

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 13 degrees; it is 8½ 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 268 feet deep to the Diamond vein; they are now sinking between the Diamond and Rock

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 $28\frac{3}{4}$ 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 shifts, 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

whole number at present in the district is forty-nine. One old fan was replaced with a new one, and two have been removed from one mine to another. Several air-shafts have been sunk, and a large amount of work has been done inside of the mines, for the purpose of utilizing a greater proportion of the air entering them.

The Delaware, Lackawanna and Western Railroad Company still carry the palm for having the best ventilated mines—all of their collieries having excellent ventilation, with the single exception of **Tripp's slope**. This slope needs attending to, and it is expected that long before the close of the current year, there will be no cause of complaint even here. A new fan, twelve feet in diameter, and three feet six inches face, was erected at the air-shaft connected with the Hampton shaft in place of a furnace, which has increased the ventilation from forty-four thousand six hundred to sixty-two thousand six hundred cubic feet per minute. This fan commenced running on the 27th of October.

The Dodge shaft is also ventilated at present by the fan at the Scranton Coal Company's slope adjoining, which has been lying idle for years. This also is a change from the furnace heretofore used, and has undoubtedly been affected, because it is so much cheaper to run a fan than to keep up a fire in a large furnace. The furnace in this instance produced more air for the Dodge shaft than the fan does, but the fan furnishes ventilation for the Scranton mines in addition to the Dodge. The furnace at the Dodge has produced as high as one hundred and forty-two thousand cubic feet per minute, exerting a horse power of 26.66 to move the air, and I doubt very much that another furnace is to be found in any colliery in the country, that will give so favorable a result. It is a double furnace, having an aggregate grate surface of one hundred and twelve square feet, the depth of the upcast being three hundred and thirty feet, and the sectional area, one hundred and thirty-two square feet. As an example of a first class furnace, I here insert a plan of it. There are two other furnaces—one at the Hyde Park shaft, and the other at the No. 2 Diamond slope—both of them sisters to the one at the Dodge, but neither of them has ever produced the quantity of air that this one has, and the difference is accounted for by the comparative shallowness of the upcasts which makes a great difference in the height of the motive column. A new fan has been put in to replace an old one at the Sloan shaft, the old one being so much worn as to require the change.

A number of the collieries of this company are quite fiery, especially the Taylor shaft, Bellevue shaft, Bellevue slope, Dodge Shaft, Sloan shaft, Central shaft, and Hampton shaft, while there is considerable gas generated in nearly all of the others. But the ventilation is so sweeping, that no explosion can occur unless it be through want of proper distribution, or through some inexcusable blunder. I find the general mine superintendents, Messrs. B. Hughes and T. D. Davies, always careful, and prompt to inaugurate improvements whenever such are needed, and they always manifest a cheer-

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prevent explosions in the mines will be conceded throughout the world, and when this is universally admitted these terrible explosions will cease.

PRESENT CONDITION OF THE COLLIERIES.

I am happy to be able to report that the condition of the collieries in the district, so far as ventilation is concerned, is on the whole satisfactory. There are but few poorly ventilated mines, and the number is being reduced each year.

The Delaware, Lackawanna and Western Railroad Company's mines are kept well in hand, there being only one or two that cannot be rated as first class. There is never any trouble with the mines of this company, for the gentlemen in charge of them have always shown a cheerful readiness to comply with the requirements of the ventilation act. They have one colliery at present, the Central shaft, where the volume of gas evolved is increasing to such an extent as to require an early addition to the quantity of air now provided for the workings. Gas stands in small quantity in several of the working places, and the workmen are in continual danger from explosions on a small scale. But they are driving to make a connection with the Oxford air-shaft, where, I am informed, they intend to erect a fan as soon as possible. This will provide all the ventilation they will need. The other collieries of this company are well provided with a liberal quantity of air, with the exception of **Tripp's slope**; and there is no cause for complaint, only occasionally, when the mine bosses neglect to conduct the air to the face of the workings.

The Delaware and Hudson Canal Company's mines have been greatly improved. They have only two collieries now in my district which are not well provided with ventilation, and neither of these is very bad, and I have been assured by A. H. Vandling, Esquire, that one of the collieries referred to will be provided with two fans as soon as they can be put in place this coming spring. These fans are intended for the Grassy Island shaft, Olyphant borough, and when they are erected, they cannot fail to produce ample ventilation for the colliery, if it will be properly utilized by the inside bosses. The other colliery referred to is the White Oak colliery, Archbald borough. This is an old colliery and nearly exhausted; and as the ventilation is not very bad, it would be unjust, perhaps, to require costly improvements to be made in it. The air now provided can be better utilized by attending to the inside air-courses. A shaft will soon be sunk, to take the place of this colliery, which, I am assured, will be provided with a fan from the start.

A. H. Vandling, Esquire, is entitled to great credit for doing so much to improve the ventilation of the collieries under his charge during the last four years, and it gives me great pleasure to award him the credit due him. I am free to admit, that I was impatient to have improvements inaugurated, especially in the collieries at Carbondale, for I found them in very bad condition; and, perhaps, I was too impatient under all the circumstances. I am aware that a great part of the expense incurred should have been

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

Central Shaft.

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

Oxford Shaft.

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

Oxford Air-Shaft.

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

Scranton Coal Company's Slope.

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

No. 2 Diamond Shaft E or Diamond seam.

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

Tripp Slope

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

Brisbin Shaft.

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

Cayuga Shaft.

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

Storr's Shaft.

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

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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.

Delaware, Lackawanna and Western Railroad Company.

Improvements made during 1884: **Tripp shaft** completed to Clark vein. New fan there, 14'×4'; also, second opening, now sinking, nearly completed, sunk from G vein, re-opened or enlarged from 12'×12' to 12'×24' to Clark vein. Intention is to put another fan here, 14'×4'. Bellevue shaft completed so as to hoist the coal direct up the breaker tower, and abandoned the trestling now between the old shaft and breaker.

Respectfully yours,

B. HUGHES.

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

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' × 10' = 60' and 28' deep; also sunk an air shaft from New County to Clark vein 6' × 10' = 60' and 78' deep, and drove a tunnel from Big to New County vein 7' × 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 Storrs, 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.

CONDITION OF COLLIERIES

The condition of the mines as to the ventilation, is satisfactory and will compare favorably with their condition at any time in the past. Table I will show the actual quantity of air in circulation in each of the mines. Fewer complaints have been heard on ventilation and distribution during the past year than usual. Whenever any local section of the workings of any mine is found to be inadequately ventilated, the attention of the officials is called to it, and almost without exception steps are immediately taken to remedy the defect.

Drainage

The drainage of the mine workings is good, except in spring and autumn when the workings of the surface veins receive water from the surface. The beds of these veins have been rendered very irregular on account of some of the lower larger veins having been worked out and caved in in many instances. When it is said that the drainage of these workings is not good, it would be proper to say that the water which is constantly dropping from the roof causes more inconvenience than that which lodges in the irregularities, or swamps in the bed of the vein; and further, it is more difficult to remove the trouble.

IMPROVEMENTS

During the year the following improvements were made in the mines of the district:

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY.

Tripp Shaft.—This shaft has been widened from 10 to 12 feet, from the surface to the Clark vein. From the Clark it has been sunk through the three Dunmore veins, a depth of one hundred and eighty-seven feet. The shaft has been concreted, and re-timbered from top to bottom, with a new tower erected over it. The work is of the most substantial kind.

Tripp Drift.—From the workings of this drift a rock plane has been driven a distance of three hundred feet, into the "Eight Foot" bed above. A shaft has been sunk from the workings of the "Eight Foot," a depth of ninety feet into the workings of the vein next below.

Tripp Slope.—The rope haulage system in this mine has been extended one thousand feet.

New Vein.—The New County vein is now being opened up from the Diamond and Supply shafts of the Diamond colliery.

Blasts

March 14, Carmine Gindies, Italian, laborer, was killed by a shot fired in an adjoining working place at No. 5 shaft, Pennsylvania Coal Company.

March 17, Taliesin Williams, American, miner, was instantly killed at Von Storch slope, by returning to shot which he thought had missed fire.

March 22, John Roak, Polish, laborer, was killed at Dickson mine by flying coal from a blast. He walked into a neighbor's chamber after the alarm had been given.

May 16, Pregze Vivdena, Hungarian, miner, was instantly killed at Pancoast mine by flying coal from his own blast.

May 29, John Sepsice, Slavonian, miner, was instantly killed by a blast of coal at Green Ridge slope. The blast exploded just at the instant the miner touched the squib.

August 3, Jeremiah Welton, English, miner, and Charles Parrish, Polish, miner, working on a rock tunnel at the North End mine were instantly killed by returning to the face just as a charge of dynamite exploded.

November 7, Gusti Kuba, Hungarian, miner, was instantly killed at the Pancoast mine, by a blast. He had prepared two shots and thought he heard them explode. He returned to the face and was killed by the flying coal from the second shot.

November 20, Steve Sopt, Polish, laborer, was instantly killed at Tripp slope, Diamond mine, by the flying coal from a blast he fired in the absence of his miner.

November 21, Owen Grogan, American, miner, was killed at Tripp shaft, Diamond mine, by a premature blast caused by the ignition of gas issuing from the hole.

Falling into Shafts

October 12, Gabor Puckle, Hungarian, laborer, was in the cage with a number of fellow workmen, when he fell off and met his death.

November 14, Thomas Rodway, American, company man, fell into main shaft at Brisbin mine, from the surface vein landing, while in the act of hailing the footmen at a lower "foot".

Breaker Machinery

October 11, James Jordan, Irish, slate-picker, was fatally injured in a conveyor line at Brisbin breaker, some distance from his post of duty.

CONDITION OF COLLIERIES AND IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

This company has under construction a new breaker to take the place of the present breaker known as the Diamond. When completed the new structure will prepare the output of the Diamond shaft and drift, and the **Tripp shaft and slope.**

The ventilation of the mines is good, the drainage is properly attended to, and conditions as to safety are good.

A. D. AND F. M. SPENCER

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

CARNEY AND BROWN

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

J. J. GIBBONS

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

BULL'S HEAD COAL COMPANY

Bull's Head.—Ventilation, roads and drainage good. Condition as to safety good.

NAY AUG COAL COMPANY

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

MOUNTAIN LAKE COAL COMPANY

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

 IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

New breaker at the Diamond was built and was in operation for a few days the latter part of year. Abandoned **Tripp Slope** and concentrated all of the work at **Tripp Shaft**. Built an addition to the boiler plant at the Manville mine.

DELAWARE AND HUDSON COMPANY

Legitts Creek.—Rock Plane driven from 5 foot vein to surface for second opening. Installation of 16 inch x 48 inch compound Duplex Jeansville pump in Clark vein. Lining of 20 inch water hole necessitated by settling of the strata through which hole was bored. Securing the roadways and sump in Clark vein, by substituting I beams in place of timber which had broken down.

Dickson.—Engine plane in Clark vein extended.

Von Storch.—6 inch hole driven from 14 foot vein to Clark vein for drainage.

PRICE-PANCOAST COAL COMPANY

Pancoast.—The tail rope system has been extended 1,000 feet into the workings of the Dunmore vein.

A new slope 400 feet long has been driven in the Dunmore vein, and at the present time a tunnel is in course of construction.

Another slope has been driven over the anticlinal in the Diamond vein and a pair of 12 inch x 12 inch hoisting engines installed.

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.

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.

CLEARVIEW COAL COMPANY

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

 IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Diamond.—A rock tunnel, 7 x 12 x 325 feet long, driven through fault from Surface vein to Surface vein.

Diamond **Tripp shaft**. A rock tunnel, 7 x 12 x 250 feet, driven from Rock vein to Diamond vein. A concrete and fire-proof blacksmith and carpenter shop combined. A new wash house to accommodate the employes in and around the colliery. One Duplex pump installed in No. 2 shaft, capacity 3,500 gallons.

PENNSYLVANIA COAL COMPANY

Pennsylvania No. 1.—Opened up the Clark and Marcy veins near the breaker by a slope.

Pennsylvania No. 5.—Erected a fire-proof steam boiler plant, 100 x 58 feet, and placed therein three batteries of B. and W. boilers, a total of 1,200 horse power, together with feed water heater, fan, etc. Repaired and remodeled the breaker. It is now practically a new breaker. Installed electric hoist inside for the purpose of dropping the coal from the 1st and 2d Dunmore veins above the fault, down through the Clark vein to the shaft below the fault. Drove a 7 x 10 rock tunnel, 370 feet long, from second Dunmore vein to first Dunmore vein, to be used for haulage. Placed a concrete cribbing from the surface to the rock, a distance of about forty feet in old No. 2 shaft, and erected a ventilating fan.

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

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

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

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