

Ventilation is produced by a fan and furnace; the in-take is located at mouth of shaft, area 140 feet; the up-cast is located in furnace air shaft, area 132 feet; the air shaft is located 2,700 feet south-east of main shaft, and the amount of pure air is 49,500 cubic feet per minute; inflammable gas is evolved in large quantities in this mine; the mine is examined every morning before men go to work, and every evening, to see that the main doors are closed; the main doors are hung so as to close of their own accord; they have attendants at main doors; they have double doors on main traveled road, and an extra one in case of an accident to any of the others; the amount of ventilation has been measured and reported good.

Machinery.—They use 1 breaker engine 30-horse power, 2 hoisting engines 60 horse power, 1 pumping engine 75-horse power, 1 fan engine 10-horse power, 1 donkey pump 15-horse power and 1 fire pump; they have a metal speaking-tube in the shaft; they have two safety-carriages with all the modern improvements; they have an adequate brake, and flanges of sufficient strength and dimensions for safety, attached to the hoisting drum; the ropes, links, chains and connections are in good condition; the boilers have been cleaned and examined, and reported in good condition; they have a steam gauge to indicate the pressure of steam; the breaker machinery is boxed and fenced off, so that operatives are safe.

Remarks.—They have furnished a map of mine; they have a second opening; there is a man and mule-way driven to the surface, where men and mules walk in and out; they have no house for men to wash or change in; the mining boss is a competent and sober man, and has the fire-boss to assist him; there are no boys working in the mine under 12 years of age; the engineers seem to be experienced, competent and sober men; they do not allow any person to ride on loaded carriages in the shaft; they do not allow over ten men to ride on the safety-carriages at one time; the parties having charge know their duty in case of death or serious accident; the shaft-opening is protected by safety gates.

FAIR LAWN SLOPE.

This slope is located in the city of Scranton and situated $\frac{1}{4}$ mile south-east of the Lackawanna river; it is a new slope just sinking; it is down 235 feet at an angle of 19 degrees; Hosie & Co. are sinking it; they are making preparations to build a breaker in connection with this slope.

GREEN RIDGE COLLIERY.

This colliery is located in the borough of Dunmore, lying $\frac{1}{4}$ of a mile south-east of the Lackawanna river. The opening consists of a rock slope; it is 318 feet long. It is operated by Filer & Co. Geo. Filer is general mine superintendent, Timothy Perfrey is mining boss and E. Brownell is outside foreman.

Description.—There is a breaker connected with this mine; it is located 240 feet away; they mine and prepare about 400 tons of coal per day; they employ 60 miners, 55 laborers, 18 drivers, 11 door-boys and 28 company men in the mine; 70 slate pickers, 7 head and plate men, 6 drivers, 23 company men, 4 mechanics and 2 bosses outside; in all 284 men and boys; they are working the Clark vein, average thickness 8 feet; they drive headings 14, air-ways 12 and chambers 28 feet wide; they leave pillars from 15 to 18 feet wide to sustain the roof; they leave cross-entrances 30 feet apart, and closer if necessary, for the purpose of ventilation; the roof is slate; the mine is in a good working condition.

Ventilation is produced by means of a furnace located about 500 feet from main opening; the in-take is located at mouth of slope, area 75 feet; the up-cast is located in furnace air-shaft, area 60 feet; the amount of fresh air is 22,000 cubic feet per minute; the main doors are hung so that they will close of their own accord; they have attendants at main doors; they have double doors on main traveled roads and an extra one in case of an accident to any of the others; the amount of ventilation has been measured and reported. Ventilation is good.

Machinery.—They use 2 hoisting engines, (100 feet from mouth of slope,) of 80-horse power, 1 breaker engine, (100 feet from mouth of slope—steam taken

from boilers of hoisting engine,) of 25-horse power; they have a metal speaking-tube in the slope; they have an adequate brake and flanges of sufficient strength and dimensions for safety attached to the hoisting drums; the boilers have been cleaned and examined and reported in good condition; they have a steam gauge to indicate the pressure of steam.

Remarks.—They have furnished a map of mine; they have a second opening located 560 feet from main opening; they have a house for men to wash and change in; there is very little gas and water in the mine; the mining boss seems to be a practical and competent man; he has a fire boss to assist him; the mine is examined every morning before men go to work, and every evening to see that the main doors are all closed; there are no boys working in the mine under 12 years of age; the engineers seem to be experienced, competent and sober men; they do not allow any persons to ride on loaded cars in the mine; the parties having charge know their duty in case of death or serious accident; the breaker machinery is fenced and boxed off so that operatives are safe.

NO. 2 SHAFT, DUNMORE.

This shaft is located in Dunmore borough and lies 1 mile south-east of the Lackawanna river. It is 53 feet to first vein, which is abandoned, and No. 2 vein is worked by a rock tunnel 600 feet from the bottom of shaft; size of shaft 12 by 15 feet. It is operated by the Pennsylvania coal company. William Bryden is general mine superintendent, Jas. M. Miller is mining boss and J. W. Marchell is outside foreman.

Description.—There is no breaker connected with this mine but there are large schutes where they load large railroad cars and run them to the screens in Dunmore, where the coal is cleaned and prepared; they mine and prepare about 240 tons of coal per day; they employ 40 miners, 40 laborers, 7 drivers, 2 door-boys and 6 company men in the mine; 14 head and plate men and 1 boss outside; in all 110 men and boys; they are working the lowest vein of coal, average thickness 4 feet; they work headings 10, air-ways 15 and chambers 30 feet wide; they leave pillars from 15 to 21 feet wide to sustain the roof; they leave cross-entrances from 25 to 40 feet apart for the purpose of ventilation; the roof is bony coal and slate; the mine is in a good working condition.

Ventilation is produced by means of a furnace located 2,000 feet from main opening; the in-take is located in old No. 1 shaft and in main shaft, area from 145 to 150 feet; the up-cast is located in furnace air-shaft, area 60 feet; the amount of fresh air is 13,500 cubic feet per minute; the main doors on headings and air-ways are hung so that they will close of their own accord; they have attendants at main doors; they have double doors on main traveled roads and an extra one in case of an accident to any of the others; the air is circulated to the face of the workings in 2 splits; the amount of ventilation has been measured and reported according to law; ventilation is good.

Machinery.—They use 1 hoisting engine with pumping gear attached, 40-horse power; they have a metal speaking-tube in the shaft; they have an adequate brake and flanges of sufficient strength and dimensions for safety attached to the sides of the hoisting drum; the ropes, links, chains and connections are in good condition; the boilers have been cleaned and examined and reported in good condition; they have a steam gauge to indicate the pressure of steam.

Remarks.—They have furnished a map of mine; they have a slope to surface and they are connected with old No. 1 shaft workings, which can be used as a second opening; they have no house for men to wash or change their clothes in; the mining boss seems to be a practical and competent man; there are no boys working in the mines under 12 years of age; the engineers seem to be experienced, competent and sober men; they use 2 patent safety-carriages in the shaft; they do not allow more than 10 persons to ride on a safety-carriage at one time; they have been working both veins in the beginning of the year 1872; the shaft-landings are protected by safety-gates.

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

shafts where the "coal breaker and chute buildings are built directly over and covering the top of the shaft." I admit that in this case there was neither "breaker nor chute buildings directly over and covering the shaft," but there was an engine-house and tower for hoisting the coal out of the mine, and a wooden stack, forty feet high, over the shaft and furnace, and connected with the engine-house. I held that the intent and purpose of the mine ventilation act was what its title indicated: "An act to provide for the health and safety of persons employed in and about coal mines." The intention of the act where it provides, section seven, that "*in no case shall* a furnace be used in the mines where the coal breaker and chute buildings are built directly over and covering the shaft, &c.," is to prohibit the use of a furnace where there is danger from fire from wooden buildings, no matter what name the buildings may be designated by. Ten thousand feet of lumber will burn as readily in an engine-house, tower, and stack, as if it were used in a "breaker and chute buildings," and no one will deny but that the result, under the same circumstances, would be equally disastrous in the one case as in the other. Holding these views, I wrote to John B. Smith, Esquire, the general agent of the company, on the 7th of May. On the 17th of May, I went to see what had been done, and finding the colliery still in operation, I again communicated with Mr. Smith, and the colliery was stopped, and, in the course of a few weeks, the furnace was removed, and a seventeen feet fan was put in in place of it.

The other case was at the **Green Ridge** slope, Dunmore, operated by Messrs. Riley & Johnson. In the latter part of June they developed an immense feeder of carburated hydrogen gas, which was being conveyed with the air current to all parts of the mine, making the atmosphere of the whole mine within a trifle of being in an explosive state. Mr. J. P. W. Riley, who was then superintendent of the colliery, wanted permission to wall up the gangway and air-way in which the gas was escaping, and when I went there on the 2d of July to examine it, I found a gang of men engaged in digging a foundation for the proposed wall. Of course I at once stopped such a reckless plan, and I gave explicit orders not to resume work until they had put in a fan to provide the necessary amount of air to dilute the gas and render it harmless. I had asked Mr. Riley to improve the ventilation of this mine on the 14th of April, and again on the 29th of May, but he elected to disregard all my appeals; hence, I had no other safe course left but to close the colliery. This was done, and, in about three weeks, a fan was put in on an air shaft, which they had already sunk, and the volume of air was increased from almost nothing to from fifty thousand to seventy thousand cubic feet per minute. This put the mine in a safe condition, and, with the understanding that the air-ways would be immediately improved to conduct the air through the face of the workings, I allowed them to resume work.

I might have procured injunctions to close a large number of collieries, for the want of proper ventilation. All the mines of the Delaware and

Green Ridge Slope Colliery.

The old breaker has been torn down and a new addition has been built to the breaker, which was erected six years ago, thereby doubling its capacity. Also a new plane was built from mouth of slope to breaker. Also put in a new pair of hoisting engines, rated at one hundred and twenty-five horse-power. Also improved the fan so as to increase its capacity twenty-five per cent.

Lucas New Shaft.

This shaft is located on property owned by William Von Storch, Esquire, at Green Ridge, city of Scranton, and on the line of the Delaware and Hudson Canal Company's railroad. The shaft opening is ten by thirty feet. It is down about sixty feet; twenty-five feet in gravel and thirty-five feet in rock. The breaker walls are all completed, also the boiler-house for two nests of boilers, three in each nest. The boilers are forty feet long by thirty-four inches in diameter. They are using one pair of hoisting engines, ten by ten inch cylinders, sixty horse-power. There are thirty sinkers employed, and twenty carpenters framing timbers for breaker. The capacity of the breaker will be about one hundred and eighty thousand tons of coal per annum.

Pancost Coal Company's Colliery.

This is a new colliery, located on three hundred and fifty acres of land on the east side of the Lackawanna river, in the borough of Dickson City. Work was commenced on the 20th day of last June. Since that time, a slope has been driven seven hundred and fifty feet in the big vein or seam of coal which is fifteen feet thick. The slope opening is seven by fourteen feet. Seven hundred feet east of the slope a shaft has been sunk seventy feet deep to the Clark seam of coal. The shaft opening is ten by twenty-two feet. In connection with these openings, and connected with them by three thousand feet of railroad track, a new breaker has been erected with a capacity of from seven hundred to eight hundred tons of coal per day. The coal is taken from the slope and shaft by a locomotive, twelve tons weight, on a three-foot gauge track.

MACHINERY.—At the head of the slope a hoisting engine, seventeen by forty-two inch cylinder, has been put up; also five boilers thirty-four feet long by forty inches in diameter. There is also an engine at the shaft and one at the breaker. All the necessary buildings are erected. They are now shipping about two hundred and fifty tons of coal per day.

Throop Shaft Colliery.

This is a new colliery, which will be operated by two shafts, one for hoisting coal, and the other for the use of the men and supplies; they are sinking both at present. These shafts are located in Priceville, on the northwest side of the Lackawanna river, on lands leased by John Jermyn, Esquire. The lease was made on November 20, 1881. The tract contains

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

bottom vein. Length of slope, 1,700 feet, grade, 4 degrees. A four-ton electric locomotive to haul coal 3,800 feet to the foot of main slope has been added during the year.

The Mt. Pleasant Coal Company.

The big shaft has been sunk from the Clark vein to the Second Dunmore, a distance of 135 feet, the shaft being 11x30. The Rider shaft has been sunk from the Clark to the Second Dunmore, distance 134 feet, size of shaft 11x24. A tunnel has been driven from the surface vein near the foot of the little outside shaft to the main hoisting shaft with the idea of footing all the surface coal directly in the big shaft; the tunnel is 7x9, and 100 feet long.

An electric motor, weighing eight tons, has been installed in the surface vein, and an electric pump of the Knowles design, with a capacity of fifty-two gallons per minute has been placed in the third counter of the surface vein.

In the breaker two new screens have been hung up and two screen rooms built. The old drum on the hoisting engine shaft has been taken off, and in its place there is a clutch drum of the latest design.

Pennsylvania Coal Company.

This company has introduced a number of automatic mine doors into their mines during the year. These doors are known as the "Champion" automatic mine doors, manufactured in Terre Haute, Ind.

John & J. J. Jermyn.

Jermyn No. 1 Mine.—A rock plane from the Dunmore No. 2 to the Clark vein has been made during the year 1899. This plane is 16 feet by 7 feet, and 185 feet long, on a grade of 12 degrees. Another similar plane connecting the veins named in another part of the mine was also made; its dimensions are 7 feet by 12 feet; pitch, 9 degrees; length, 360 feet.

An extensive rope haulage has been installed during the year. Its features are its heavy grades and curves of small radius. The cars are hauled a distance of 3,500 feet. The round trip is made in twelve minutes.

West Ridge Coal Company.

West Ridge Mine.—By order of the court the engines, boilers and tower were removed from the head of the main shaft. A pair of 16x10 inch second motion engines were erected in the Diamond vein to hoist through the main shaft from the China vein. The Diamond

DELAWARE AND HUDSON COMPANY

The workings of the Marvine have been connected with Marvine No. 2 shaft by driving 1,300 feet of narrow work. No. 2 shaft has been concreted to a depth of 70 feet from the surface, and concrete buntons put in place.

Leggitts Creek.—A rock plane was driven from the Rock vein to the Fourteen Foot vein, a distance of 350 feet.

A Jeffries pulverizer has been installed to crush refuse from breaker and flush into the mine workings.

A new engine 14x16 and scraper line has been installed to feed culm from the dump into washery.

Dickson.—A rock plane 450 feet long has been driven from Dunmore No. 4 to Dunmore No. 3 vein.

During the year an addition measuring 24x50 feet was made to the breaker. New towers were erected over the main hoisting and man shafts.

Von Storch.—A 6-inch bore hole 260 feet in depth was drilled into the workings of the Clark vein. This will be used for flushing purposes.

Von Storch Washery.—Two 78-inch locomotive type boilers, and a 14 inch x 16 inch engine and conveyor line were installed during the year.

The ventilation and drainage of the mines are good.

SCRANTON COAL COMPANY

Mines are well ventilated, roads are good and properly drained.

PRICE-PANCOAST COAL COMPANY

A new air shaft, 10x14 and 300 feet deep, is being sunk. On this shaft a 20 foot diameter Guibal fan will be erected. This arrangement will not only provide and increase quantity of air all around, but it will also allow the ventilation of the Dunmore veins being duplicated.

A tail rope system of haulage has been installed in the Diamond vein workings. A similar system of haulage is being installed in the Dunmore vein workings.

A new gravity plane 600 feet long has been made in No. 3 vein, and another 350 feet in the Clark vein.

In the Diamond vein a slope has been sunk 800 feet, and a 40 horse-power engine installed to hoist the coal.

The condition of the workings as to ventilation and drainage is good.

PENNSYLVANIA COAL COMPANY

No. 5 Shaft.—Ventilation and drainage good.

GREEN RIDGE COAL COMPANY

Ventilation and drainage good.

The remaining mines in the district are ventilated by natural means. The employes work for the most part in scattered groups. Good ventilation is provided under the circumstances.

A. D. AND F. M. SPENCER

No. 1 Shaft.—Abandoned April 1.