

Description.—The opening to the coal consists of a tunnel; there is a breaker connected with this mine, located 500 feet south-west of the mouth of tunnel; they mine and prepare about 80 tons of coal per day; they employ 16 miners and laborers and 4 drivers in the mine; 10 slate pickers, 8 men and boys and 2 bosses outside; in all 40 men and boys; they are working the Diamond vein of coal, average thickness 7 feet; they work headings 14, air-ways 16 and chambers 30 feet wide; they leave pillows 15 feet wide to sustain the roof; they leave cross-entrances wherever necessary for the purpose of ventilation; the roof is good slate; the mine is in a good working condition.

Ventilation is produced by the action of the atmosphere; the intake is located at mouth of tunnel in summer, and in second opening in winter; just the reverse for the outcast; the amount of pure air is 4,500 cubic feet per minute; the main doors are hung so as to close of their own accord; the air is conducted to the face of the workings in one volume; the amount of ventilation has been measured and reported; ventilation is good.

Machinery.—They use one breaker engine of 20-horse power, and one small pumping engine of 20-horse power; they require no machinery in the tunnel.

Remarks.—They have furnished a map of mine; they have a second opening in air and pump shaft; they have no house for men to wash or change in; the mining boss seems to be a practical and competent man; there are no boys working in the mine under twelve years of age; the engineers seem to be experienced, competent and sober men; 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.

No. 2 **DIAMOND** SHAFT.

This shaft is located in the city of Scranton and lies $\frac{1}{4}$ of a mile north-west of the Lackawanna river; it is 166 feet deep to the Rock vein and 216 feet deep to the G or Big vein; the size of the opening is 36 by 10 feet. It is operated by the Delaware, Lackawanna and Western railroad company. Rees T. Evans is mining boss, and Daniel Lightstaff is outside foreman.

Description.—They have a double breaker located about 500 feet north-east of the shaft; they mine and prepare about 800 tons of coal per day; they employ 40 miners, 40 laborers, 32 drivers, 4 door-boys and 13 company men in the E or Diamond vein; 51 miners, 51 laborers, 35 drivers, 7 door-boys and 20 company men in the G or Big vein; 68 slate pickers, 12 head and plate men, 14 drivers, 27 company men, 12 mechanics and 2 bosses outside; in all 428 men and boys; they use 4 patent hoisting carriages in the shaft, 2 to each vein; the E vein is opened by a rock tunnel from the Rock vein, and the G vein from the bottom of the shaft; the average thickness of the E vein is 6 feet and the G vein 12 feet; in the E vein they work the headings 12, air-ways 18 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 slate, in some places it is very good and in other places the parties having charge must be very careful in order to keep it up; in the G vein they work headings 12, air-ways 18 and chambers 30 feet wide; they leave pillars from 6 to 8 yards wide to sustain the roof; they leave cross-entrances 20 yards apart for the purpose of ventilation; the roof is good slate and rock; the mines are in a good, safe, working condition.

Ventilation.—The ventilation in both veins is produced by means of furnaces; the in-take in E vein is located in main shaft, it contains an area of 180 feet, and the upcast is in No. 2 slope furnace; the intake for G vein is in main shaft, it contains an area of 180 feet; the up-cast is located in air-shaft, about 300 feet south of main shaft, it contains an area of 42 feet; the amount of fresh air for G vein is 24,000 cubic feet, and for the E vein 10,500 cubic feet per minute; there is noxious and inflammable gas evolved in the G vein; the mines are examined every morning before the men are allowed to go to work, and every evening to see that all the main doors are closed; they have double doors, and an extra door on the main traveled roads in the G vein; the doors are hung so that they will close of their own accord; they have an attendant at all main doors; they have 2 splits of air in the E vein and 3 in the G vein; there are no more than fifty men allowed to work in any one split in the G vein; the air is conducted to the face of the workings systematically by the aid of check-doors; the amount

of ventilation has been measured and reported according to law ; ventilation is good in both veins.

Machinery.—The engines in use at this shaft are 1 pair of hoisting engines for each vein, of 90-horse power, 1 pumping engine of 100-horse power, (all in engine room,) 3 steam pumps inside, of 150-horse power, 6 6-horse power pumps also in the mines, 1 breaker engine; they have speaking-tubes in the shaft; they use 4 safety carriages with all the modern improvements; they have flanges on their hoisting drums of sufficient strength for safety; they have adequate brakes on hoisting drums; they use standard wire ropes with clevis and cone attachment; the boilers, feed pipes, water gauge cocks, etc., have been cleaned and examined and reported in good condition; they have steam gauges and safety-valves for the purpose of indicating the pressure of steam and for safety; the breaker machinery is boxed and fenced off so that operatives are safe; the shaft-landings are protected by safety-gates.

Remarks.—The company have furnished a map of the mines; they have second openings; the opening used for the E vein is located $\frac{1}{4}$ of a mile north-west of the shaft and for the G vein about 800 feet from main shaft; they have a house for men to wash and change their clothes in; there is no standing gas or water in the mines; the mining boss is a practical and competent man; he has a fire boss to assist him; there are no boys allowed to work in the mines under 12 years of age; the engineers seem to be experienced, competent and sober men; there are no persons allowed to ride on loaded carriages in the shaft; the rules of the mines compel all persons to walk in and out at the second openings; the parties having charge know their duty in case of death or serious accident; since my last report they have sunk a new air-shaft about $\frac{1}{4}$ of a mile north-west of the main shaft; it is sunk to the E or Diamond vein and is intended to ventilate the E vein of Diamond mines and Tripp slope workings, both of these mines are connected with it; the company intend to erect a 14-foot fan for each mine.

No. 2 DIAMOND 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 375 feet long to the "G" or Big vein; it is 20 feet wide by 8 feet high, and it is driven on an angle of 22 $\frac{1}{2}$ degrees; it is operated by the Delaware, Lackawanna and Western railroad company. Daniel Phillips is mining boss and Daniel Langstaff is outside foreman.

Description.—There is a double breaker connected with this mine about 50 feet away; they mine and prepare about 400 tons of coal per day; they employ 58 miners, 42 laborers, 24 drivers, 13 door-boys and 17 company men in the mine; 56 slate pickers, 10 head and plate men, 6 drivers, 17 company men, 4 mechanics and 3 bosses outside; in all 250 men and boys; the coal mined at Tripp slope is prepared at this breaker; they are working the "G" or Big vein of coal; average thickness 12 feet; they work headings 12, air-ways 18 and chambers 30 feet wide; they leave pillars from 5 to 7 yards wide to sustain the roof; they leave cross-entrances from 15 to 20 yards apart for the purpose of ventilation; the roof is good slate and rock; the mine is in a good working condition.

Ventilation.—Ventilation is produced by means of a furnace located about 500 feet north of the main opening; the intake is located at the mouth of the slope; it contains an area of 160 feet; the outcast is located at the furnace air shaft; it contains an area of 144 feet; the average supply of pure fresh air is 35,450 cubic feet per minute; there is noxious, poisonous and inflammable gas evolved in the mine; the mine is examined every morning before men are allowed to go to work and every evening to see that the main doors are all closed; the main doors on headings and air-ways are hung so that they will close of their own accord, and they have attendants at each so as to keep them closed and to keep up a steady current of air; they have double doors on main traveled roads and an extra one in case of accident to any of the others; they do not work over fifty men in any one 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 mine are two steam-pumps at foot of slope of 150-horse power, one hoisting engine of 80-horse power, one breaker engine of 28-horse power; they have a metal speaking tube in the slope; they have flanges of sufficient strength and dimensions for safety; they have an adequate

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

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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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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Belmont Mines.

There has been a new fan erected here during the year, which gives general satisfaction.

Delaware, Lackawanna and Western Railroad Company's Oxford Shaft.

Sunk main shaft from Rock vein to Clark, a distance of about 165 feet, and sunk a new air-shaft from surface to Clark vein, 354 feet; 10×26 feet for ventilation, and to hoist men and let down material. We will set a fan over this one, and a fan at the old, or main shaft, to ventilate part of it and all of Bellevue slope, so as to leave Bellevue fan for Bellevue shaft alone. The slope at **Diamond** shaft E vein is completed, and working all right. At the Brisbin shaft we have two of the gravity planes we alluded to last year, all ready and working. The third one is very near ready. At Cayuga shaft we are driving a tunnel, or plane, from G to Diamond vein, to let down the coal to G vein. Expect to be ready in 1883. At Sloan shaft we are resinking from G vein to Clark; are also sinking a second opening from G to Clark—size, 8×10 feet in the clear. We intend to make this to that men can go up or down. Storrs shaft being sunk 416 feet, we are now opening gangways in G or big vein 285 feet down. Not developed yet.

Yours, respectfully,

B. HUGHES.

SCRANTON, *March 6, 1883.*

PROVIDENCE, *February 23, 1883.*

PATRICK BLEWITT, Esq.,

Inspector of Coal Mines:

DEAR SIR:—The following are the improvements made in and around the D. & H. C. Co.'s mines for the year ending December 31st, 1882:

Coal Brook Mines.

Have graded a new gravity plane to let coal down on north-east side. Have driven seventy feet of rock tunnel, 7×9 feet, to open No. 3, or four-foot vein from Lackawanna tunnel, in bottom coal on a level with breaker. Have about 600 feet of heading cut in coal.

No 1 Shaft.

Have graded a new gravity plane to let coal down on north-west side.

Powderly Slope.

Commenced pumping out water October 20th; are also building schutes and outside plane.

Jermyn No. 1.

Have finished sinking inside slope to basin. Put up a new 17-foot fan, by four-foot face, on air-shaft that was being sunk last year.

Grassy Island Shaft.

Have sunk fan-shaft, 11×14 feet, 252 feet deep to the Grassy Island vein.

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.

The following were recommended to receive mine foreman's certificates:

David Jenkins, Scranton.
William W. Baird, Dunmore.
John M. Dobbie, Pittston.
Evan H. Evans, Scranton.
Thomas McWilliam, Moosic.
Thomas F. Cook, Pittston.
M. I. Garvey, Pittston.
John T. Brown, Avoca.
William Watkins, Scranton.
I. A. Garvey, Pittston.
Dd. F. Davies, Scranton.

The following were recommended to receive assistant foreman's certificates:

Thomas Parry, Scranton.
William McDowell, Scranton.
James Tibbs, Rendham.
Ed. R. Hughes, Scranton.
John R. James, Scranton.
Samuel C. Evans, Taylor.
Benjamin J. Rees, Rendham.
John W. Jenkins, Scranton.

Mine Improvements During 1896.

The improvements made in this district during the past year, such as new openings, shafts, planes, tunnels, slopes, boilers, etc., are the following:

The Delaware, Lackawanna and Western Railroad Company.

Bellevue Shaft. A tunnel 7 x 12 feet was driven from the Clark vein to the New County vein, a distance of 911 feet, on a grade of two and one-half inches on ten feet.

Continental Shaft. A plane was driven on a grade of 11 degrees. Sectional area, 9 x 16 feet; length, 328 feet.

Dodge Shaft. A tunnel was driven and completed; sectional area, 72 square feet; length, 300 feet.

Diamond Mine. A tunnel was driven from the "seven foot" seam to "Church vein," 300 feet long and 84 feet sectional area. A new drift was also driven on a level having 60 feet sectional area; length, 900 feet.

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

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

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

The Delaware and Hudson Company.

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

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

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

Green Ridge Coal Company.

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

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

CONDITION OF COLLIERIES

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.

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.

NAY AUG COAL COMPANY

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

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

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

CARNEY AND BROWN COAL COMPANY

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

BULLS HEAD COAL COMPANY

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

CLEARVIEW COAL COMPANY

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

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

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

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

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

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

PENNSYLVANIA COAL COMPANY

Pennsylvania Colliery:

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

THE SPENCER COAL COMPANY

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

CARNEY AND BROWN COAL COMPANY

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

BULL'S HEAD COAL COMPANY

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

CLEARVIEW COAL COMPANY

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

NO. 6 COAL COMPANY

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

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

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

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

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

PENNSYLVANIA COAL COMPANY

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

Additional slate-pickers were installed in the breaker.

SCRANTON COAL COMPANY

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

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

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

Nay Aug Drift.—Ventilation good. Drainage and safety conditions fair.

Nay Aug No. 3 Drift.—Ventilation good. Drainage and safety conditions fair.

CARNEY AND BROWN COAL COMPANY

Carney and Brown Colliery:

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

NO. 6 COAL COMPANY

No. 6 Colliery:

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

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

Pennsylvania No. 1 Colliery.—Extensive repairs are being made to the breaker to make it more efficient.

A hospital on the surface has been provided.

In the Clark vein slope electric haulage has been substituted for mules.

Hospitals have been built in both the Marcy and Clark slopes. Electricity has been introduced into the workings at No. 2 shaft, the motor being placed in the 3rd Dunmore vein. Also installed a hoist and substation. In the 2nd Dunmore vein an electric hoist has been installed to haul the coal to the dip. An electric motor barn of fire-proof construction has been built in the 3rd Dunmore vein.

Pennsylvania No. 5 Colliery.—1,000 feet of pipe line have been laid and a pump installed outside to pump the slush from the breaker into the old abandoned workings.

A hospital on the surface has been provided.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Diamond Colliery.—Installed a new 18 by 16 foot ventilating fan. A new steel tower has been built over Tripp shaft and a rock plane driven from Rock to Diamond vein.

Installed one 7-ton electric locomotive, a rock crusher, boiler feed pumps, and four flat slate-pickers.

A second opening has been driven between No. 3 and No. 2 Dunmore veins.

A new steam line has been laid between boiler plant and shaft.

A surface hospital and a new wash house are being provided.

SCRANTON COAL COMPANY

Pine Brook Colliery.—A rock plane 7 by 14 feet was driven from No. 2 Dunmore vein to No. 1 Dunmore vein, a distance of 375 feet. This was done to shorten the haulage and to develop No. 1 Dunmore vein.

A second opening, 80 feet long, was driven through the strata between No. 2 and No. 1 Dunmore veins at an angle of 45 degrees. This

CARNEY AND BROWN COAL COMPANY

Carney and Brown Colliery:

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

NO. 6 COAL COMPANY

No. 6 Colliery:

No. 6 Slope.—Ventilation and drainage good. Safety conditions, fair.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

Pennsylvania No. 1 Colliery.—A rock tunnel 5 by 7 feet and 250 feet long, was driven from the First Dunmore vein, No. 1 shaft, to the First Dunmore vein, through faulty ground, for the purpose of ventilation.

No. 5 Colliery.—Brick building erected, 41 by 150 feet, to take care of outside stock. A new and more modern pump room was finished in Third Dunmore vein near foot of shaft.

A rock tunnel about 500 feet long and 7 by 10 feet in cross-section was driven from the Third Dunmore vein through an upthrow in the Bunker Hill section.

Underwood Colliery.—This colliery was placed in operation April 28. The work of construction has been going on during the year. The boiler plant, power plant, engine house and other necessary buildings are about completed.

SCRANTON COAL COMPANY

Pine Brook Colliery.—Installed 300 Maxim water tube boiler.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Diamond Colliery.—Built new washhouse and sub-station. Installed one 7-ton electric locomotive with reel, etc.

PRICE-PANCOAST COAL COMPANY

Pancoast Colliery.—A tunnel 600 feet long was driven from No. 3 to No. 2 vein.

NAY AUG COAL COMPANY

Nay Aug Colliery.—Built new washhouse. Also built addition to mule barn outside. Installed Hayes derailler above breaker as a safety precaution. A First Aid team was trained in the Y. M. C. A. and Bureau of Mines car.

SPENCER COAL COMPANY

Spencer Colliery.—Installed electric hoist in No. 1 shaft, 100 H. P. motor to replace steam hoist. Installed four 30 H. P. motors in mines, and new rotary pump for washery. Concreted 40 feet of No. 1 shaft from No. 1 to No. 2 Dunmore vein. Built 100 feet of new trestle and new scraper line at breaker.

CARNEY AND BROWN COAL COMPANY

Carney and Brown Colliery.—A second opening driven from Marcy vein to surface, a distance of 150 feet. A new hoisting tower was erected.

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NO. 6 COAL COMPANY

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

No. 6 Drift.—Ventilation and safety conditions, fair. Drainage good.

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

Underwood Colliery.—A rock slope 7 feet by 12 feet and 500 feet long, was driven from the Clark vein to the New County vein for development purposes. A wash-house for employes was built on the outside 30 feet in width and 110 feet long. A storehouse, 30 feet by 80 feet of steel and galvanized iron, was constructed. Approach to the slope from the outside to the first Dunmore vein was concreted. Much grading and finishing was done on the outside.

Pennsylvania No. 5 Colliery.—A brick building, 40 feet by 170 feet, was erected on the outside to replace the old mule barn. This building accommodates mules, outside teams and wagons. On the inside a rock tunnel was driven from the second to the third Dunmore vein in the Bunker Hill section.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Diamond Colliery.—Installed engine and fan for boiler plant. Painted three sides of breaker. The dust system in breaker is being improved. Installed conveyor line, pit, etc., for handling Cayuga coal. Also installed one 7-ton locomotive with reel, etc., two shortwall coal-cutting machines, and one longwall coal-cutting machine.

PRICE-PANCOAST COAL COMPANY

Pancoast Colliery.—Built new fire room and installed 6 new water tube Maxim boilers.

SPENCER COAL COMPANY

Spencer Colliery.—Installed 2 sets of double-deck shakers in the breaker. No. 2 shaft was retimbered, and new ropes were placed in Nos. 1 and 2 shafts.

CONDITION OF COLLIERIES

DELAWARE AND HUDSON COMPANY

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

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

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

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

BULLS HEAD COAL COMPANY

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

CLEARVIEW COAL COMPANY

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

SCRANTON COAL COMPANY

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

IMPROVEMENTS

DELAWARE AND HUDSON COMPANY

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

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

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

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

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Diamond Colliery.—Installed a new ventilating fan.

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

CONDITION OF COLLIERIES

DELAWARE AND HUDSON COMPANY

Eddy Creek, Dickson, Von Storch, Legitts Creek and Marvine Collieries.—Ventilation, drainage and condition as to safety, good.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

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

MID CITY COAL COMPANY

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

SCRANTON COAL COMPANY

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

IMPROVEMENTS

DELAWARE AND HUDSON COMPANY

Eddy Creek Colliery.—Completed a rock tunnel 96 feet long, from Rock to Rock vein, as a second opening. Renewed timber in Olyphant shaft between hoisting and air shaft, also placed new timber at foot of branch at Rock landing.

Dickson Colliery.—Completed rock plane 410 feet long, from Dunmore No. 2 to Clark vein; also Rock plane 175 feet long, from Dunmore No. 2 to Clark bed, to be used as an air return. Installed rope haulage in Dunmore No. 3 bed for a distance of 5000 feet.

Von Storch Colliery.—Completed rock plane 90 feet long, Top Rock to Diamond vein, also a plane 50 feet long, to be used as an air return. A rock tunnel was driven from Rock top split to bottom split bed, a distance of 120 feet. A plane 60 feet long to be used as an air return was driven from the Rock bottom split to the top split of the Rock bed.

Legitts Creek Colliery.—Completed a shaft, 2nd opening, 30 feet deep, from the surface to the eight foot bed; rock plane 575 feet long, from Dunmore No. 3 bed to Dunmore No. 2 bed. Installed a rope haulage in Rock bed for a distance of 4600 feet; electric haulage in Rock bed to Von Storch, a distance of 4200 feet.

Marvine Colliery.—Completed a rock plane from Diamond to Rock bed, a distance of 80 feet; another plane from the 14 Foot Top split to Diamond bed, a distance of 98 feet; also one from Dunmore No. 3 bed to Dunmore No. 2 vein.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Diamond Colliery.—In No. 2 Shaft a haulage road has been constructed in the New County vein, together with a new arrangement at the bottom of the shaft to save hauling the New County vein coal to the Clark vein. Completed an emergency hospital in the New County vein. Installed one 7-ton electric locomotive.

In drift No. 1 a 7-ton electric locomotive was installed.