tunnel 7x12 feet and 90 feet in length, from surface to Surface vein, to be used as a second opening.

One rock slope from the Clark vein to the No. 3 Dunmore vein, 7x12, and 475 feet in length, pitch 15 degrees.

One shaft 12x32 and 185 feet in depth, from the Clark vein to the No. 4 Dunmore vein, located about 700 feet east of Central main shaft. This shaft was completed during the year, and operations commenced in the Dunmore vein.

Central Boiler Plant.—The work of installing six new Maxim boilers, with a total of 3,500 horse power, is now in progress and nearly completed.

Dodge.—Main shaft sunk from Big vein to Dunmore vein and also general improvements made in breaker.

Electrical Machinery Installed

Pyne.—One 300 K. W. rotary converter, and an addition to the sub-station building to house the same, one 6½ ton electric locomotive in Clark vein, one 6½ ton electric locomotive in Big vein.

Archbald.—Two 6½ ton electric locomotives to operate on Rist and Rossars gangways in Big vein.

Continental.—One 300 K. W. rotary converter located on top of the Dunmore vein slope, one 6½ ton electric locomotive to operate in the Dunmore vein.

Hyde Park.—One 300 K. W. rotary converter with addition to sub-station to house the same. One 300 K. W. rotary converter taken away from this colliery and installed at the Central Water shaft for Sloan New County vein.

Three 6½ ton electric locomotives to operate in the New County and Dunmore veins. One Jeffrey rock crusher and foundation, to crush all rock and bone coming from the breaker in order to flush the same into the mines.

Hampton.—Three 6½ ton electric locomotives in the Diamond and Rock veins.

CONDITION OF COLLIERIES

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Hyde Park Colliery.—Ventilation, drainage, roads and general condition as to safety good.

Sloan Colliery.—Ventilation, roads, drainage and general condition as to safety good.

Hampton Colliery.—Ventilation fair; roads, drainage and general condition as to safety good.

Continental Colliery.—Ventilation, roads, drainage and general condition as to safety good.

Archbald Colliery.—Ventilation fair; roads, drainage and general condition as to safety good.

Bellevue Colliery.—Ventilation good; roads and drainage fair; general condition as to safety good.

Dodge Colliery.—Ventilation, roads and drainage fair; general condition as to safety good.

Holden Colliery.—Ventilation, roads, drainage and general condition as to safety good.

National Colliery.—Ventilation, roads, drainage and general condition as to safety good.

DELAWARE AND HUDSON COMPANY

Greenwood Colliery.—Ventilation good; roads and drainage fair; general condition as to safety good.

SCRANTON COAL COMPANY

Capouse Colliery.—Ventilation, roads, drainage and general conditions as to safety good.

PEOPLES COAL COMPANY

Oxford Colliery.—Ventilation good; roads and drainage fair; general condition as to safety good.

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Hyde Park Colliery.—The new air shaft 12 x 12 in progress of sinking in 1907 from the surface to the lower Dunmore vein, depth 583 feet, was completed, and a new 8 x 8 x 24 steel casing ventilating fan driven by an 18 x 36 single Corliss engine was put in operation November 1, resulting in an increase in the ventilation of about 103,000 cubic feet.

One rock slope from the No. 2 to the No. 3 Dunmore vein, 7 x 12, to a depth of 193 feet.

One 4 x 4 x 14 ventilating fan on the surface vein, driven by a 10 H. P. electric motor, was installed; one 50 H. P. electric motor to drive the ventilating fan at the Central Air Shaft to replace the steam engine, and one 35 H. P. electric hoist to replace the steam hoist to operate the Central Air Shaft.

Hampton Colliery, Outside.—Installed one 750 gallon steam pump for fire protection.

Sloan Colliery.—Installed one 150 H. P. electric hoist on the rock slope sunk from the Clark vein to No. 2 Dunmore vein.

Continental Colliery.—One rock tunnel, 7 x 12, in length 218 feet, from the Clark to the New County vein on the pitch, for the purpose of shortening the haulage.

The main shaft and the air shaft were concreted, replacing the old wood cribbing.

Bellevue Colliery.—New concrete barn in slope. Rock tunnel from New County to Big vein, and a second opening to the same tunnel. Rock tunnel from No. 2 to No. 1 Dunmore vein, and a second opening to the same tunnel.

Built new concrete blacksmith and carpenter shop, outside.

Dodge Colliery.—Concrete partition in main shaft.

Holden Colliery.—Installed electric hoist on plane to Surface vein.

National Colliery.—Installed dust fan in breaker. New brick blacksmith and carpenter shop, concrete barn built, inside. New fire pump and fire line installed. Outside.

DELAWARE AND HUDSON COMPANY

Greenwood Colliery.—Drift opened from outside to Checker vein. Haulage road built from breaker to head of plane, outside, distance 1,000 feet. A plane 400 feet in length, equipped with 10 x 12 engines, was built to hoist coal from mouth of drift to the Surface railroad.

CONDITION OF COLLIERIES

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Archbald.—Ventilation, drainage and condition as to safety, good.

Continental.—Ventilation, drainage and condition as to safety, good.

Hyde Park.—Ventilation, drainage and condition as to safety, good.

Hampton.—Ventilation, drainage and condition as to safety, good.

Sloan.—Ventilation in Sloan Surface vein is only fair. A new air-shaft is being sunk to improve this condition. Otherwise, the ventilation, drainage and condition as to safety are good.

Bellevue.—Ventilation, drainage and condition as to safety, good.

Dodge.—Ventilation, drainage and condition as to safety, good.

Holden.—Ventilation, drainage and condition as to safety, good.

National.—Ventilation, drainage and condition as to safety, good.

HUDSON COAL COMPANY

Greenwood.—The ventilation where fans are in use is good. In the openings where natural causes are depended upon the quantity is a variable one, but sufficient to maintain a healthy condition. Drainage fair; condition as to safety, good.

SCRANTON COAL COMPANY

Capouse.—Ventilation, drainage and condition as to safety, good.

PEOPLES COAL COMPANY

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

MINOOKA COAL COMPANY

Minooka.—Ventilation, drainage and condition as to safety, good.

CARLETON COAL COMPANY

National.—Ventilation, drainage and condition as to safety, good.

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Archbald Colliery.—All the inside buildings reconstructed of incombustible material.

Continental Colliery.—The 12'x4'x4' ventilating fan was replaced by a new 24'x8'x6' fan, which was put into operation March 20. All the inside buildings reconstructed of incombustible material.

Hyde Park Colliery.—A 7'x12' tunnel, 220 feet long, was driven from the Rock to the Diamond vein. All the inside buildings reconstructed of incombustible material.

Hampton Colliery.—All the buildings reconstructed of incombustible material.

Hyde Park Colliery.—A 7 by 12 foot tunnel, 220 feet long was driven from the Rock to the Diamond vein. All the inside buildings reconstructed of incombustible material. An automatic overwinding device was attached to the hoisting engines.

National Colliery.—An air shaft was sunk from the surface to the Clark vein, a depth of 75 feet. This shaft is 10 by 16 feet in the clear. A rock tunnel was driven on a 45 degree pitch from M. gangway, Clark vein to B. gangway, Clark vein, 7 feet by 12 feet, a distance of 60 feet for ventilating purposes. Installed railings around all dangerous parts of machinery and openings in the breaker and around all engines and machinery outside. Installed a Welch automatic overwind device or engine stop on hoisting engines. Completed new concrete wash-house, which is properly ventilated, and there is a person in charge to see that it is kept clean.

Dodge Colliery.—New locomotive house outside. Installed additional electric locomotive, 750-gallon fire-pump, and a Welch automatic overwind device or engine stop on hoisting engine. New concrete mule barn inside. New concrete wash-house completed; it is properly ventilated and there is a person in charge to see that it is kept clean. Started work on a new haulage system on the outside to safely convey the cars from the drift to the head of the breaker, which is now being done by an engine. This will be completed in a short time. Installed railings around all dangerous parts of machinery and openings in and around the breaker.

Holden Colliery.—Installed railings around all dangerous parts of machinery in and around the breaker. A Welch automatic overwind device or engine stop was installed on hoisting engines. Completed new concrete wash-house, which is properly ventilated, and there is a person in charge to see that it is kept clean.

Continental Colliery.—A second opening and return air course was driven from No. 1 Dunmore to Clark vein, a distance of 73 feet. An air shaft and second opening was also sunk near outcrop to Diamond vein, depth 30 feet. An automatic overwinding device was attached to hoisting engine.

Hampton Washery.—All the buildings were reconstructed of incombustible material.

This Company is educating its non-English speaking employes. Colonel R. A. Phillips, the General Manager, conceived the idea of having pictures taken in the mines showing how accidents occur and how they are prevented. Two hundred of these pictures appear in book form with simple statements. The book was prepared under the direction of Colonel Phillips and Mr. C. E. Tobey, Superintendent of the Coal Mining Department, and ten thousand copies have been printed and will be distributed to groups known as extension schools in the various mining communities.

This Company is promoting this educative work through the local branch of the Young Men's Christian Association, and it deserves much greater patronage than it is getting at present, as it instructs not only in theory, but also in practice.

SCRANTON COAL COMPANY

Capouse Colliery.—All inside buildings reconstructed of incombustible material.

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.