

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 north-west side of the Lackawanna river, on lands leased by John Jermyn, Esquire. The lease was made on November 20, 1881. The tract contains

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.

cept what were necessary for development of territory to supply their quota of coal to the market.

Pennsylvania Coal Company.

This company have sunk a new shaft in Dunmore borough on what is known as the Gilbert Dunning tract, called No. 1 shaft. Commenced sinking in rock on November 26, 1885, and finished on November 18, 1886. Shaft is $171\frac{3}{4}$ feet from surface to bottom of first Dunmore vein, $218\frac{5}{12}$ feet to bottom of second Dunmore vein, $272\frac{1}{2}$ feet to bottom of lower Dunmore vein, and $289\frac{1}{6}$ feet to bottom of sump. No coal has been shipped yet. They are opening up the mine and preparing to build a large breaker in connection with the shaft 600 feet east of it. No coal will be shipped until the latter end of year.

Spencer's Shaft.

Spencer Bros. have extended their underground slope 1,280 feet; angle of pitch, 3° ; sectional area, 90 square feet.

Richmond Shaft.

This shaft has been sunk 60 feet to a lower vein; size of shaft, 12×24 feet. They are opening out the mines at present.

Pancoast Shaft.

The company sunk a new slope 550 feet long in mines on a pitch or angle of 6° ; also had a new tunnel driven 128 feet long in rock from top to bottom split of 14-foot, or G, vein; sectional area of tunnel, 60 square feet.

Marshwood Colliery.

This is a new colliery, owned and operated by the Moosic Mountain Coal Company. It is located in Olyphant borough, and 3 miles southeast of Lackawanna river. It consists of one drift driven into crop of first Dunmore vein; slope sunk across the measures, cutting the second Dunmore vein, and to the bottom of the lower Dunmore vein. It is 292 feet long; angle of pitch, $19^{\circ} 25''$; sectional area, 8×12 feet = 96 square feet. The breaker is not finished yet. It will have a capacity of 1,000 tons of coal per day. There are eight boilers in place, also one pair of hoisting engines and one breaker engine. The company have also built several houses for their employés. From present appearances, it is intended for a first-class colliery. John R. Davis, general manager; B. F. Fillmore, assistant; James R. Wilson, mine foreman. The company will be ready to ship coal as soon as the main outside track is finished to the colliery. They are sinking an air shaft 12×16 feet to cut all the veins of coal.

Capouse Shaft.

A new plane has been graded at an angle of 15° and 450 feet long.

Buffalo Mines.—Built a three-foot gauge track railroad from mines to Jefferson branch of N. Y., L. E. & W. R. R., a distance of two and one-third miles. Coal is hauled by a small locomotive. A new hoisting engine, new main and pony rolls and screens were also put in, and the breaker and machinery given a thorough overhauling.

Belmont Mines.—A new water-level tunnel; was opened to coal headways, and airways were driven to cut off the distance in haulage.

Edgerton No. 2 was opened by a water-level tunnel. It is located about two miles northeast of breaker. Coal is hauled by a small locomotive on a three-foot gauge track.

Eaton Tunnel.—Drove a heading to surface for manway and ventilation; size of opening, 6'x9'—54 feet.

Eaton Shaft.—Sunk a shaft from surface to the present working or "Archbald" vein 162 feet deep; size of opening, 10'x20'—120 feet area.

Jermyn No. 3.—Sinking slope; it is down 700 feet; opening 14'x7'—98 feet area; driven on a grade of one in three feet; in place, six new boilers, one pair of hoisting engines, 10'x10', one fan engine, 12'x12", and one pump, and are also building new breaker.

Mount Pleasant Mines.—Sinking a second opening from G, or Big vein, to Clark.

Filer's Slope, now Mount Jessup.—Have driven slope in coal about 1,000 feet in length.

Lackawanna Shaft.—Have placed an endless wire rope about 2,000 feet long in main gangway for haulage; it works satisfactorily; it is cheaper and better than horses or mules.

Pancoast Shaft.—Have put in a new set of boilers; have put in Zeigler's patent slate-pickers; have graded slope to a uniform grade for about 1,000 feet; they are using the electric arc light at this colliery and it gives general satisfaction.

Rushbrook Shaft.—Have erected a new blacksmith shop, 20'x20', a new powder house, 10'x10', a new barn, 14'x20'; have placed in mine a No. 10 Knowles pump, sunk a second opening to top vein, and have driven headings in top vein going east 350 feet, and in the same vein going west 300 feet; the east heading in bottom vein has been driven 400 feet, and in the same vein going west 125 feet.

Spencer Shaft.—Are driving slope in coal northwest of shaft; in middle vein they are down about 800 feet.

Hon. Thomas Waddell is at present opening up a new mine in Winton borough.

Note.—The Peakville Coal Company's colliery was idle during the year and did not ship any coal.

The Rushbrook colliery did not ship any coal during 1888.

Bridge colliery was sold and abandoned August 16, 1888.

Shaft No. 2, Penn. Coal Company, located in Dunmore, was abandoned September 1, 1888.

equal 144 square feet on an angle of 15° ; also constructed another plane 800' long; sectional area, 8'x14', equal 112 square feet on an angle of 12° .

Mount Jessup slope.—Constructing plane 600' long through old workings on an angle of 8° .

SCRANTON, *February, 1890.*

P. BLEWITT, *Mine Inspector :*

The following changes have been made at the Mount Pleasant colliery :

The old slope has been abandoned for hoisting. Coal is now being hoisted in new shaft, 370 feet deep, to Clark vein, with a landing at Big vein for coal from that and Rock veins.

There is a new plane in operation in Clark vein 750' long to haul coal to foot of shaft, operated by a pair of engines at head of plane, steam for them being carried down the shaft. Also, another plane in Big vein 1,050' long, operated by a pair of engines outside, the rope being carried down the shaft in a box. The old fan and air shaft is now idle, mine being now ventilated through a new air-way in main shaft by a new Guibal fan, 20' in diameter, 6' face, run by a direct connected, 16"x30", 75 horse-power engine. The breaker has been altered and improved, and a tower built to dump coal from shaft. The machinery has been changed to conform to the different run of the coal, and the size of both pairs of rolls has been increased, and two new main screens have been added to the old ones.

The section of breaker that was over the main tracks of the Delaware, Lackawanna and Western railroad has been taken down. The breaker is heated throughout by steam, the roofs, also the sides and ends that are exposed to the railroad, are covered with iron. The old retail pockets which were under the breaker have been abandoned and new ones built which hold about 500 tons. They are located about seventy-five feet south of the breaker, and are filled by a conveyor running under the large pockets, and from there by an elevator.

The boiler house has been removed from the side of the breaker, and a new one built one hundred feet north of it, with an addition of four cylinder boilers, 34'x30", and two return-flue boilers, 14'x60", making fourteen boilers in all. Capacity of breaker, 1,000 tons.

W. T. SMITH,

By THOMAS SPRAGUE, *Superintendent.*

New York and Scranton Coal Company.—This company is opening up their property at Peckville, Blakely borough. The breaker is nearly ready for machinery. They are sinking two shafts. Main shaft opening is 11'x29', and 100' deep. Second opening shaft is down 80', and the opening is 11'x17'. The name of the colliery is to be the Ontario.

Pancoast shaft.—Constructed new slope 400' long; sectional area

6'x17', equal to 112 square feet. We are, also, driving a rock tunnel from one split to the other in the Clark vein, 330' long.

Providence shaft.—Finished new slope 300' long; sectional area 6'x10', equal to 60 square feet on a dip of 1' in 5'.

Richmond colliery No. 3.—Commenced sinking shaft in October, 1888, through quicksand. Reached rock at a depth of 93'. Shaft opening 12'x24', when finished will be 11'x21'. Expect to mine Diamond, G and all the veins below, on the Pulaski Carter estate. Intend to build breaker with a capacity for preparing for market 1,000 tons of coal per day. Have boiler house built with six (6) cylinder boilers 40'x34" in diameter. Also, set in place one locomotive boiler rated at 100 horse-power. Have nine pumps in position, but are not all in use at the same time.

Rushbrook shaft.—Are driving both sides of shaft, testing the coal. Finished second opening shaft.

S. V. White tunnel.—Constructed one new plane 800' long.

Simpson colliery.—Built one mile of railroad track for mine locomotive between breaker and coal slope. Finished building a new side on breaker. Drilled an 8" bore-hole from surface to bottom of Carbondale vein, in basin which is now being used to pump water through to surface. Are erecting a nest of three new boilers; also, sinking a new slope on dip of vein, which is now down 1,500'. Expect to reach basin in 550' more. Sectional area of slope 7'x14', equal to 98 square feet. The dip is on an angle of 6°.

Clifford Colliery.—Finished one plane in mines.

Erie Colliery.—Graded planes on west side of shaft from Bengough's heading through old chambers to Gilhool's heading.

Shaft No. 2, Forest City.—Finished plane in mines.

Glenwood No. 1 Shaft.—This shaft has been sunk through the "Grassy Island" to what is known as the Carbondale top vein, 60' below the Grassy Island Vein. Permanent mining has not yet commenced.

Keystone Tunnel.—We are improving the breaker by enlarging it, also by putting in place one pair of rolls 26" x 22" and one pair 26" x 12", for the purpose of breaking coal down to small sizes. They will be in place January, 1891.

Elk Creek Mines.—Have sunk a shaft to third vein of coal.

Marshwood Mines.—Finished one inside plane

Ontario Mines.—Finished one inside plane 300' long.

Pancoast Mines.—Finished rock tunnel and proved good coal.

Richmond No. 3.—Shaft down to the "G" vein of coal, they have not commenced opening out the mines yet. A breaker is in course of construction. They have not commenced to open up any of the veins of coal yet.

MT. JESSUP COAL COMPANY, LIMITED,
WINTON, PA., *January 8, 1891.*

MR. PATRICK BLEWITT, *Inspector of Mines, Scranton, Pa.:*

DEAR SIR: Herewith I hand you our yearly report for 1890.

Regarding explosion of boiler at our fan shaft on night of January 21, 1890, by which Michael J. Murley lost his life, I would respectfully refer you to the evidence at coroner's inquest, of which you doubtless have a copy, and also to the verdict of coroner's jury.

As to our improvements for the year, we have concentrated all of our boilers at the breaker and abandoned the old plant at fan shaft, having put in three (3) new steel boilers 30" diameter by 36' long, and two iron boilers 40" diameter by 35' long, all in first class condition. Steam is conducted through a new line of 5" gas pipe to our big pump, a distance of 2,000', and from thence through four and three inch branch lines to our hoisting engines and pumps and up the fan shaft to fan engine.

The total distance from boiler house to our lowest pump on underground slope is 3,900'. We made connection with the Olyphant Water Company's main by laying 2,500' of 2" gas pipe and have now a good supply of pure water.

We put in a line of perpendicular elevators in our breaker for hoisting screenings and pickings, also put in a set of small "pony" rolls for reducing pickings. Besides which, we have made other minor improvements on breaker.

Yours truly,

ELI T. CONNER, *Superintendent.*

OFFICE OF **PANCOAST** COAL COMPANY,
THROOP, LACKAWANNA Co., PA., *March 14, 1891.*

PATRICK BLEWITT, Esq., *Mine Inspector, Scranton, Pa.:*

DEAR SIR: Replying to your inquiries in regard to the electric pumps, about the first of November last we struck a dip in the mine which made more water than twenty men could bale, and we were drowned out. We were about putting in steam pipe when Mr. Pocock came along with one of the Thomson Van Pepele Electric Pumps, which, with our assistance, we put in place in thirty hours and it kept the water all out with ease. As the dip was over 3,500' feet from the shaft the expense of placing and running this pump for four months was less than the cost of the steam pipe at the head of the shaft. We don't hesitate to recommend these pumps as indispensable in all such places in the mines when it is difficult or expensive to carry steam.

Very truly yours,

C. M. SANDERSON, *President.*

THE RIVERSIDE COAL COMPANY,
SCRANTON, PENNA., *January 19, 1891.*

PATRICK BLEWITT, Esq.:

DEAR SIR: The following improvements to date of January 1, 1891, have been made at the works of the Riverside Coal Company, located in the borough of Archbald, Lackawanna county, on lands of the Howell estate, and Jones, Simpson & Co., comprising about 270 acres. Ground was broken in July, 1890, and by November first the following, one pair of 18"x30" geared engines with 9' drum, erected upon a substantial foundation of masonry were in readiness to sink the main shaft, one 16"x30" engine erected upon a timber foundation was also in place to do like duty at the second opening, six cylinder boilers 34" diameter by 50' long, made of five-sixteenth shell steel, fitted with McClare blowers and 4' diameter by 40' wrought iron stack for burning culm, were also put in place to supply the steam.

Carpenter and blacksmith shops, wash-house, oil and powder houses are also completed, and whenever it will be necessary to use heat, steam pipes have been carried into this building to supply it. Culm is exclusively used for generating steam and the daily consumption is about twelve tons. All masonry such as breaker foundations, fan engines and fan foundations, cistern for the water supply, breaker engine bed and foundation for barn were also completed before frost set in. On the first of November sinking commenced at both shafts; the main shaft, size 11x20, with two hoisting ways and pump way is now down to a depth of 100', having passed through two veins of good coal, 2' and 3' respectively. Ninety feet lower, we expect to find another vein about 4' 6" thick, and ninety still lower is the Archbald vein from six to eight feet

I wish to call your attention to Bunker Hill breaker; while the breaker itself is situated in the Second anthracite district, the coal is prepared and accounted for in the Third or McDonald's district. The breaker for the present is used only to screen coal that has already been prepared in excess of the market's demands, the same coal having already been prepared at the several breakers near the mines and shipped to the company's dumping grounds near this breaker.

Yours very respectfully,

JAMES YOUNG,
Mine Superintendent.

Dolph Tunnel.—Inside slope or dip being driven to crop at south end of property, and operated by a pair of hoisting engines located on surface; rope through bore-hole. Opening being driven from crop, up to meet said slope. Electricity is used for signaling.

Marshwood Slope and Tunnel.—Additional traveling way made on eastern crop of vein for men and mules, thus avoiding the use of the air shaft by miners and laborers and the slope for mules. No. 3 drift in Upper Dunmore gangway and airway driven in 350'. No. 4 drift in Upper Dunmore gangway and airway driven in 125'. Pennsylvania slope, in new territory, acquired from Pennsylvania Coal Company, sunk 300'.

Jones, Simpson & Co.—Set new boilers at breaker.

Pancoast Shaft.—Continued tunneling vein towards old slope workings which were filled with water, when 80' from old workings, water was tapped from two headings with 2½" holes and is now being pumped out.

Rushbrook Mines.—Have graded and laid 1½ miles of track, 3' gauge, with 40 pounds railroad iron; built new boiler house 21'×55', engine house 27'×34', and fan house 14'×31', with tower 13'×16' and 36' high.

Spencer's Shaft.—Driving slope through strata from middle to bottom vein on an incline of 15' to 100' horizontal.

There were no improvements reported from any of the other collieries except what were necessary to provide for keeping the workings in such a condition as to provide for the quantity of coal required.

Large bodies of water have been successfully tapped and drained off from old working by the **Pancoast** and John Jermyn Companies, thus securing their mines from sudden inflows of water.

The Delaware and Hudson Canal Company after boring to ascertain the thickness of the pillar between the Eddy creek shaft workings, and those of the slope in Jermyn No. 4, and against which water, to a vertical height of eighty feet was pressing, abandoned the plane along the pillar, and built seven dams of fire-brick and cement, and have thus strengthened the pillar and secured their mine from the possibility of an inflow of water from this point. The bore holes which are fifteen in number range in length from fourteen to thirty-five feet. Pillars are being robbed in several of the mines of the district previous to abandoning them, and while this is considered the most dangerous work connected with the mining of coal, I am happy to be able to say that no person who was thus engaged was killed or injured by a fall of roof during the year.

REMARKS ON FATAL ACCIDENTS.

In view of the many fatal accidents which occurred in this district during the year, I deem it imperative to make a few remarks on the principal causes of most of them, and also to describe, so far as possible, in detail, each accident that would not have happened had ordinary care been exercised by the unfortunate victims themselves.

Carbonated hydrogen gas is conspicuous in the mines of this district only by reason of its almost entire absence. It is evolved in but six of the fifty-eight openings comprising the district, consequently, accidents from explosions are few, one only from this source proving fatal during the year, and that was caused by an acknowledged mistake on the part of the unfortunate man, who was also a fire-boss. But while accidents from this source are few, the number of fatal and non-fatal accidents caused by falls of coal and roof is far too great. By referring to the table of fatal accidents in this report, it will be observed that out of a total of fifty-five, thirty-six, or nearly sixty-five and a half per cent. were caused in this manner.

It is a well-known fact that persons who are daily, and almost hourly, exposed to danger, become so accustomed to it as to regard it with an indifference approaching contempt. It is this consummate contempt of danger on the part of many miners, that leads them to take so many uncalled for, utterly unnecessary and frequently fatal risks, of which a description is herein given. It is frequently noticed that where no slips are visible in the top coal, it is left to overhang for a distance of ten, fifteen or possibly twenty feet, more or less, without a prop to support it at the other edge; a shot is fired in the bottom bench which cuts a slip, that runs up into and through the top coal; soon after the shot

Hillside Coal and Iron Company.

At Glenwood a new air shaft was sunk to the Archbald seam, a distance of 136 feet. Three new planes were also completed, the length of which are 425, 500 and 525 feet respectively.

At Erie a new air shaft was sunk, sectional area of which is 64 square feet, and a depth of 19 feet.

At Keystone a new tunnel was driven from the surface to the Archbald seam, a distance of 175 feet.

At Forest City a new air shaft was sunk, having an area of 144 square feet, and a depth of 180 feet. A new "Broadbent" fan was also erected at this place 25 feet in diameter, driven by an horizontal engine, cylinder 20"×36" directly connected to the fan shaft.

At Clifton a new plane 300 feet long, with a sectional area of 84 square feet, and a gradient of 15° has been completed.

Murray Carney and Brown.

A new plane 2,500 feet long with a grade of 6 feet to the 100 feet has been completed; they have also enlarged their breaker thereby increasing its capacity from 75 tons to 250 tons per day. Three new boilers have also been placed in position.

Pancoast Coal Company.

This company sunk its main shaft to the bottom split of "G" vein, a distance of 295 feet, area 10'×34'. It is intended to sink the main shaft to the same seam this year for a second opening.

Northwest Coal Company.

At Simpson slope a new fan 15 feet in diameter was erected to ventilate the coal slope workings, exhausting 75,350 cubic feet of air per minute, with a working speed of 70 revolutions per minute. It is run by an horizontal engine cylinder 12"×24".

Moosic Mt. Coal Company.

At Marshwood a new slope has been sunk a distance of 850 feet on a gradient of 10½ degrees, with an area of 72 square feet.

Elk Hill Coal and Iron Company.

At Richmond No. 3 a new air shaft, which was also a second opening, was sunk from the surface to the 14-foot vein, a distance of 155 feet. Sectional area 63 square feet.

This company is also sinking a new shaft and building a breaker in Fell township.

Mt. Jessup Coal Company, Limited.

At this company's colliery a new slope has been sunk through old workings to an abandoned levee opening up work in solid coal and pillars. Eight boilers were replaced by new ones.

Pennsylvania Coal Company.

At Gypsy Grove a new shaft to be used as a second opening was sunk from the surface to the third Dunmore vein a distance of 60 feet; area of shaft, 80 square feet.

Murray Coal Company.

Completed the slope begun in 1892, total length of which is 2,500 feet, with an area of 117 square feet; angle $3\frac{3}{4}$ degrees.

Pancoast Coal Company.

Sunk their hoisting shaft to within a few feet of the Clark vein, making a total depth of 428 feet; size of shaft is 10x34 feet.

They also sunk their man shaft to the bottom split of "G" vein, and intend to continue sinking it until the Clark vein is reached.

Delaware, Lackawanna and Western Railroad Company.

At Storrs, No. 2, a tunnel from the big vein to the Diamond is being driven; length, 444 feet; area, 72 square feet.

At Storrs, No. 3, a new slope 1,450 feet long, having an area of 98 square feet and an angle of 4 degrees was completed and put in operation.

Jones, Simpson & Co. sunk a new air shaft 40 feet deep; area, 100 square feet, which made a much needed improvement in the condition of the ventilation in the drift workings.

A new slope was also sunk by this company a distance of 550 feet on a grade of 8 degrees, with an area of 104 square feet.

The Sterrick Creek Coal Company completed two new planes; length, respectively, 175 and 280 feet, each on a grade of $8\frac{1}{2}$ degrees.

New York and Scranton Coal Company sunk a new air shaft a distance of 250 feet, with an area of 120 square feet.

A new tunnel was also driven by this company from the surface to the Dunmore vein, a distance of 1,000 feet.

The Elk Hill Coal and Iron Company, at Richmond, completed their new plant begun in 1892, including a new breaker, a shaft and slope.

Pennsylvania Coal Company.

A new shaft 12x24 feet and 55 feet deep was sunk by this company. It is used as an air shaft and also for hoisting coal from the third Dunmore vein, which is five feet thick. An exhaust fan 17½ feet in diameter, with a five-foot face, run by a horizontal engine having 14x26 cylinder has been put in.

A new tunnel was also driven from the surface to the second Dunmore vein which vein is also five feet thick.

Elk Hill Coal and Iron Company.

Completed the sinking of their Richmond No. 3 shaft from the 14-foot vein to the Clark. Also sunk their second opening from 14-foot to Clark vein, a distance of 160 feet. Dimensions 10x12 feet.

Moosic Mount Coal Company.

A new shaft was sunk by this company from the surface to the Lower Dunmore vein, a distance of 175 feet. Dimensions 14x20½.

The vein here is three feet eight inches thick.

They also drove a tunnel from the surface to the same vein, a distance of 1,000 feet. Dimensions 6x12 feet.

The tunnel will be connected with the shaft workings in course of time. In the meantime a new air shaft has been sunk to ventilate the tunnel workings.

Waddell & Son sunk a new air shaft to the Archbald vein. Depth 98 feet. Area 120 square feet.

Pancoast Coal Company.

This company sunk their main hoisting shaft, also their man shaft from the bottom split of the "14-foot" to the Clark vein, a distance of 160 feet. Dimensions of the former 10x34 feet; of the latter 10x14 feet. They are opening up the Clark vein, which is of excellent quality, and runs from five to five and a half feet thick.

Hillside Coal and Iron Company,
Scranton, Pa., April 10, 1895.

Mr. Edward Roderick,

Inspector of Mines, Scranton, Pa.:

Dear Sir: The following is a statement asked for about the drum and fan, the drawing of which I gave you some time ago:

The drum with fan attached, as shown in adjoining illustration, is for the purpose of handling coal on self-acting planes without the use of a brake, except for the purpose of holding up the trip when it ar-

Two new tunnels have been driven at Coal Brook, one from the top vein to the surface, a distance of one hundred and sixty feet, and one from the third vein to the surface, a distance of one hundred and seventy-five feet.

At Clinton two new slopes have been driven; one is 3,100 feet long, the other 700 feet. The first has an average grade of 8 feet in 100, the other 6 feet in 100.

Richmond No. 3 shaft has been sunk from the Clark to Dunmore Nos. 1 and 2 veins, a distance of 132 feet. Its size is 10x22 feet.

At Richmond No. 4 a new plane 800 feet long has been made.

At Mt. Jessup a tunnel 464 feet long has been completed from the Clark to the No. 3 Dunmore vein.

Near their No. 1 colliery the Pennsylvania Coal Company has erected six Babcock and Wilcox water tube boilers of 900 horse power. The pressure carried per square inch is 110 pounds.

Steam is supplied for No. 1 colliery breaker and shaft, to Gypsy Grove colliery breaker and its two shafts, and have supplanted the 27 cylindrical boilers 36x30 feet formerly used at these places.

The Lackawanna Coal Company has sunk an air shaft, having a sectional area of 120 feet and a dept of 55 feet.

A new air shaft was sunk from the surface to the Dunmore vein by the Johnson Coal Company. Its depth is 310 feet and has 120 feet area.

A tunnel 7x14 feet and 1,300 feet long has been driven from the big vein to the Dunmore.

At **Pancoast** a new slope 800 feet long has been sunk in Clark vein and another is being sunk in No. 3 vein.

The Dolph Coal Company has sunk two new slopes, one 350 and the other 650 feet deep. One is 6x16 and the other 6x12. They have also made a new plane 500 feet long, and sunk two new air shafts each 62 feet deep.

The Riverside Coal Company has made a new slope 900 feet long.

Many other small air shafts, tunnels, slopes and planes have been made during the year for the purpose of properly ventilating the workings and to keep up the output of coal, but they are not reported.

A FEW REMARKS ON THE STATISTICS FOR FIVE YEARS.

By a retrospective glance at the mining statistics of this district for the five years ending December 31, 1896, we find that there were 30,702,284 tons of coal produced and 29,367,733 tons shipped; 79,645 persons were employed for 939 days, during which time 1,056,055 kegs of powder of 25 pounds each, were consumed.

Of the total number employed 243, or a small fraction more than three-tenths of one per cent. were killed. Of the 243 killed, 154 lost

At Clinton colliery a new tail rope system of haulage has been introduced 2,500 feet long, which hauls cars from eight different stations and replaces at least eight mules and drivers.

A new slope has been sunk in Clifford or lower vein, and an air shaft 200 feet deep has been sunk.

Delaware, Lackawanna and Western Railroad Company.

At Storrs No. 2 a rock tunnel through "fault," in Big Vein, has been driven. It is $6\frac{1}{2}$ x10 feet, and 435 feet long.

Elk Hill Coal and Iron Company.

At Richmond No. 3, main shaft has been sunk to Dunmore No. 3 vein, a distance of fifty feet. The air shaft has been enlarged and a fan erected at head of it, with very good results.

Pancoast Coal Company.

The main shaft is being sunk to lower veins and is now down about 121 feet. Commenced sinking about the middle of June.

Also, drove slope in Clark vein, about 1,600 feet through "fault" to coal, and two rock planes through "fault."

The Temple Iron Company's Improvements.

During the year 1899 the following improvements have been made at the collieries north of Scranton:

At Sterrick Creek colliery there has been erected a 20-foot fan, with 16x26 engine, and an air shaft 12x12 sunk in order to properly ventilate the Dunmore vein. There has been erected a double culm plane 300 feet long and 100 feet high, with a pair of 100 horse-power engines. There has been built a $22\frac{1}{4}$ x22x24 air compressor and 8,000 feet of 8x10-inch cast pipe laid from this air plant to the Dunmore vein workings, where there has been erected a pair of 100 horse-power engines to operate the slope in this vein, and with this air they are also doing the necessary pumping. A compressor house, 40x38, of brick has been built; also, a blacksmith and car shop, 30x60, with a 30x30 addition. A locomotive house, 20x40 has been built and there has been graded and built 5,880 feet of track and switches connecting the colliery with the Nay-Aug, D., L. & W. branch.

Two 225 horse-power Stirling boilers have been erected, with a boiler house 50x42. There have been placed in the breaker 24 jigs, 8 shakers and 8 screens, 2 sets of rolls, 2 sets elevators and 4 sets of conveyors, and an addition has been built to accommodate the machinery from the north and south sides of the breaker, 27x42. A pair

TABLE F—Nationalities of Persons Killed or Injured.

Nationalities.	Killed.	Injured.	Totals.
Pole,	6	24	30
American,	6	22	28
Irish,	5	17	22
English,	6	14	20
Welsh,	2	13	15
Slavs,	2	9	11
Italian,	3	6	9
Austrian,	2	4	6
Hungarian,	2	4	6
Russian,	4	1	5
German,	2	2	4
Scotch,		2	2
Totals,	40	118	158

Improvements at Collieries.

Delaware and Hudson Company's Improvements.

At Clinton a new air shaft 10x12 feet and 240 feet deep was sunk for ventilating purposes, and a new fan was installed to ventilate the East Side tunnel.

At Coal Brook a rock plane 300 feet long was driven from bottom to top vein, and an air shaft sunk. A new air compressor was installed and three new air motors added for haulage. A new drift was opened on East Mountain; and an air shaft sunk.

At Jermyn No. 1 a new 22-foot fan was installed, to replace the old one. A rock plane 600 feet long, driven to shorten transportation, and improve ventilation, was made.

Grassy Island.—The rock vein was opened and air connections made.

At Eddy Creek a slope was sunk from surface to rock vein to improve ventilation on Mills tract workings.

Hillside Coal and Iron Company.

A new breaker was built at Forest City to replace the old one, which was destroyed by fire in early part of the year.

The Price Pancoast Coal Company has sunk the main shaft to Dunmore veins; also, installed a new fan 35 feet in diameter.

The Johnson Coal Company has driven a 1,000-foot tunnel from prove ventilation on mills tract workings.

the purpose of draining all of the collieries above No. 1 shaft in the Dunmore district.

This tunnel when completed will be about 7,000 feet in length. The dimensions are as follows:

First 1,200 feet to be 8x6 feet.

The next 5,000 feet to be 15x7 feet.

The last 800 feet to be 8x6 feet.

The tunnel to be driven with a uniform grade of 4 inches in each and every 100 feet.

By the Price-Pancoast Coal Company

Pancoast Shaft.—Erection of two new brick supply houses, one 20x30 feet and the other 20x40 feet.

The old 20 foot ventilating fan has been repaired and put in fit condition to ventilate the Dunmore vein.

In No. 1 or Diamond vein a new gravity plane has been constructed 700 feet in length.

In No. 3 vein, two new gravity planes, and in No. 4 vein two new gravity planes have been constructed. The West slope has been extended for a distance of 700 feet to line near Lackawanna river.

The Dunmore vein has been opened and a slope driven on the north dip 1,000 feet. A hoisting engine has been put in here, capable of hoisting 200 cars per day. A slope on West side is being driven, present length 400 feet, with gangways driven east and southeast. Seven splits of air have been made with two more under way. A new barn has been made in this vein to hold 35 mules.

By the Finn Coal Company

Erection of new breaker, dimensions of which are 51x51 feet and height over wall 65 feet. One large screen, two sets of shakers 30 feet long. One set of elevators, distance between centers 45 feet.

Breaker engine 16x24 inch cylinder, 75 horse power. Capacity of breaker about 350 tons daily.

A tunnel driven from No. 1 Dunmore to No. 2 Dunmore vein; length 66 feet, section 6x14 feet.

A new second opening was driven from inside to the surface, a distance of 100 feet.

By the Black Diamond Coal Company

Erection of new fan, 12 feet in diameter, to ventilate No. 1 vein. The result is a marked improvement in the ventilation.

to the Red Ash vein, a distance of 514 feet from the surface. A pair of 26x48 inch first motion hoisting engines has been erected to operate this shaft. An 800 horse power, water tube boiler plant, has been installed near this shaft. Also a new fan has been erected, Guibal pattern 8x25 feet to ventilate the Red Ash vein. Both the empty and loaded trestles at the breaker have been rebuilt. The breaker structure has been renewed and reinforced and breaker pockets practically rebuilt.

DOLPH COAL COMPANY, LIMITED

Extensive repairs and improvements in breaker enlarged the capacity and changed the method of handling the coal on the outside. A new chain hoist has been put in which elevates the empty cars sufficiently to run by gravity from the breaker to a point where they are then taken to the mine by an electric motor, which has also been installed. This dispenses with all mules formerly used for this purpose and is a decided improvement. The new air shaft to the Clark vein has been enlarged and timbered. One 300 horse power Babcock and Wilson water tube boiler has been added to the boiler plant.

PRICE-PANCOAST COAL COMPANY

The Pancoast colliery was totally destroyed by fire on the evening of March 11. It has been replaced by a much larger and more modern breaker, capacity 2,500 tons per day, with all the latest improved machinery for cleaning and preparing coal. The breaker is connected by a steel bridge 46 feet long to a steel tower built over the shaft, which is 160 feet in height. A concrete wall 3 feet in thickness has been put around the shaft to take the place of timber which was used as cribbing prior to the destruction of breaker. A new building has been erected that contains a carpenter shop 50 feet square, blacksmith shop 36 feet square, machine shop 80x36 feet with steel roof and concrete floor, making them almost absolutely fire-proof. A new wash house has been erected of brick material 20x14 feet with stationary tubs, hot and cold water for the convenience of employes. The breaker is lighted by 250 incandescent lights and 20 arc lights and heated throughout by steam. A new automatic water spray arrangement is being placed throughout the breaker as a protection against fire. A new Guibal fan 20 feet in diameter has been erected for the purpose of ventilating Nos. 1, 2 and 3 veins; also a 35 foot Guibal fan to ventilate the Clark and Dunmore veins.

In the Diamond vein the gravity plane has been extended 200 feet, and a new foot in shaft to replace old one in No. 3 vein.

No. 1 plane has been extended 500 feet, new air bridges have been built, and new air ways have been driven.

Clark vein No. 1 plane has been extended 1,200 feet, and a pair of 10x12 inch engines placed at the bottom to take the place of gravity wheels. This plane is now 2,300 feet in length.

No. 2 plane was extended 200 feet.

Dunmore vein, a slope, has been sunk 350 feet on the west side of shaft and a pair of engines 10x12 inch put in for hoisting the coal. An engine plane has been made on the east side of shaft 700 feet in length and a pair of engines 10x12 inch put in to operate it. The hoisting shaft and also the main shaft have been thoroughly repaired. A new steel tower was erected over the man shaft. The inside and outside have been converted into a new colliery.

HILLSIDE COAL AND IRON COMPANY

Erie Colliery.—An air shaft put down on the west side of the Lackawanna river from the surface to the new county vein, area 10x10 and 35 feet in depth. A Guibal fan 12 feet in diameter has been installed to be driven by a 40-horse power electric motor. Near the breaker a brick electric power house 30x35 feet has been erected, and an additional 90 K. W., 275 volt generator, driven by a 145 H. P. Armington and Sims engine, is being erected. An additional 7½ ton electric motor with cable reel attachment has been added to the inside equipment.

Keystone Colliery.—A tunnel 7x10 feet area and 100 feet in length, has been driven from the surface to the new county vein. A new track has been laid 2,000 feet in length from the tunnel to the head of a new plane 900 feet in length which has been constructed.

BLACK DIAMOND COAL COMPANY

An electric plant which consists of a building 16x30 feet, with a 25 horse power high speed McEwen engine, a 7½ K. W. dynamo, switch-board complete. This furnishes the power necessary for driving two-electric rotary drills for mining purposes inside.

FINN COAL COMPANY

Erection of new breaker, dimensions of which are 54x60 feet. One large screen, two sets of elevators, one pair of big rolls, one pair pony rolls, one pair of crushers. Breaker engine 16x24 inch cylinder, 75 horse power. Capacity of breaker 300 tons daily.

IMPROVEMENTS

DELAWARE AND HUDSON COMPANY

Clinton.—New tail rope installed 1,000 feet in length, with a pair of double engines 14x20 inch in River Side Slope to pull coal north and south. A new hospital "First Aid," and wash house has been erected outside for employes of the Dunmore vein. Two new ventilating fans erected, each 20 feet in diameter.

No. 1. Carbondale.—Tail rope has been extended 1,000 feet, delivering cars to main line.

Powderly.—New car shop, supply house and blacksmith shop erected.

Jermyn.—Rock tunnel completed from the Archbald vein to the Dunmore vein, distance 125 feet. New electric motor $4\frac{1}{2}$ tons with 12x18 inch reel on top for lowering loaded and hoisting empty cars in chambers.

White Oak.—New car shop has been erected. New plane in Dunmore vein finished.

PRICE-PANCOAST COAL COMPANY

A rock slope has been sunk in the Diamond vein over the "Anticlinal." A pair of double engines has been put in same vein to hoist the coal from this slope; size of engines 24x36 inch. In No. 3 vein a slope has been sunk 600 feet in length to the river line, and a pair of engines put in to hoist the coal, 12x12 inch in size. No. 2 Gravity Plane that was abandoned six years ago has been opened. In the Clark vein a new plane has been built, 600 feet in length. Dunmore No. 2 vein, the west slope, 900 feet in length, has been graded, and a pair of engines 12x12 inch in size erected outside to hoist the coal. One 250 horse power boiler was installed.

PENNSYLVANIA COAL COMPANY

No. 1 Colliery, Outside—In 1904, work was commenced on the installation of 300 additional horse power "Babcock and Wilcox" boilers, and new 10 foot forced draft fan; also new "Cochrane" feed water heater and 12x8x12 inch "Duplex Scranton Pump" and new 50,000 gallon water tank. This work has all been completed during the year. The following buildings have been erected during the year. A new stone powder house 12x14 feet; a new stone oil house 12x12 feet 7 inch; also new brick wash house for miners 16x24 feet. Work is progressing on new brick building 16x36 feet to contain three rooms; office for outside foreman, shifting shanty for firemen, and shifting place for breaker men.

No. 2 Shaft, Outside.—The fan and head house, which was burned during the year, has been replaced by concrete buildings. A 12 inch concrete wall has been built between the down-cast and up-cast from foot of shaft to fan.

No. 1 Shaft, Inside.—Water tunnel from Lackawanna river to No. 1 Shaft. No. 1 Colliery has been driven in 1,600 feet during the year, and on the No. 1 end, 1,900 feet. Total distance driven since the tunnel was commenced, 5,200 feet. Distance yet to be driven, 1,600 feet. Another tunnel has been driven 675 feet from the third Dunmore vein to the second Dunmore vein, to carry the water to main tunnel, sectional area 6x9 inch.

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.

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.

A new shaft 10 feet x 14 feet for ventilating purposes and a new Guibal fan installed.

The mine ambulance has been fitted with heating apparatus for the comfort of the injured.

PENNSYLVANIA COAL COMPANY

No. 5 Shaft.—Concrete cribbing has been put in the shaft from the rock to the surface, also a new brick fan drift with concrete roof. Work has been started on a new brick building 36 feet x 46 feet, for an electric power plant, also new brick building 21 feet x 38 feet for shaft engine house started. New concrete foundation and new bed plates have been put under the shaft engines.

MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as Mine Foremen and Assistant Mine Foremen was held in the City Hall, Scranton, May 13 and 14. The Board of Examiners was composed of the following members: H. O. Prytherch, Inspector, Scranton; John Corcoran, Superintendent, Rendham; T. F. McNally, miner, Old Forge; and John D. Griffiths, miner, Scranton.

The following persons passed a successful examination and were granted certificates:

Mine Foremen

Reese Lloyd, Scranton; David J. Davies, Scranton; Walter G. Hughes, Scranton; Arthur C. Dale, Scranton; Michael Ford, Rendham; James D. Robinson, Coyne; John R. James, Scranton; Edward J. Garvin, Rendham; John McGinley, Rendham.

Assistant Mine Foremen

Eli Morgans, Scranton; Walter Jones, Scranton; John J. McHugh, Scranton; Edward W. Morgan, Scranton; N. J. Cunningham, Scranton; Andrew Meixner, Scranton.

PRICE-PANCOAST COAL COMPANY

Pancoast.—Drove a rock tunnel 485 feet long from Diamond vein to Surface vein, and sunk a shaft 8 x 10 x 65 feet deep from surface to same vein for ventilation and second opening. Slope, 7 x 12 x 200 feet, driven from No. 1 Dunmore vein to No. 4 Dunmore vein, and shaft, 8 x 10 x 20 feet, sunk from No. 1 Dunmore vein to No. 4 Dunmore vein for ventilation and second opening. Extended tail rope system 3,000 feet inside.

Pennsylvania No. 5 Colliery.—Erected new hay barn on the outside constructed of corrugated iron. One Duplex slushing pump 24x8x36 installed in a building constructed of corrugated iron on the outside; one 21x20 automatic engine with connections to a 240 K. W. and D. C. generator; one 8x10 McEwen generator with 100 ampere for lighting purposes. Installed on the surface in a building constructed of corrugated iron, one electric hoist, 30 H. P., to handle coal in the No. 1 Dunmore vein in the old No. 2 shaft section. At old No. 2 shaft one 18-foot fan was installed in a building constructed of corrugated iron, to ventilate the Clark No. 1 and No. 3 Dunmore veins. One electric hoist, 25 H. P., installed in No. 1 Dunmore vein to handle coal on slope. One electric hoist, 25 H. P., installed in No. 3 Dunmore vein to handle coal on slope.

Gipsy Grove Colliery.—Old Gipsy Grove breaker destroyed by fire on April 27, 1911. Erected a new head frame and constructed coal pockets of concrete and corrugated iron, from which the coal from the Gipsy Grove mine will be dumped and conveyed to the Pennsylvania No. 1 breaker. Erected a new engine house, carpenter shop and wash-house of wood on the surface.

SCRANTON COAL COMPANY

Pine Brook Colliery.—A rock tunnel 6x12x92 feet long on a pitch of 45 degrees was driven through fault from Dunmore No. 2 vein connecting Dunmore No. 2 vein. A rock tunnel 7x12x240 feet long on a pitch of 2 degrees was driven from Dunmore No. 2 vein connecting Dunmore No. 1 vein. Sunk a shaft for second opening 10x10x30 feet deep from Dunmore No. 1 to Dunmore No. 2 vein. Erected concrete fireproof barn. All pump-rooms, engine houses, emergency hospitals and foremen offices inside of mines are of incombustible material.

Mount Pleasant Colliery.—Erected new fireproof barn of iron and concrete. All pumprooms, engine houses, emergency hospitals and foremen offices inside of mines are of incombustible material.

West Ridge Colliery.—Erected a new second opening provided with 360 feet of steps to be used in an emergency in case the steam plant is put out of commission. Cleaned up and provided a new return airway along side of slope, 2,000 feet long, as a traveling way for men and mules.

Also added during the year fire escapes to the breaker, beginning in the tower and continuing down on the outside of the breaker to the ground; also installed other escapeways from the screen rooms making two escapes from this point.

PRICE-PANCOAST COAL COMPANY

Pancoast Colliery.—All barns, engine houses, pump-rooms and air-bridges have been made absolutely fireproof. Fire escapes have been built on both sides of the breaker. A tunnel has been driven from Dunmore No. 4 vein connecting with Dunmore No. 2 vein as an additional outlet from both veins and traveling way. Two 6-inch bore holes have been sunk from the Surface to the Clark vein 430 feet deep for slushing culm into the old workings. One new No. 10 Knowles pump has been installed at the No. 2 Dunmore vein to help take care of the extra water caused by slushing.

not only acts as a second opening, but also improves the ventilation. An air bridge or air "cross over" was cut in the rock in the west tunnel section in the Dunmore No. 1 vein, 6 by 12 feet by 37 feet, which gives an additional split of air in that section.

Mount Pleasant Colliery.—A rock plane from the 3rd or China vein to No. 1 Dunmore vein has been driven and fully equipped.

PRICE-PANCOAST COAL COMPANY

Pancoast Colliery.—Installed one steam duplex pump, 28 by 14 by 24 feet in No. 3 vein to pump water to surface. Steel support substituted for timber on foot branch in Dunmore vein.

A rock tunnel 90 feet long was made from Clark to New County vein for ventilation and second opening.

Engine plane 1,000 feet long was made from Clark into New County vein for transportation.

Installed one double inlet Jeffrey exhaust mine fan 20 by 7 feet, and one 28 by 28 inch Ridgway engine.

A surface hospital has been provided.

SPENCER COAL COMPANY

Spencer Colliery.—No. 1 and No. 2 shafts have been retimbered and a new tower built at No. 2 shaft. The tower at No. 1 shaft was cut down 20 feet during the year.

A surface hospital has been built, the washery retimbered and a new 125 H. P. engine installed in the washery to replace four small engines.

NAY AUG COAL COMPANY

Nay Aug Colliery.—Installed a 100-ton loading scale, jigs for egg, stove and nut coal, and new grates, blowers and boilers. A new washhouse has also been built.

CARNEY AND BROWN COAL COMPANY

Carney and Brown Colliery.—A rock tunnel was driven through 150 feet of fault in the Clark vein.

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 derailer 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.