

LEGITT'S CREEK COLLIERY.

This colliery is located in the city of Scranton and situated $\frac{1}{4}$ mile north-west of the Lackawanna river; the shaft is 340 feet deep to the G or 14 feet vein. It is operated by the Delaware and Hudson canal company. J. C. Simpson is assistant mine superintendent. Thomas Bamford is mining boss of the Diamond and Finley Ross is mining boss of the G or 14 feet vein, and J. L. Atherton is outside foreman.

Description.—There is a double breaker attached to the shaft tower; they mine and prepare about 500 tons of coal per day; they employ in the Diamond vein 41 miners, 35 laborers, 15 drivers, 21 door-boys and 18 company men; in the G vein 46 miners, 35 laborers, 16 drivers, 8 door-boys and 23 company men; 63 slate pickers, 8 head and plate men, 3 drivers, 6 company men, 10 mechanics and 3 bosses outside; in all 352 men and boys; they are working the Diamond and G veins of coal; average thickness of the Diamond 6 feet, and of the G vein 8 feet; they work headings 9, air-ways 12 and chambers 30 feet wide, except where the roof is very bad; they leave pillars 18 feet wide to sustain the roof; they leave cross-entrances 50 feet apart for the purpose of ventilation; the roof in the Diamond vein is fire clay next to the coal, then rock, and in the G vein it is bony coal; the mines are in a good working condition.

Ventilation is produced by a fan; the in-take is located at mouth of shaft, area 240 feet; the up-cast is located in air-shaft, 500 feet from main opening, area 93 feet; the amount of pure air is 103,925 cubic feet per minute; there is noxious and inflammable gas evolved in these mines; the mines are examined every morning before the 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 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 six splits; the amount of ventilation has been measured and reported. Ventilation is good.

Machinery.—They use 1 breaker engine of 77-horse power, 2 hoisting engines of 123-horse power, 1 hoisting engine for outside plane of 62-horse power, 1 pumping engine of 105-horse power at second opening, 1 hoisting engine of 77-horse power and 1 fan engine of 49-horse power; they have a metal speaking-tube in the shaft; they have 3 safety carriages with all the modern improvements; they do not allow any persons to ride up or down the main shaft, they are all hoisted and lowered by a safety-carriage in the second opening; 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 and safety-valve to indicate the pressure of steam; the breaker machinery is boxed and fenced off so that operatives are safe.

Remarks.—They have furnished maps of mines; they have no house for men to wash or change in. Finley Ross, mining boss, is a practical and competent man; Mr. Thomas Bamford seems to be a practical and competent man; they have a fire boss to assist them in each vein; there are no boys working in the mines under 12 years of age; the engineers seem to be experienced, competent and sober men; they do not allow over 10 persons to ride on the safety-carriage at one time; the parties having charge know their duty in case of death or serious accident; they are working a gravity plane in the Diamond vein; the air is conducted systematically, by the aid of check-doors, &c., to the face of the workings by 3 air-splits in each vein; they do not work over 50 men in any one split of air; the fan is 21 feet in diameter by 5 feet face and it runs at the rate of 68 revolutions per minute; the shaft-opening is protected by safety-gates.

MARVIN SHAFT.

This shaft is located in Scranton city, and situated about 500 feet north-west of the Lackawanna river. This is a new shaft just sinking; it is sunk down to the Diamond vein, which is 155 feet below the surface, average thickness of coal 7 feet; the opening is 10 feet wide by 41 feet long; they are putting up very substantial brick buildings around the shaft for engine house, etc.

Machinery.—They use 2 hoisting engines of 120-horse power, and 2 smaller hoisting engines of 30-horse power; they are now in the act of building a breaker, etc. I gave instructions when I last visited it to put a brake on the drum before they hoist any more men in or out of the shaft.

ROLLING MILL COLLIERY.

This colliery is located in the city of Scranton, and situated on Roaring Brook creek; it is operated by the Lackawanna iron and coal company. C. F. Mattes is general superintendent, and Evan Davis is mining boss.

Description.—The opening to the coal consists of a slope and tunnel; the slope is 1,023 feet long, and driven at an angle of 5° in a south-westerly direction; there is no breaker connected with these mines; all the coal mined here is consumed by the company's rolling mills and blast furnaces; they mine and prepare about 240 tons of coal per day; they employ 90 miners, 18 drivers, 13 door-boys and 7 company men in the mines; 1 head man, 2 drivers, 2 company men, 9 mechanics and 1 boss outside; in all 143 men and boys; they are working the Rolling Mill vein of coal, average thickness 4½ feet; they work headings 9, air-ways 30 and chambers 30 feet wide; they leave pillars 15 feet wide to sustain the roof; they leave cross-entrances 30 feet apart for the purpose of ventilation; the roof is good hard rock; the mines are in a good working condition.

Ventilation is produced by means of furnaces; the intakes are located at mouths of slope and tunnels; the area of intakes for the slope is 72, and for the tunnel 34 feet; the upcasts are located in furnace air-shafts; the area of the upcasts for the slope is 63, and for the tunnel 113 feet; the amount of air in the slope is 9,150, and in the tunnel 14,250 cubic feet per minute; 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 travelled roads, and an extra one in case of an accident to any of the others; the air is conducted to the face of the workings in one volume in the slope and tunnel; the amount of ventilation has been measured and reported; ventilation is good.

Machinery.—They use two hoisting engines near mouth of slope, 40-horse power each; there is a double acting steam pump in mines, 80-horse power, and 1 feed steam pump; they have no metal speaking tube in the mines; 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.

Remarks.—They have furnished a map of mines; they have a second opening; they have a house for men to wash and change 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 practical men; they do not allow any persons to ride on loaded cars in the mines; the parties having charge know their duty in case of death or serious accident; the stacks over furnace air-shafts are built of brick, 7 feet in diameter in the clear.

PINE BROOK SHAFT.

This shaft is located in the city of Scranton, and situated about 1,000 feet south-east of the Lackawanna river; it is 175 feet deep to the Clark vein; it is operated by the Lackawanna iron and coal company. Charles F. Mattes is general superintendent, Morgan Bowen is mining boss and Henry Hess is outside foreman.

Description.—There is a breaker attached to the shaft tower; they mine and prepare about 250 tons of coal per day; they employ 37 miners, 34 laborers, 14 drivers, 6 door-boys and 16 company men in the mine; 15 slate pickers, 1 head and plate man, 2 drivers, 8 company men, 6 mechanics and 1 boss outside; in all 140 men and boys. They are working the Clark vein; average thickness 6½ feet; they work headings 14, air-ways 21, and chambers 27 feet wide; they leave pillars 12 feet wide to sustain the roof; they leave cross-entrances 60 feet apart, for the purpose of ventilation; the roof is slate; the mine is in a good working condition.

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 $28\frac{1}{2}$ 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 shafts, 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

gressing slowly. It is not developed enough at present to give it an extended notice here. It will be fully reported next year.

DELAWARE AND HUDSON CANAL COMPANY.

No. 3 Jermyn's Shaft, Green Ridge.

This colliery is operated by the Delaware and Hudson Canal Company and the Delaware, Lackawanna and Western Railroad Company, in partnership. They are now grading a slope in coal inside, which will be eight hundred feet long, when completed, on the northwest side of the shaft, also a new gravitation plane, four hundred feet long, on the east side of the shaft.

Von Storch Slope.

They are erecting another ventilating fan at this colliery in addition to the fan which they have there at present. The new fan is seventeen feet diameter by four feet face. This is to ventilate the fourteen feet and Diamond seams of coal. The old fan, which is twenty feet diameter by five feet face, will be used exclusively for the Clark seam of coal. They have just finished a slope, six hundred feet long, in coal in the Clark seam, on the southeast side of shaft.

Legitt's Creek Shaft.

They have re-opened the Diamond seam of coal, which has been idle for four years. They are now ready for operation.

Marvine Shaft.

They are now building a gravitation plane, six hundred feet long, in the fourteen feet seam of coal, on southeast side of shaft. Also sinking a slope in coal on northwest side of shaft, which will be about twelve hundred feet long when finished. They are also driving for second opening in Diamond seam, by connecting with Diamond seam in Legitt's Creek shaft. The connection is now made.

Olyphant, No. 2.

They have built a new breaker over second opening shaft of this colliery, and call it Eddy Creek breaker. They have cut and graded a new gravitation plane to bring coal to foot of shaft from the northwest side of the property.

Grassy Island Shaft.

They are sinking a new air shaft at this colliery. It is timbered down to the rock, a distance of twenty feet from the surface. The size of shaft opening is eleven by fourteen feet. They are now drilling a bore-hole in the air shaft to let the water down through to the mine workings. They expect to finish bore-hole in a few days. The contract for sinking shaft is already let. The intention is to put up two fans on the same shaft, seventeen feet diameter by four feet face, each. They are to be run by two

Have put up a 20-foot fan, by 5-foot face, run direct by two engines, one on each end of fan-shaft.

Eddy Creek Shaft.

New breaker all ready. Expect to start on February 15th. Have sunk a new slope in south dip 600 feet long to first basin.

Marvine Shaft.

Finished sinking slope on north dip. Finished second opening to Leggett's Creek in Diamond vein. Put three drill-holes down from Diamond vein to 14-foot to take water from small basin—saves one steam-pump.

Leggett's Creek Shaft.

Put new buntings and guides in hoisting shaft. Are now taking 100 cars per day of coal from the Diamond vein. Put three drill-holes down from Diamond to 14-foot vein, to take water from basin—saves two steam-pumps.

Von Storch Mines.

Have driven under the river from foot of slope in 14-foot vein, to open coal on south-east side of river. Are cutting up the north-west rise in Diamond vein to outcrop to get air-shaft for intake air; also put in new 17-foot fan.

Yours, etc.,

ANDREW NICOL,

General Superintendent of Mines.

Per A. B. NICOL.

We find that John Young, Patrick McNulty, John Shaffer, Patrick Murphy, Patrick Harrison, John Carden, Cormac McGuire, and Patrick Cavanagh, came to their deaths on the 13th day of September, A. D. 1886, in the slope section of the fourteen-foot vein, at the Marvine shaft of the D. & H. C. Co., by being suffocated by mine gas, caused by the circulation of air having been cut off by an unusually large fall of roof.

From the testimony of those who escaped from the same portion of the mines, it seems that in going to work that morning the deceased did not apprehend any danger, although, probably, aware that there was undue pressure on the pillars of several chambers on No. 2 air split, and that the squeeze was extending.

This system of mining—which may be compared to working in a bottle with no channel for egress of air, except at the nozzle—though generally in vogue throughout this district, and not distinctly forbidden by law, is certainly reprehensible.

If the officials in charge had had sufficient foresight to have made, beforehand, the heading connection which was afterward done to recover the bodies, or prevented the men from entering until there was a second opening, the disaster would have been averted.

In witness whereof, as well the aforesaid coroner, the jurors aforesaid have to this inquisition put their hands and seals, on the day and year and at the place above mentioned.

G. EDGAR DEAN,
A. B. DUNNING, JR., Foreman,
JOHN J. COSTELLO,
JAMES S. WHITE,
D. T. LEWIS,
JOHN O. STANTON,
BENJAMIN HUGHES.

NOTE.—This portion of the mine has been abandoned and filled with water.

Time and Speed Indicator.

Article 10, section 17, of the anthracite mine law of Pennsylvania, requires that all ventilators used at mines generating explosive gases, shall be provided with a recording instrument, by which the number of revolutions of the fan shall be registered each hour, and such data shall be taken and reported, &c., &c.

Mr. Edmund Bartl, engineer Delaware, Lackawanna and Western Railroad Company, has devised an instrument which will do the work demanded by the above law admirably. It consists of a metal pedestal, which is erected on blocks at the side of the fan or engine shaft, which supports a small vertical shaft to which a governor is attached. On the lower end of the shaft is a small cog wheel, which is geared to a large driving wheel screwed into the end of the fan or en-

another portion of the mine. The squeeze seemed to stop at this point, and did not extend any further at that time.

On September 13th, the men went in as usual in the morning to their work, and, from the testimony of the witnesses who appeared before the coroner's jury, everything was quiet and no sign of a squeeze. About eight o'clock, the coal began to chip off the pillars from the pressure of the overlying strata, and at about fifteen minutes after eight o'clock the mine foreman thought he had better stop the work in that part of the mine. He then sent messengers through and notified everybody to come out. They all came out except the eight men who have been mentioned as going back and being lost. Every effort was made to rescue them, but the roof kept falling and it was dangerous to risk going over the fall. On the afternoon of the 13th, every place was blocked tight with falls from the roof. Air bridges and doors were all destroyed, which caused the stoppage of the circulation of air. About noon, on the 14th, gangs of men were started to cut through to rescue the men at two places. One of the places colored red on tracing and marked F, and another from the same heading to be driven into a chamber marked James Lynch. This last place had to be abandoned when they reached a distance of fifteen feet, as the drill was caught fast in the hole on account of the squeeze. The distance to be driven on heading marked F on tracing was 154 feet. It took nearly six days to go through to the lower heading. Six bodies were found at the face of the heading, marked A. on September 21st, and two bodies were found on the 23rd, at points marked B and C. Attached, you will find tracing with notes and letters denoting where men were found, also the verdict of the coroner's jury:

The Verdict.

COMMONWEALTH OF PENNSYLVANIA, } ss:
Lackawanna County,

An inquisition indented and taken at the First ward of Scranton, in the county of Lackawanna, the ninth day of October, in the year of our Lord one thousand eight hundred and eighty-six, before me, G. E. Dean, M. D., coroner of the county aforesaid, upon the view of the bodies of John Young, Patrick McNulty, John Shaffer, Patrick Murphy, Patrick Harrison, John Carden, Cormac McGuire, and Patrick Cavanagh, then and there lying dead, upon the oaths of A. B. Junning, foreman, James White, D. T. Lewis, J. O. Stanton, Benjamin Hughes, and John Costello, good and lawful men of the county aforesaid, who being sworn and affirmed to inquire on the part of the Commonwealth, when, how, where, and after what manner the said eight men came to their deaths, do say, upon their oaths and affirmations respectively, that there was strong suspicion of violence, such as to make an inquest necessary.

Marvine Mine Disaster.

Marvine mine, which had previously been in successful operation, employing about 250 men and boys, on September 13th, 1886, was the scene of a serious disaster, caused by an extensive fall.

The fall was caused by the settling of eight (8) acres in a basin of the mine north-west of the shaft, in which locality the coal of that part of the mine, the vein being about sixteen (16) feet thick, had been mined out. Pillars of the usual dimensions, which had been left for supporting the roof, were crushed by the superincumbent pressure. There were about 100 men and boys working in the portion of the mine that caved in. All except eight escaped. These could have gotten out safely if they had persevered as the others did. They were within ninety (90) feet of the foot of the slope, indicated by letter D, on tracing attached to this report. At this point, it seems they had a consultation and turned back into the mine. They were met going back by William Shaffer, son of John Shaffer, who implored his son with tears in his eyes to return with them, but he went right on toward the shaft; he got to a point marked G on tracing, where he was caught by a fall of roof and held fast until relieved by Peter Kelly, a propman, who was coming out after him. Both of them came to the foot of the shaft in safety. They were also met going back by Paul Bright and Robert Proudlock, the fire boss, who tried to persuade them to return and go out with them, but without avail. Bright and Proudlock reached the foot of the shaft without being injured. The names of the persons who returned into the mine and were lost, are: John Young, Patrick McNulty, John Shaffer, Patrick Murphy, Patrick Harrison, John Carden, Cormac McGuire, and Patrick Cavanagh. John Carden, one of the party that lost his life, was out at the foot of the slope, when he heard his uncle, Cormac McGuire, imploring for assistance. He returned to his relief, but never came out alive. The heroic action of John Howells deserves special mention. As he was coming out, creeping over the fall with the roof falling around him, he heard the cry for help of a boy named John Ready, who was held fast by a slab of rock. He returned, turned the rock off his foot, but the boy lost some of his toes and could not walk. Howells hoisted him on his back and carried him to the foot of the shaft, a distance of about 2,000 feet.

The first indication of a creep or squeeze was on Monday morning, September 6th. A slight squeeze was noticed in Thomas Lynch's chamber. He was compelled to quit and would not be allowed to work any longer. Next morning the squeeze extended to the chamber inside, marked on tracing Elijah Filer. He had to quit work also. Next morning the squeeze extended two chambers further in, marked on tracing Frank Collins and Valentine Birtly. When it got this far, all the men were removed from this section of the workings to

Table Showing the Occupation and Percentage of Persons Killed and Injured while Following these Occupations During the Year 1893.

Occupation.	Killed or fatally injured.	Per cent.	Injured.	Per cent.	Total.	Per cent.
Miners,	18	35.3	35	36.45	53	36.0
Miners' laborers,	20	39.2	28	29.16	48	32.7
Runners,	2	3.9	3	3.12	5	3.4
Drivers,	3	5.9	18	18.80	21	14.3
Door boys,	2	3.9	3	3.12	5	3.4
Company laborers,	4	7.9	1	1.04	5	3.4
Foot men and head men,			5	5.20	5	3.4
Shaft sinkers,			1	1.04	1	0.7
Slate pickers,	2	3.9	2	2.07	4	2.7
Total,	51	100.0	96	100.0	147	100.0

IMPROVEMENTS MADE IN 1893.

Delaware and Hudson Canal Company.

At the **Marvine** shaft a new plane was made, 1,430 feet long, area 98 square feet, grade 8 degrees.

At No. 1 shaft, Carbondale, two new air shafts were sunk a distance of 20 feet, which greatly improved the air at the extreme end of the workings.

At Grassy Island a second opening was driven at the extreme end of the plane working from the "Grassy" vein to the surface; length, 275 feet; area, 84 square feet.

Hillside Coal and Iron Company.

At Glenwood three new planes were made, the length of which are 400, 600 and 600 feet, respectively; sectional area of each 84 square feet, on angles of 12, 18 and 19 degrees.

At Erie two new planes were completed, one 150 feet long, with an area of 112 square feet; the other has 98 feet area, and is 175 feet long, on a pitch of 14 degrees.

At Forest City, No. 2 shaft, a new plane, 600 feet long, 6 feet high and 14 feet wide was put in operation.

A new plane, 275 feet long, 14 feet wide and 6 feet high was also put in operation at the Clifford shaft.

At the **Marvine** the Clark vein which is five feet 6 inches thick and of very good quality was opened up. The second opening slope which was begun in 1893 was completed from the 14-foot vein to the surface, a distance of 384 feet.

It has an area of 98 square feet and a grade of "one in four." It is also used for a down cast for air.

At the Grassy Island mine a new plane 400 feet long on a grade of 12 degrees was completed.

A new tunnel was driven from the surface to the number 2 vein at White Oak. It is 507 feet long.

The vein here is 3 feet 6 inches thick.

A new fan is also in course of erection to ventilate all the White Oak workings.

At Coal Brook, near the face of the present workings, a new shaft was sunk a distance of 87 feet, for the purpose of ventilation.

A new tunnel was also driven at this mine from the surface to the bottom coal, cutting a five-foot vein at a distance of 100 feet.

Lackawanna Coal Company.

A tunnel 550 long having a sectional area of 84 square feet was driven by this company from the surface to the lower Dunmore vein, which is four and one-half feet thick.

A shaft for the purpose of ventilation was also sunk from the surface to this vein, a distance of 190 feet.

Delaware, Lackawanna and Western Railroad Company.

At Storr's mine, a tunnel 6x12 and 750 feet long was driven from the "big" vein to the Diamond.

A new plane 450 feet long on a grade of 11 degrees was also made.

At Storrs No. 3 two new planes were made, one 450, the other 500 feet long.

John Jermyn.

At Jermyn No. 3 a tunnel is being driven north across the measure. It is now 600 feet long and is expected to go 900 feet more to cut the lower Dunmore vein.

The coal from this new opening will be brought to the surface through the slope.

A shaft through which the tunnel workings will be ventilated has been sunk to the vein, a distance of 120 feet.

The vein at this point is reported seven feet thick and of good quality.

A new plane 450 feet long has also been made in this mine. It has a pitch of 12 degrees.

Table F.—Nationality of Persons Killed and Injured.

Nationality.	Polish.	American.	Irish.	English.	Welsh.	Hungarian.	Italian.	German.	Russian.	Austrian.	French.	Creolan.	Bohemian.	Total.
Killed or fatally injured,	8	8	14	7	4	4	3	5	2	1	1	1	1	51
Injured,	31	26	19	24	11	10	2	5	2	1	1	1	1	134
Total,	39	34	33	31	15	14	5	5	4	2	1	1	1	185

Table G.—Showing the Quantity of Coal Mined and Shipped, the Number of Days Worked, the Number of Persons Employed, the Number of Persons Killed and Injured in and About the Mines of this District During the Five Years Ending December 31, 1896.

Years.	Total production in tons of coal.	Total shipment in tons of coal.	Number of days worked.	Number of persons employed.	Number of persons killed.	Number of persons injured.
1892,	5,874,638	5,546,890	209.94	14,121	55	115
1893,	6,202,131	5,914,673	195.35	15,634	51	96
1894,	5,907,251	5,602,644	171.90	16,014	47	93
1895,	6,510,817	6,216,137	182.31	16,272	39	121
1896,	6,217,447	5,996,599	179.40	17,604	51	134
Totals,	30,692,281	29,367,733	938.9	79,645	243	564

Improvements.

A new fan has been erected by the Delaware and Hudson Canal Company at the **Marvine** shaft to ventilate the fourteen foot workings. The old one will hereafter be used to ventilate the Clark vein.

At Eddy Creek two new planes were driven from the Rock vein to the "14 foot." One is two hundred feet long, the other five hundred feet. A new slope seven hundred feet long was also sunk.

At Grassy Island a new slope has been driven from No. 2 vein to the Diamond, a distance of six hundred feet. Two new shafts have been sunk and a new fan erected to improve the ventilation in the workings of the Wilson creek tunnel.

TABLE F—Nationality of Persons Killed and Injured.

	Poles.	American.	Irish.	English.	Welsh.	Austrian.	Hungarian.	Russian.	Slavs.	Greek.	Italian.	Scotch.	German.	French.	Totals.
Killed,	16	10	10	9	6	5	5	2	1	1	3	3	2	1	68
Injured,	24	19	22	12	15	2	7	4	4	5	5	3	2	1	116
Total,	40	29	32	21	21	7	12	2	5	1	8	3	2	1	184

Examination.

The annual examination of applicants for mine foremen and assistant mine formemen certificates of qualification was held at Carbondale on July 18 and 19, by the Board of Examiners, consisting of Edward Roderick, Inspector; Chas. P. Ford, Superintendent; James E. Morrison and Joseph T. Roberts, miners, and Lewis H. John, clerk.

Fifteen applicants entered for mine foremen certificates and the following named persons were successful and were recommended: Thomas C. Boylan and Patrick F. Tigue, of Carbondale; J. W. Parfrey, Dunmore; John D. Jones and Edward Scharar, Scranton; Paul Bright, Throop; John J. Williams, Olyphant, and William T. Powell, Plymouth.

The following persons were recommended to receive assistant foremen certificates: John Robinson and Thomas C. Hodgson, Scranton; Thomas Johns and Benjamin Milton, Vandling; James H. Swift and Martin Murphy, Archbald; David B. Thomas, Peckville, and David J. Morgan, Carbondale.

Improvements Made During the Year 1899.

Delaware and Hudson Company.

At the Leggett's Creek Colliery a new breaker of 2,000 tons a day capacity has been erected and the old one, which was built over the shaft, has been razed.

Two new air locomotives have been installed in the mine.

Also, at the **Marvin**, a twelve-ton air locomotive has been installed.

At Eddy Creek two new planes have been built in Grassy Island vein, and a slope has been sunk in Diamond vein.

In Olyphant No. 2 a chain hoist has been placed in rock vein to take empty cars from foot of shaft, doing work which formerly required three mules. Also, a new Jeanesville pump has been installed, making two pumps delivering water to surface through an 18-inch bore hole.

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 conveyer 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.

CONDITION OF COLLIERIES

DELAWARE AND HUDSON COMPANY

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

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

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs and Brisbin Collieries.—Ventilation, roads, drainage and condition as to safety, good.

Cayuga Colliery.—Ventilation and condition as to safety, good. Roads and drainage, fair.

SCRANTON COAL COMPANY

Johnson and Richmond No. 3 Collieries.—Ventilation, roads, drainage and condition as to safety, good.

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

BULLS HEAD COAL COMPANY

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

CLEARVIEW COAL COMPANY

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

IMPROVEMENTS

DELAWARE AND HUDSON COMPANY

Eddy Creek Colliery.—Completed the rock slope through the fault and started tunnel through Smoketown, Diamond vein. Installed a Goodman mining machine in the Dunmore vein. Drove rock slope to Rock and 14 foot veins in Birdseye drift.

Marvine Colliery.—The mouth of No. 1 rock slope was concreted. Rock vein was opened from No. 1 slope and also from No. 9 rock plane.

Von Storch Colliery.—A rock plane 400 feet long was driven from the Clark to the New County vein.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery.—Built a fireproof machine shop. A bore hole was made for suspending a cable at No. 3 shaft. Built a new washery. A tunnel was driven from top to bottom split of 14 foot vein, at No. 2 shaft. New transmission line from Hampton power plant. One shortwall coal-cutting machine was installed.

plane and branches. A car haul, steam driven, 140 feet long, is in course of construction in the Clark vein for the same purpose. Extended Rock slope No. 14, 300 feet on pitch of 12 degrees, in Dunmore vein, through big fault from top of Eddy Creek anticlinal into Miles basin. An air shaft, 10 by 10 feet, 40 feet deep, and fan drift 75 feet long were completed, connecting with up-cast of Eddy Creek shaft for proposed emergency fan.

Olyphant Shaft.—A second opening and return airway, 7 by 18 feet, was driven from Clark vein to Rock vein, 700 feet on 28 degree pitch. An intake shaft, 12 by 12 feet, to Rock vein, was sunk through 60 feet of wash at face of No. 25 plane near crop.

Bird Eye.—Extended No. 4 slope 150 feet through fall and graded 1,200 feet of slope in Clark vein.

Olyphant Breaker.—Installed a central power plant, comprising one 1,000 K. V. A., 25 cycle alternating generator, directly connected to a Hamilton-Corliss cross compound engine. The voltage is 2,300, and power will be furnished to mine motors in Archbald, Olyphant and Scranton districts. Steam for the plant is provided by two batteries of Sterling boilers, yielding 1,800 H. P. The whole is housed in a brick and steel structure.

Marvine Colliery.—Extended Rock plane 7 by 12 feet, from 14 foot vein to the Diamond vein 1,000 feet on a pitch of 12 degrees to lower coal to 14 Foot landing at shaft. This plane is operated by a 14 by 20 inch Flory engine, located on surface. Extended Rock plane 400 feet on pitch of 12 degrees from No. 4 Dunmore to No. 3 Dunmore vein. Built a new pump room in Clark vein, 17 by 32 by 11 feet, for locating plant to deliver water to 14 Foot vein level.

Legitts Creek Colliery.—Extended Rock plane from Rock to Diamond vein 350 feet on 12 degree pitch for handling coal in latter vein on northwest end of property.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Storrs Colliery.—Installed one 18 by 6 foot fan, including engine and fan house. Remodeled scales. Added two 5 by 6 inch plunger pumps with motors, and one haulage electric motor with reel.

Brisbin Colliery.—Installed one 18 by 6 foot ventilating fan, including engine and house. Built brick and concrete oil house. Made second opening shaft from four foot to five foot vein.

Cayuga Colliery.—Installed one 7-ton electric motor with reel in Dunmore No. 2 vein.

SCRANTON COAL COMPANY

Johnson Colliery.—Built a hospital, 12 by 14 feet, equipped with steam heat, electric lights, hot and cold water, cots and First Aid outfit.

Richmond No. 3 Colliery.—Built a hospital, 14 by 15 feet, equipped with steam heat, electric lights, hot and cold water and First Aid outfit.

West Ridge Colliery.—Built a hospital, 10 by 12 feet, equipped with steam heat, hot and cold water and First Aid outfit.

CONDITION OF COLLIERIES

DELAWARE AND HUDSON COMPANY

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

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

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

MID CITY COAL COMPANY

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

SCRANTON COAL COMPANY

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

IMPROVEMENTS

DELAWARE AND HUDSON COMPANY

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

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

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

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

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

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

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

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