

general mine superintendent, Edward Jones is mining boss and A. Wisenflew is outside foreman.

Description.—The opening to the coal consists of 2 shafts and a tunnel; one of the shafts caved in about 2 years ago, and is now used as a pump shaft; there is a breaker connected with these mines; they mine and prepare about 250 tons of coal per day: they employ 40 miners, 40 laborers, 5 drivers, 3 door-boys and 5 company men in the mines; 25 slate pickers, 4 head and plate men, 3 drivers, 2 company men, 3 mechanics and 2 bosses outside—in all 132 men and boys. They are working the Carbon Hill vein of coal; average thickness, 6 feet; they work headings 15, air-ways 15 and chambers from 25 to 27 feet wide; they leave pillars from 8 to 15 feet wide to sustain the roof; they leave cross-entrances 60 feet apart for the purpose of ventilation; the roof is rock; the mines are in a good working condition.

Ventilation in the shaft is produced by a steam jet, and in the tunnel by a furnace; the intake for the shaft is in main shaft, area 100, and the upcast is in main shaft, area 60 feet; the intake for tunnel is at mouth of tunnel, area, 50 feet, and the outcast is in furnace air shaft, area 60 feet; there is some noxious gas evolved in the shaft; the mines are examined every morning before men go to work, and every evening to see that the main doors are closed; the main doors are hung to close of their own accord; they have attendants at main doors; the air is circulated to the face of the workings in the shaft in one volume; the amount of pure air in the shaft is 4,000, and in the tunnel 5,000 cubic feet per minute; the amount of ventilation has been measured and reported; ventilation is good.

Machinery.—They use one breaker engine, 25-horse power; 2 hoisting engines, 45-horse power each, and 1 pumping engine, 60-horse power; they have a safety carriage, 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 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.

Remarks.—They have furnished maps of mines; they have no second opening for the shaft yet, but they have for the tunnel; they have a house for men to wash and change in; there is some standing water in the old shaft workings; 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 mines 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; they do not allow over 10 persons to ride on the safety carriage at one time; the parties having charge know their duty in case of death or serious accident; the tunnel workings is a different vein of coal from the vein that they are working in the shaft; the shaft landings are protected by safety gates.

ELLIOTT, KEORNER & Co.'s NEW COLLIERY.

This colliery is located in Old Forge township, and situated one mile and a half north-west of the Lackawanna river; the opening to the coal consists of a shaft and slope; the shaft is 85 feet deep to the first workable vein; the opening is 10 feet by 45 feet; the slope is located 1,500 feet south-west of the shaft in progress of sinking; they employ 48 men and boys in and around the works.

PYNE COLLIERY.

This colliery is located in Lackawanna township, and situated about 2 miles north-west of the Lackawanna river; this is a new colliery, owned by the Delaware, Lackawanna and Western railroad company; the opening consists of a shaft and slope; they are also building a new breaker; in the slope they employ 12 sinkers and 4 mechanics. S. D. Kingsley, Esq., has charge of building all the new breakers and keeping them in repairs for this company; he employs about 16 carpenters; John M. Andrews has about 15 masons, and the company has about 12 company men; in all 59 men.

twenty-inch cylinder, two hundred horse power, one fan engine, eighteen by thirty inch cylinder, eighty horse power to run a twenty-foot fan. There is also a brick engine-house here, with six boilers in place, for burning culm. They are building two breakers at this colliery, with a capacity of one thousand tons per day each. There are a number of men engaged here sinking the shafts and building the breakers. When this colliery is completed it will be one of the best equipped and most substantial in this mining district.

The Lackawanna Coal Company's New Shaft.

This is a new shaft which they are sinking. At present the shaft opening is ten by thirty-four feet, and is down fifty feet from the surface. It is located in Blakely borough on the north-west side of the Lackawanna river, on property leased by the company from Stevens, Hull, and others.

They are working a large force of men sinking the shaft and building all the necessary appendages for a first class colliery.

Jones, Simpson & Co.'s New Shaft.

This shaft is located in Archibald borough, on a tract of land leased by the company, of C. B. Hackley, Esquire. It is about one and one half miles west from the Lackawanna river. It will be connected with their present breaker by railroad track eleven thousand two hundred feet long, the coal to be hauled by locomotive power to the breaker from the shaft. The shaft opening is ten by thirty-four feet. It is sunk about seventy-five feet. The probable depth of the shaft to Archibald seam of coal is one hundred and twenty-five feet.

Belmont Colliery.

This is a new colliery, and consists of three drifts, in Carbondale. Bottom seam of coal, and a new breaker, with a capacity of preparing about four hundred tons of coal per day. It is located in the upper end of Carbondale city, and about fifteen hundred feet east of the Lackawanna river. It is owned and operated by the Butler Coal Company.

The Pennsylvania Coal Company.

This company have made considerable improvements during the year, but their officers have made no detailed statements of the same.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.

Pyne Shaft.

The company have graded a new gravity plane in this colliery to let the coal down on the West mountain side of shaft.

Continental Shaft.

Re-sunk from G or big seam to the Clark, now operating both seams of coal.

Hampton Shaft.

Sinking a new slope from Diamond seam to F or Rock seam so as to

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 $32\frac{1}{3}$ 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.

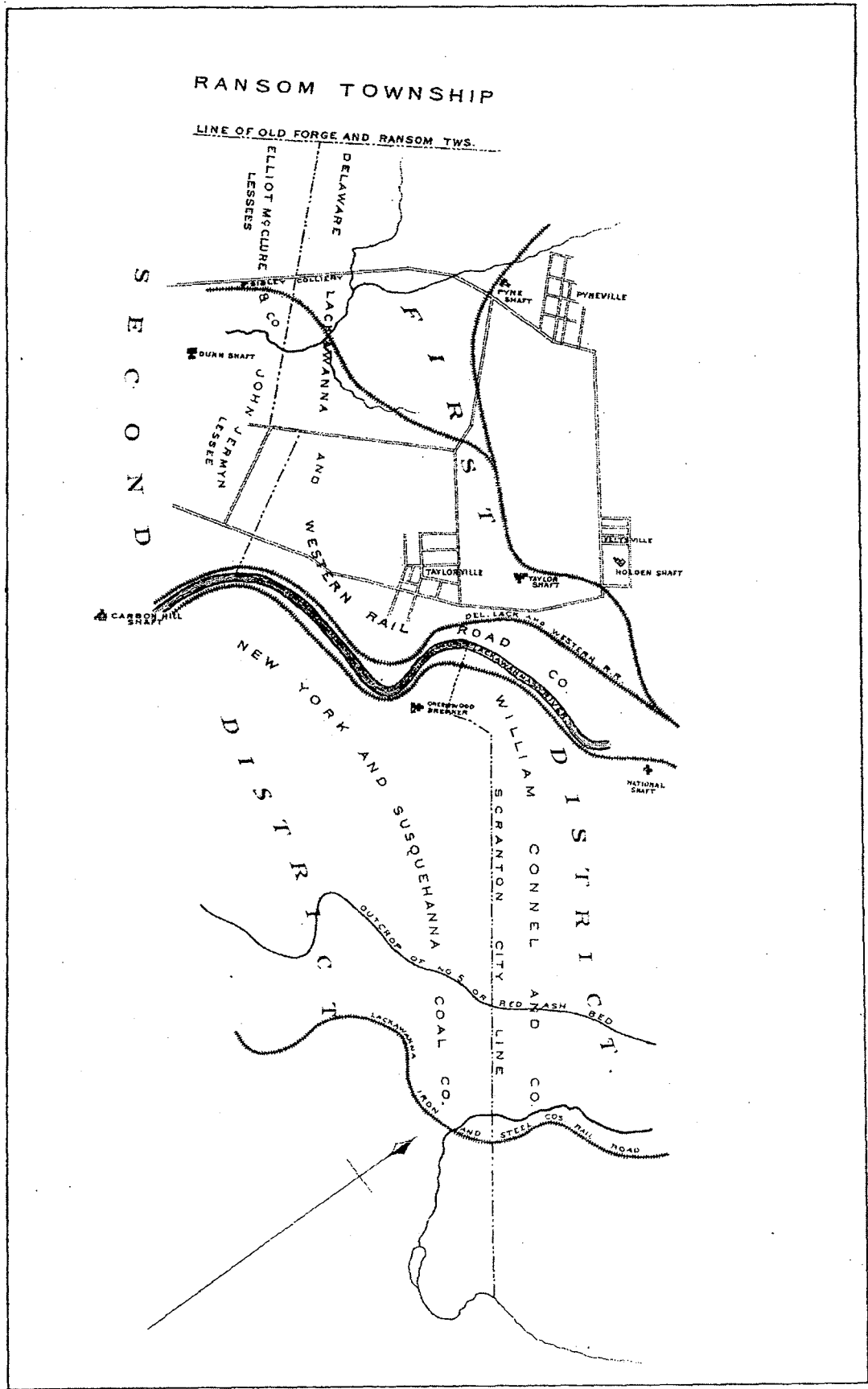
Holden shaft.—Finished a new plane 414' long on a grade of 1 in 3; sectional area 7'x16', equal to 112 square feet.

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.

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.

P. at 150 pounds pressure, divided into seven and one-half batteries Babcock & Wilcox vertical headed water tube boilers. They are fitted up with McClave & Brooks Automatic Stokers and self-feeding arrangement for fuel from storage pockets, and also have attached the Green Economizers, divided as follows: One for eight batteries and one for seven and one-half batteries, with induced fan draft in connection with forced fan draft. This plant is all under one roof. The steam pipe connections are as follows: To Sloan shaft 1,420 feet of 8 inch pipe. To Central shaft 1,400 feet of 8 inch pipe. To Hyde Part shaft, 3,140 feet of 8 inch pipe. To Hampton Shaft, 1,400 feet of 12 inch pipe. To Continental shaft 1,500 feet of 8 inch pipe. The above plant takes the place of ninety-five boilers, cylinders and locomotives. A new reservoir 100 feet in diameter has also been located near the plant which will hold 500,000 gallons of water.

At Pyne shaft a tail rope system of haulage is being installed. Length of main rope 4,000 feet; size of engines 15 feet x 30 feet geared.

Sloan Mine.—A new air shaft has been sunk to the surface vein and a connection driven from the bottom to the upcast compartment of main shaft. A new ventilating fan will soon be erected over this shaft. The fan which is now ventilating the mine and is located at the breaker over the main shaft will be removed, thus reducing the risk from fire, and at the same time doing away with the possibility of the air—which is being exhausted, entering the downcast again.

New Water Shaft.—A new shaft is being sunk at a point between the Central and Sloan shafts. This shaft is 8'x33' in the clear, and will be 500 feet deep. It is to be used to drain the mine workings of the company's Keyser Valley collieries. When the work is finished it is proposed to raise 7,000,000 gallons of water every twenty-four hours, by the use of buckets.

An electric motor system of haulage has been installed in the Dodge mine, and a new steam generating plant erected, at a point between the Dodge and Bellevue breakers. This plant will supply steam to the two mines and breakers.

A new ventilating shaft has been sunk at the Taylor mine from the surface to the Clark vein.

In the Manville shaft of the Delaware and Hudson Company and the Delaware, Lackawanna and Western Railroad Company, and the Delaware, Lackawanna and Western Company's Holden shaft, the old cribbing has been removed and replaced by expanding metal. The work was successfully accomplished in each case, and the result is highly satisfactory.

The improvements made in the several mines in the district are of the usual kind, and as important as the condition of the mine required and the increased output demanded.

Pyne colliery.—A new belt-driven ventilating fan 5x4½ feet by 16 inches was erected at the Pyne. The fans erected in 1903, together with this one, were attached to the breaker, which was a source of danger from fire.

One Rock Plane tunnel located about 1,700 feet north-east of shaft from the Clark to the Big vein; 7x14 feet, length 663 feet, pitch 12 degrees.

Six 6½ ton electric locomotives have been installed, four of which are equipped with reels to work in chambers. Sub-station erected outside for 200 K. W. rotary converter which supplies 250 volts power for the six (6) electric motors inside.

Power is supplied from the central power station near Hampton colliery.

The new 1,500 horse power B. & W. water tube boilers and brick house are now nearly completed. Located about 250 feet north-east of breaker.

Sloan Colliery.—One Rock plane tunnel located about 2,000 feet north-east of shaft from Clark to N. C. vein, 7x14 feet length 275 feet, pitch 10 degrees.

Central Colliery.—One rock tunnel plane, located about 800 feet north-west of shaft, 7x14 feet length 375 feet, from Clark to New County vein, pitch 10 degrees.

Hampton Colliery.—One rock plane tunnel, located about 2,600 feet south of shaft, from Rock to Diamond vein, 7x14 feet, length 200 feet, grade 5 per cent.

Holden Colliery.—Air shaft from the Big vein to New County vein, size 6x8x36 feet deep, for ventilation.

LEHIGH VALLEY COAL COMPANY

William A. Colliery.—A rock tunnel was driven from the middle to the upper-split of Red Ash vein, at a point near foot of long slope, just west of the Lackawanna river. It was put at this point in order that the coal in this vein between the river and shaft could be mined separately from the same vein east of the river, the coal under the river being kept as a barrier or safety pillar. Since the Hallstead mine was flooded a system of silting has been in operation at this mine. All of the finer refuse from breaker, together with the dirt from culm banks on surface, has been silted into the old workings.

The workings along the Hallstead mines have been thoroughly filled from barrier pillar to main gangway. The work is being continued in the old workings along the Pennsylvania Coal Company's line. A slope has been driven from the shaft level to the lowest point in the Flag and Drake tracts. This was for the purpose of saving in haulage, the foot of Long or Main slope being a considerably higher elevation.

Pyne Colliery.—A second opening rock tunnel was driven from the New County vein to the Big vein, size 7 feet x 12 feet, length 200 feet, pitch 18 degrees. Installed one 200 K. W. electric rotary converter for mine haulage purposes. Installed and working two 6½ ton motors without reels, and five 6½ ton motors with reels. Installed new water fire lines for protection outside to breaker and out-buildings. Installed 2½ batteries or 10 boilers of the Babcock and Wilcox water tube type, 1515 horse power. Brick building, boilers brick lined, iron trusses for roof, and equipped with Parson's steam blower. Cylinder boilers and old boiler house removed. Hoisting engines were remodeled and removed further away from breaker onto a new foundation and in a new brick building.

Archbald Colliery.—Installed two batteries or 8 boilers of the Babcock and Wilcox water tube type, 1212 horse power. Brick buildings, boilers brick lined, iron trusses for roof, and equipped with Parson's steam blower. Old cylinder boilers removed and old boiler house torn down and removed. Installed fire lines and plugs on the outside for fire protection. Rock tunnel driven from Rock to Diamond vein, size 7 feet x 12 feet, and 75 feet long. Rock plane tunnel from New County vein to Big vein, size 7 feet x 14 feet, length 220 feet.

Continental Colliery.—Second opening rock tunnel driven from Dunmore No. 2 vein to Clark vein, size 7 feet x 12 feet, length 125 feet.

Sloan and Central Collieries.—Second opening rock tunnel driven from Clark vein to New County vein, 7 feet x 12 feet, length 150 feet. Also to do away with hoisting coal at the Central main shaft to the surface, and hauling over with steam locomotive to Sloan breaker; the coal is now transported by electric motor from Central to Sloan under ground, in the Clark vein. Six additional reel motors were installed at this mine during the year.

Dodge Colliery.—A new brick hoisting engine house, size 36x36; and a new pair of direct acting engines, size 22 inches x 36 inches. A new washery annex, size 24 feet x 60 feet for small sizes, capacity 400 tons per day.

Taylor Colliery.—Installed 4 new tubular boilers, 150 horse power each, also brick boiler house for the same, size 53 feet x 41 feet. Installed pair of breaker engines 12x30 inches in a new brick building 36 feet away from breaker. Rock tunnel driven from New County vein to Clark vein, size 7x14x184 feet, also new air shaft for ventilation from New County vein to Clark vein to ventilate above tunnel, size 8x10x23 feet.

LEHIGH VALLEY COAL COMPANY

William A. Colliery.—A new boiler plant consisting of seven batteries, with 2100 horse power was completed. A steam line was extended from this plant to the Lawrence and Bablyon mines, and the steam for the three collieries is now furnished from this plant. New cribbing was placed in the main shaft. One pair of 12x22 inch hoisting engines was placed in the Clark vein to replace the old pair which was too small for the work. One 1000 and one 600 gallon pump was placed in the Red Ash vein for silting.

Lawrence Colliery.—A William's crusher was installed to dispose of refuse from breaker, which is run in the mine.

Installed fire-pump in our new shaft buildings.

Completed bridge for our railroad track over Carpenter's Creek.

Built sand drying house 10 feet x 16 feet.

Built engine house 15 feet x 24 feet x 10 feet high for locomotives.

Put in concrete retaining walls $2\frac{1}{2}$ x8 feet x 99 feet long, at mouth of main slope, in place of the wooden cribbing that has heretofore been in use.

Drove 1,100 feet of new road, to connect new shaft to west gangway road.

Drove 240 feet of rock tunnel 8 feet x 12 feet for new road in Red Ash to face of 5th vein workings.

A slope 360 feet long at the inside end of new road was driven to the coal left in dip south of new road, and a 60 H. P. engine installed to operate this slope.

Installed electric haulage 300 feet long, with $8\frac{1}{2}$ ton motor. This road is lighted with electric lamps.

Made second opening to Ross vein, same being the rock tunnel, crossing measures to the Marcey vein, size 8x12 feet.

CLEAR SPRING COAL COMPANY

Clear Spring Colliery.—They installed a 115 K. W. electric machine and engine, and are at present using the current for drilling inside. They intend installing two electric locomotives at an early date to be used in their small vein, viz: Marcey vein.

W. G. PAYNE COAL COMPANY

A new 16x24x15 $\frac{1}{4}$ x18 inch Ingersoll-Sergeant air compressor, complete, has been installed alongside of the one already in use in a new engine house 16x44 built on concrete walls and foundation.

A new outside hospital for the mine stock, furnished with water and heat, was built during the year.

Air compressor pipe line running from the compressor down the shaft was increased in size from 8 to 10 inches.

There was a tunnel driven in the Eleven Foot vein through a roll 60 feet over all so as to get at the vein beyond.

Owing to the high percentage of acid in the mine water they changed all the Bennett pumps during the past year from cast iron to bronze. They also installed a new No. 10 Knowles pump in the Red Ash s'ope; also a new No. 9 Knowles pump installed at the same station.

There has been a new plane built 260 feet long used for conveying culm from the culm bank into the washery, in connection with a 90 foot swinging conveyor.

RAUE COAL COMPANY

Louise Colliery.—A tunnel, 106 feet long was driven from top Ross to bottom split of same vein in the Mt. Thomas drift, cutting the vein in good shape on the other side of fault.

A new air shaft, 6x6 feet, was sunk from surface on mountain

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.

RANDALL AND SCHAAD BROTHERS ANTHRACITE COAL COMPANY,
LIMITED

Randall and Schaad.—Condition as to drainage, ventilation and general safety is good.

IMPROVEMENTS AT COLLIERIES

PENNSYLVANIA COAL COMPANY

Central Colliery.—At No. 13 shaft a centrifugal pump electrically driven with a capacity of 1,000 gallons per minute has been installed.

A new opening has been driven into the Marcy vein at Laws shaft to give extra facilities for handling coal.

A plant has been erected at Avoca bank, to pick up the culm, load it into railroad cars, and send it to the various washeries for preparation.

OLD FORGE COLLIERIES

A number of machines, such as lathes, wheel-presses, and boring machines have been installed in the shop.

A number of the roads at the Mountain drifts and Old Forge No. 2 shaft have been uniformly graded to provide better haulage roads for the electrical equipment.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

The Pyne Colliery was shut down for extensive repairs to the breaker from July 3 to December 1.

The Pyne Breaker was practically rebuilt. Ten new Emery mechanical slate pickers, 44 spiral separators and 14 shakers were installed.

One breaker, 18 inches x 26 inches Hamilton Corliss engine was installed to replace two old breaker engines. One Jeffrey rock crusher was installed driven by a 50 H. P. electric motor; two new cylinders, 22 inches x 48 inches, were installed on the shaft hoisting engines, operated by two double seated 8-inch throttle boat valves and an extra or emergency valve.

A new system of heating the breaker throughout was installed, also new fire water lines.

The wooden trestle was replaced with a steel structure; a new concrete reservoir, 40 feet in diameter, for boiler feed water was built and also a new brick and concrete fire proof oil house.

A new Jeanesville 18 inch x 34 inch x 36 inch compound condensing plunger pump, capacity 1,500 gallons per minute, was installed near the foot of shaft in a fire proof pump house.

A new air-shaft was sunk from the surface to the Clark vein 12 inches x 14 inches x 300 feet in depth; and a new ventilating fan, Guibal type, 6 feet x 8 feet x 24 feet, was installed on this shaft, driven by 18 inch x 36 inch Hamilton Corliss engine.

There was also installed a new breaker dust fan, 2 feet, 7 inches x 5 feet, 6 inches x 12 inches, to be driven by a 75 H. P. electric motor. All tubing is made of galvanized iron.

An 80 horsepower electric hoist was installed at Corey slope and a fireproof engine house built. A fan 15 feet in diameter, driven by a 55 horsepower motor, was installed in a fireproof fan house to properly ventilate the workings of the Corey slope.

Central Colliery.—No. 13 shaft has been abandoned as a hoisting shaft. A motor road was made from No. 13 to Laws shaft, and the coal is hoisted at Laws shaft. No 13 shaft is only used as a pumping station and for lowering and hoisting men.

A new electric pump has been installed in Laws shaft, capable of handling 1,000 gallons of water per minute.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Pyne Colliery.—A second opening and return airway, 7 by 12, was driven from the Clark to the No. 1 Dunmore vein, pitch 25 degrees, total length 78 feet. A Welch automatic overwind device, or engine stop, was installed on the hoisting engines.

Taylor Colliery.—Concrete breaker and washery completed and put in operation during the month of July.

JERMYN AND COMPANY

Jermyns Colliery.—A new wash-house was built of brick and concrete, 80 by 20 feet, to accommodate 200 men and boys, with shower bath and lockers. A supply house was built of brick and concrete, 80 by 24 feet. Made slope from outside to Clark vein, to be used as second opening, also air shaft from Clark vein to Monkey vein. Balance plane in No. 2 mine. A new tower was erected at No. 3 shaft.

ELLIOT, McCLURE AND COMPANY

Sibley Colliery.—Concrete stables were completed in No. 2 Dunmore vein, also one in No. 3 Dunmore vein. Two Lehigh Valley double jigs for the preparation of egg and stove coal were installed in the breaker. An additional air compressor is being installed. A new compound duplex Jeanesville pump, with steam cylinders 22 and 34 inches, 16 inch plunger, 36 inch stroke, is being placed in position in the Dunmore vein. Big vein is being opened by a drift north of shaft. This drift has been driven about 300 feet.

HILLSIDE COAL AND IRON COMPANY

Consolidated Colliery.—Made a new opening on the North dip for hoisting slope for Red Ash vein. Engines moved from inside to outside. Fan and fan-house, car and blacksmith shop, barns, storehouses, locomotive house, foreman's office, emergency hospital, wash-house and boiler plant, were built near slope. This was done on account of fire in surface vein under location of old buildings near breaker.

CONDITION OF COLLIERIES

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Taylor and Pine Collieries.—Ventilation, drainage and condition as to safety, good. Pillars are being extracted.

Halstead Colliery.—Ventilation and drainage, good. Condition as to safety, fair. Pillars are being mined.

PENNSYLVANIA COAL COMPANY

Old Forge and Sibley Collieries.—Ventilation, drainage and condition as to safety, good. Pillars are being removed.

Central Colliery.—Ventilation, drainage and general condition, good. Pillars are being mined.

JERMYN AND COMPANY

Jermyn Colliery.—Ventilation, drainage and condition as to safety, good. Mining pillars extensively.

DELAWARE AND HUDSON COMPANY (INCLUDING HUDSON COAL COMPANY)

Langeliffe Colliery.—Ventilation, drainage and condition as to safety, good. Mining pillars exclusively.

HILLSIDE COAL AND IRON COMPANY

Consolidated Colliery.—Ventilation, drainage and condition as to safety, good. Pillars are being removed.

LEHIGH VALLEY COAL COMPANY

Austin Colliery.—This mine is exhausted and the opening closed.

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Pyne Colliery.—One electric locomotive pit was built in east side of Clark vein for-motors working in that section and in No. 1 Dunmore vein, east side.

Three electric locomotives, including one 7½-ton Jeffrey locomotive, were installed in No. 1 Dunmore vein, east side.

One 6½-ton Jeffrey locomotive was installed in No. 1 Dunmore vein, west side.

One 7½-ton General Electric locomotive was installed in New County vein.

PENNSYLVANIA COAL COMPANY

Sibley Colliery.—Outside: The breaker was closed down March 31 and during the summer months the structure was razed to the ground.

CONDITION OF COLLIERIES

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Taylor, Pyne and Holden Collieries.—Ventilation, drainage and condition as to safety, good. Pillars are being removed.

Halstead Colliery.—Ventilation, drainage and condition as to safety, fair. Pillars are being mined.

PENNSYLVANIA COAL COMPANY

Old Forge and Central Collieries.—Ventilation, drainage and condition as to safety, good. Pillars are being mined.

JERMYN AND COMPANY

Jermyn Colliery.—Ventilation, drainage and condition as to safety, good. Pillars are being mined extensively.

DELAWARE AND HUDSON COMPANY

Langcliff Colliery.—Ventilation, drainage and condition as to safety, good. Mining pillars exclusively.

HILLSIDE COAL AND IRON COMPANY

Consolidated Colliery.—Ventilation, drainage and condition as to safety, good. Pillars are being removed.

MOOSIC COAL COMPANY

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

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Taylor Colliery.—Inside: Installed one 7-ton electric locomotive.

Pyne Colliery.—Inside: Installed four new electric locomotives.

Outside: Installed recaging device at head of breaker, one Sullivan 10 by 10 portable electrically driven air compressor with Ingersol Rand jackhammers, also an electric motor drive to take the place of steam drive in breaker annex.

JERMYN AND COMPANY

Jermyn Colliery.—Inside: Installed one electric coal cutting machine in No. 3 Dunmore vein, No. 3 shaft.

DELAWARE AND HUDSON COMPANY

Langcliff Colliery.—Inside: Installed two 800 gallon electric pumps.