

new shaft a slope has been driven two hundred and ten (210) feet through the coal into the bottom of a basin, and at the foot of this slope there is a splendid passing branch one hundred yards long. A fourteen by twenty-four inch engine will be used to hoist the coal up the slope. The present superintendent, George W. Cooper, Esq., does not apprehend any trouble from water or gas, but I am of opinion that considerable gas will be displaced in the working of this vein, and that it will require good ventilation to dilute and dispose of it so as to avert explosions.

On the surface a complete new breaker has been built, with a capacity of four hundred tons per day. The machinery consists of a hoisting engine, 18×36 inch cylinder, a 14×24 inch breaker engine, a No. 8 Guild & Garrison steam pump, set of rolls, a twenty feet main screen, and a ten feet counter screen. For a breaker of its size and capacity, it is fitted up with all the modern conveniences for preparing and cleaning coal.

The work of sinking was commenced, under the superintendence of Charles Hiscock, Esq., March 28, 1880, and the coal was reached on July 12, same year, and I am glad to say, that no accident of any kind occurred during the sinking, which is creditable to the workmen and to the superintendents. The aggregate cost of the sinking of the shaft and the new breaker is estimated at \$20,000.

JERMYN'S No. 4 SHAFT.—John Jermyn, Esq., on the 22d of November, effected a perpetual lease of nine hundred and seventy (970) acres of coal land from Messrs. Pancoast & Price, Philadelphia. The land is located in Dickson borough, and the surface, as well as the coal, is included in the lease. In accordance with the usual enterprise of Mr. Jermyn, he at once entered upon the land, and on the fourth day after the lease was signed, November 26, he commenced sinking, and at this writing, his shaft, which is twenty-six feet long and of the usual width, is down thirty-six feet through the worst kind of quicksand. There is five feet more of quicksand, and about seven feet of gravel to go through to the rock. It is purposed to sink this shaft to the Big vein, which is about three hundred and sixty (360) feet from the surface, that being the coal which will be first worked.

Another shaft, 10×18 feet, will be immediately sunk, one hundred and twenty-five (125) yards away from the main shaft, for a second opening.

As the lease calls for two breakers on the property, coal will be hoisted through both shafts, and the two breakers will be erected, containing all the modern improvements in machinery, to clean the coal and prepare it for market. There will be a pair of 24×48 direct acting engines for hoisting at the main shaft, and one 16×36 breaker engine, with nine boilers thirty-six feet long by thirty-four inches diameter. The boiler-house will be large enough for twelve boilers, in case that number is required. There will also be a pair of 16×30 hoisting engines for the second opening, and an 18×22 fan engine, to run a twenty feet diameter fan. There will be six boilers for generating steam at this shaft also. The pumping will be done in two lifts with four of Guild and Garrison's 14×24 pumps, two pumps in

each lift. A building thirty feet wide by ninety feet long is to contain the blacksmith, carpenter, and machine shops, and a 9×12 engine will run the shops.

The above, of course, is only a rough outline of this new enterprise, which, before the close of another year, will be fully developed, and will be in full operation.

STORR'S SHAFT.—The Delaware, Lackawanna and Western Railroad Company having broken ground for a shaft at Dickson borough, which is to be ten by forty feet, and about three hundred feet deep to the Big or "G" vein. The company has a large territory to be developed here, which will require other shafts in the near future. The reason given by B. Hughes, Esq., for the large size of the shaft, is an excellent one, and it is recommended to the consideration of others who contemplates sinking. He says: "The reason of its being so long is, I want more area for our upcast. We find, generally, more friction in the upcast alone than in all the workings of the mine"

This company have also extended the Continental shaft and its air-shaft to the Clark vein, a distance of sixty-three feet below the Big or "G" vein. In sinking, another vein was penetrated, but it is not large enough to be workable at this point, but at other points it is workable. The Clark vein here is eleven feet thick, eight feet being clean coal of an excellent quality, better than any of the veins above it that have been developed at this shaft.

Prosecutions for Violation of Law.

There were but two cases prosecuted for violations of law in my district during the year, and both cases were pending at the close of 1870. As I have always stated, this is the most unpleasant duty that devolves upon an inspector, and one that I would be glad to shirk, if I were not bound by a solemn oath to perform it. These cases were very effecting ones, for one of the parties was an unfortunate old gentleman, who has been fearfully burned by an explosion of gas, though that misfortune overtook him through his own heedlessness, to use the mildest term possible. He held the important position of mining boss in the No. 6 shaft, Jenkins township, under the Pennsylvania Coal Company. The charges entered against him were for neglecting to "provide that all doors used in assisting, or in any way affecting the ventilation of the mine, were so hung and adjusted as that they would close of their own accord, and could not stand open," and for neglecting to provide an attendant at a door. Because of this neglect a certain door was left open, and remained open through the night of October 29, 1879, whereby a large quantity of gas accumulated in a heading that the door was put to turn the air into, which was found by the fire boss on making his rounds the next morning. Considerable excitement was caused at the time by finding of the gas there, and because of the door being left open, and search was made for the person who left the door open, and the guilt(?) was attached to a young man named Timothy Ford, who was laboring in one of the cross-headings. Ford was suspended from work as a pun-

ley. Capacity, one thousand tons of coal per day. It contains seven hundred thousand feet of lumber. The machinery consists of one pair first-motion hoisting engines, 22''×36''; will hoist a car of coal from the bottom of the shaft to the head in ten strokes of the engine. The breaker engine is 16''×36''. The mine is ventilated by a fan 12 feet diameter by 3½ feet face, D. L. & W. pattern. The breaker machinery consists of one pair of mud screens, one pair cast center screens, one pair of main screens 6 and 8 feet in diameter and 24 feet long, double jackets, one pair pony screens 5 and 7 feet diameter and 18 feet long, double jackets, one pair 29 and 36 main rolls, one pair pony rolls 19 and 29. This company commenced sinking their shaft December, 1881, and are now shipping from one hundred to three hundred tons of coal per day. The coal is of the best quality, and the seam is 11 feet thick. They sell their coal to the D. & H. C. Co., and the Scranton Steel Company. The second opening is now completed.

Yours, &c.,

ROBERT REVES, *Superintendent.*

Throop Shaft—Jermyn No. 4.

This colliery is now completed and under full headway, and up to the requirements of law, and one of the most substantial in this district.

Lackawanna Coal Company's Colliery.

The main shaft is down to coal, the second opening shaft is not quite finished, the breaker is built and they are shipping a little coal, the boilers, engines, machinery and buildings are of the most substantial kind, and when finished, will compare favorably with any in this district.

Jones Simpson and Company's New Shaft.

This is a new colliery; it consists of a shaft and drift; they have reached the coal in both, and are connected with their breaker by a railroad track, laid with steel rails, the distance between the shaft and breaker is 11,100 feet long. It is to be operated by a mine locomotive.

Erie Shaft.

They have re-opened Keystone tunnel, which was commenced in 1874, situated about a mile east of the shaft on D. & H. C. Co's gravity railroad track. A small breaker is here erected, of a capacity of 350 tons of coal per day, and so arranged that part of the coal therefrom may be shipped *via* the gravity railroad and part run through the Erie breaker, or all may be shipped either way.

Forest City Mines.

A new shaft has been sunk here. The area is 10×20 feet, and 125 feet deep to the coal from the surface landing. The seam reached is about five feet in thickness. The breaker is located about 2,000 feet from the shaft, and has a capacity of 400 tons of coal per day. The coal will be shipped *via* the Jefferson branch of the Erie railroad.

SCRANTON, PA., *March 24, 1884.*

The following improvements have been made in coal department of the Lackawanna Iron and Coal Company during the year 1883 :

At the Pine Brook colliery there has been driven a rock tunnel seven by sixteen feet, for a distance of five hundred feet at an angle of ten degrees; same has been driven from No. 4, or second, below Clark to Clark vein, cutting one vein of coal about midway. The object of this tunnel being to run all Clark vein coal to one common foot located in second vein below Clark. The tunnel or plane will be provided with double track for letting or lowering down coal in the ordinary way. Our connections have been made with old workings of Clark vein, hence with mule-way or man-way. The man-way upon the surface has been extended towards the breaker some distance by building side walls, and covering with large and substantial flag-stones, making a very complete and easy man-way from lower vein to surface. Above constitutes about all the important improvements made in coal department during year 1883.

R. G. BROOKS, *Superintendent.*

PATRICK BLEWITT, Esq.,

Inspector of Mines :

DEAR SIR: The New York, Susquehanna and Western Railroad Company have in the Lackawanna valley about seven and one half miles of railroad completed and in active operation, and about three and one half miles now under construction. When finished shipments will be made over this road from nine different collieries. Of these, the Greenwood and Sibley collieries have been for a long time in operation. The Dunn is a new operation completed during the last year at a cost of \$100,000, and is now rapidly increasing its out-put. Jermyn No. 6, also completed during the last year, is a shaft colliery, having a shaft two hundred and twenty feet deep, cutting two veins of coal, and a very fine, large breaker and commodious out-buildings have also been erected. The cost of this plant is about \$120,000. The Winton colliery is now being rapidly developed by a drift of about two thousand feet in length, one thousand four hundred feet of which have already been driven. The breaker foundations have been erected, and the timber for the breaker has been framed, and is ready to be raised. The Dolph colliery is now nearly ready for shipping coal. The plant consists of a very fine breaker and machinery, with suitable out-buildings, and the mine will be operated by a drift and inside gravity plain. The cost of development will be about \$80,000.

The Spencer colliery is partly a new operation, and being rapidly completed. The breaker has been framed and raised, and the machinery is now being put in. The mine opening consists of a shaft which has been sunk through four seams of coal—three of which are so far developed as to insure an out-put of eight hundred tons per day from the very start. Coal will doubtless be shipped from this colliery about the 1st of May. The

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.

Jessup Coal Company—Filer's Slope.—This company is sinking a new slope in coal; it is now down 900 feet. Sectional area, 96 feet.

Hillside Coal and Iron Company—Glenwood Shafts.—The work on the two shafts and breaker; reported in last year's report, 1886, under the head of Erie colliery improvements, has been advanced as follows: The shaft to top vein has been completed at a depth of 100 feet. The shaft to bottom vein has reached a depth of 160 feet. Work is being pushed rapidly forward in this shaft. The breaker to prepare the out-put of these two shafts for market is about finished, and is expected to prepare coal from the top vein about February 1, 1888. This Company is also sinking the Clifford shaft, at Forest City, as rapidly as possible.

John Jermyn—Jermyn No. 4 Shaft has built a new reservoir for spring water to supply the boilers. Started sinking a new slope November 5, 1887, and are down 170 feet. Slope opening, 14'x7'; pitch, 1 foot in 3 feet. Has set three new boilers in place; one pair of engines, 10"x10"; one fan engine, 12"x12", and one pumping engine.

Wm. T. Smith—Mount Pleasant Slope.—Sinking a new shaft to Clark vein. Size of shaft opening is 30'x11'. Depth of shaft from surface to bottom of little vein, 27 feet; Diamond vein, 139 feet; Rock vein, 171 feet; G or Big vein, 241 feet; new County vein, 292 feet; and to Clark vein, 365½ feet.

Moosic Mountain Coal Company—Marshwood Colliery have everything ready to ship coal when branch track to breaker is finished. Are now pushing the work rapidly forward.

William H. Richmonds—Richmond Shaft.—Finished sinking shaft reported in 1886, and are now mining coal in No. 2 vein.

Winton Coal Company—S. V. White Mine has sunk a new shaft and built a new furnace.

Pennsylvania Coal Company—Shaft No. 1 Dunmore.—The second opening of this shaft is not yet completed.

William Connell & Co.—Stafford Shaft has been put in good working order. A new hoisting tower and new engine and boiler houses have been erected. A new nine foot diameter fan has been put in place, and a new railroad track has been laid connecting this shaft with the National breaker, where the coal is prepared for market.

Watkin's Son & Co.—Watkin's Colliery.—This company has erected a new breaker, having a capacity to prepare 500 tons of coal per day of ten hours. Have also erected a boiler house, blacksmith shop, barn and office, etc. Also sunk slope, opened a tunnel, sunk air shaft, and built air stack and furnace for ventilating purposes.

Large bodies of water have been successfully tapped and drained off from old workings 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