

Remarks.—They have furnished a map of the mines; they have a second opening for each vein; they have a house for men to wash and change in; the mining boss is a practical and competent man; there are no boys working in the mines under twelve years of age; the engineers seem to be experienced, competent and sober men; they do not allow over ten men to ride on the safety-carriage at one time; they do not allow any person to ride on loaded cars in the mines or on loaded carriages in the shaft; the parties having charge know their duty in case of death or serious accident; the shaft landings are protected by safety-gates.

MT. PLEASANT COLLIERY.

This colliery is located in the city of Scranton, on the northern division of the Delaware, Lackawanna and Western railroad, and situated one-fourth of a mile north-west of the Lackawanna river; it is operated by the Mount Pleasant coal company. William T. Smith is general superintendent, James R. James is mining boss and Thomas D. Bevan is outside foreman.

Description.—The opening to the coal is a slope driven on an angle of 15°; it is 500 feet to where it strikes the Diamond, 550 feet to where it strikes the Rock, and 700 feet to where it strikes the Big vein of coal; it is 1,200 feet long to where they take the coal out at the basin; there is a breaker connected with these mines, located about 50 feet from main opening; they mine about 350 tons of coal per day; they employ 43 miners, 43 laborers, 20 drivers, 5 runners, 8 door-boys and 14 company men in the mines; 23 slate pickers, 5 head and plate men, 3 drivers, 7 company men, 4 mechanics and 2 bosses outside; in all 177 men and boys; they are working the Diamond and Rock veins, average thickness 7 feet each; they work headings and air-ways from 10 to 12, and chambers 28 feet wide; they leave pillars from 15 to 20 feet wide to sustain the roof; they leave cross-entrances about 60 feet apart for the purpose of ventilation; the roof is good slate; the mines are in a good, safe working condition.

Ventilation is produced by means of furnaces; the intakes are located at mouth of slope, area 54 feet; the upcasts are in furnace air shafts, area 48 feet; the amount of fresh air is 11,500 cubic feet per minute, passing through both veins; the main doors are hung so that they will close of their own accord; they have attendants at main doors; they have double doors on main travelled 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 one volume in each vein; the amount of ventilation has been measured and reported; ventilation is good.

Machinery.—They use 1 hoisting engine, 70-horse power, and 1 breaker engine, 25-horse power; they have an adequate brake, and flanges of sufficient strength and dimensions for safety attached to their hoisting drum; the links, chains, ropes and connections are in good condition; the boilers have been cleaned and examined and reported in good condition; they have a steam gauge to indicate the pressure of steam; the breaker machinery is boxed and fenced off so that operatives are safe.

Remarks.—They have furnished a map of mines; they have second openings for both veins; they have a house for men to wash and change in; the mining boss seems to be a practical and competent man; he has a fire-boss to assist him; there are no boys working in the mines under 12 years of age; the engineers seem to be experienced, competent and sober men; they do not allow any persons to ride on loaded cars in the mines; the parties having charge know their duty in case of death or serious accident; they are sinking an air-shaft 13 feet in diameter, and it is now down 110 feet; they intend to build a furnace in it when completed; they are working 18 men in it at present.

FELLOWS' LOCAL COAL SALE MINE.

This mine is located in the city of Scranton, and situated on the west bank of the Lackawanna river. It is operated by J. T. Fellows, Esq. George Perigo has charge of the works, and John Frank is mining boss.

The latter are generally small collieries, and are well supplied with air, excepting in spring and autumn, when the temperature of the air in the mines and on the surface is equal. However, I am very firm in the conviction that there should be fans to ventilate all the collieries, and I cannot be satisfied until that end is reached.

Cavings in of the Mines.

There have been frequent cavings in of the mines during the year on an extensive scale, but no lives were lost by them, though some very narrow escapes have been reported, through the reckless daring of parties that did not have sense enough to realize the danger. These caves have generally occurred where two or three veins are worked one over the other, though some have occurred even where only one vein was worked, but the latter occurred in the old abandoned workings, and have not interfered with the mining of coal. The first one of importance, where one vein was being worked over the other, occurred in the Mt. Pleasant slope, Hyde Park, in August last. Here the Diamond vein had been completely worked out, and under it the Rock vein had been extensively worked. Each of these veins had been worked without any regard to the manner in which the other had been worked, hence the pillars in each vein were either over or under the vacuum of the chambers in the other, and the natural consequence was that the pressure of the overlying strata caused these pillars to crush through the intervening rock between the veins, and the whole strata above settled down, closing up both veins entirely. In order to get the remainder of the coal in the Rock vein, a new opening will have to be made by a plane, through rock, from the Big vein below. Another very extensive cave occurred at the Diamond mines, and still another at the Bellevue mines, both belonging to the Delaware, Lackawanna and Western Railroad Company. In each of these cases they were working three veins, one over or under the other, and the caves were caused by the same system of working as at the Mt. Pleasant mines. In no case, so far as I know, is there any attempt made to work the pillars in one vein exactly over the pillars in the vein below, or *vice versa*, and so long as this is not done, there is no hope of preventing these caves. I admit that it requires good mining engineering to do this, and I must also admit that our present class of mine bosses are not competent for the work, but that will not alter the facts in the case. I believe it can be done, and I believe it would pay the operators to try the experiment.

NEW COLLIERIES.

Pierce Colliery.

This colliery is owned by Messrs. H. S. Pierce, Edward Jones, John Hosie, and H. B. Phelps, the last named having one tenth interest in the firm, and the others three tenths interest each. The land upon which the colliery is located is in the warrantee names of John Clark and Aaron

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.

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

Diamond No. 2 Shaft has been enlarged from 10 x 40 feet to 12 x 40 feet from the surface to the New County vein, and extended from New County vein to the Clark vein at 12 feet by 33 feet 5 inches, and is now being sunk at these dimensions to the lower "Dunmore" veins.

A new fan has been erected, dimensions 6 x 16 feet.

Hyde Park Shaft. A new plane was driven on a grade of one and one-half inches on ten feet. Sectional area, 7 x 14 feet; length, 395 feet. Another plane was driven on a grade of one inch in ten feet; sectional area, 7 x 12 feet; length 310 feet.

Manville Shaft. A new slope of the following dimensions was driven: Length, 1,100 feet; sectional area, 84 square feet; gradient, two and one-half degrees.

Holden Shaft. A plane of the following dimensions was driven: Length, 112 feet; sectional area, 60 square feet; grade, 27 degrees.

Delaware and Hudson Canal Company.

This company is opening up No. 3 Dunmore vein, and preparing for the installation of an extensive system of tail top haulage at their "Dickson" mine.

Von Storch Mine. A plane of the following dimensions has been completed during the year: Length, 238 feet; sectional area, 14 x 7; gradient, 2 in 10.

Lackawanna Iron and Steel Company.

A tunnel has been driven from this company's "Pine Brook" mine from No. 2 Dunmore vein through a fault a distance of 820 feet, and it was intended to reach the same vein, but the vein they found resembles Dunmore No. 3.

William T. Smith.

Mount Pleasant Mine. A tunnel was driven from the four-foot to the five-foot vein; length, 200 feet; sectional area, 7 x 8 feet.

Pennsylvania Coal Company.

At No. 5 Dunmore shaft two planes have been driven, one in the Clark vein, 400 feet long, 90 square feet sectional area, 9 degrees gradient.

One in the Bottom vein 760 feet long; 90 square feet sectional area, 5 degrees gradient.

A slope is being driven in the Second Dunmore vein, and another in the Third Dunmore vein.

Three Babcock & Wilcox water tube boilers of 450 H. P. are in course of erection.

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

The Mt. Pleasant Coal Company.

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

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

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

Pennsylvania Coal Company.

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

John & J. J. Jermyn.

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

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

West Ridge Coal Company.

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

MOUNT JESSUP COAL COMPANY, LIMITED

Mount Jessup Colliery.—Built new breaker at Peck shaft, started July 21, 1910. Installed one new 416 horse power Maxim boiler at Peck shaft; not yet in use.

MOOSIC MOUNTAIN COAL COMPANY

Marshwood Colliery.—Installed at shaft nest of two boilers, tubular 5 feet diameter, 14 feet long, each. Rated 100 horse power each. Carpenter and machine shop for general mine work erected at Marshwood. Reopened fan shaft; rebuilt fan house, and installed fan and engine at Marshwood.

STERRICK CREEK COAL COMPANY

Sterrick Creek Colliery.—The Sterrick Creek breaker, which was destroyed by fire October 26, 1909, was rebuilt and began preparing coal November 7, 1910. The structure is 92 feet by 107 feet, and 123 feet 6 inches in height. The entire frame of the breaker is of structural steel and the outside covering is of heavy galvanized corrugated steel, carried by steel angle studding. Fenestra steel standard window sash was used, and the breaker is usually well lighted. The old breaker was built over No. 1 shaft, and the new breaker was erected seventy feet from the shaft, necessitating the relaying and regrading of all tracks, and also the removal of both light and loaded scales.

A brick engine house, 60 feet by 48 feet 6 inches, with steel roof, has been erected, containing one pair of 20 by 42 inch Putnam-Corliss engines, which drive the breaker, the transmission being by ten wraps of $1\frac{3}{4}$ -inch manilla rope drive, American system. This engine house also contains one pair of 22 by 30 inch geared engines for the shaft hoist; one pair of $10\frac{1}{2}$ by 12 inch geared hoisting engines for the culm plane, and one 3 by 18 inch engine, with $1\frac{3}{4}$ -inch manilla rope drive to the head of the breaker, driving a rivetless chain conveyor, 282 feet centers, with flights 48 by 54 inch centers, which conveys the coal from a steam cross-over tip to the head of the breaker.

Adjoining this engine house and in course of erection is a brick and concrete fan house; containing a high speed fan, 10 feet by 3 feet, driven by a $14\frac{1}{2}$ by 15 inch automatic engine.

A new steel head frame has been erected over the No. 1 shaft.

The breaker is equipped with a B. G. Carpenter and Company exhaust fan system for removing the dust.

The breaker has a capacity of 2,600 tons per day.

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, June 1 and 2. The Board of Examiners was composed of the following persons: L. M. Evans, Mine Inspector, Scranton; Frank G. Wolfe, Mining Engineer, Scranton; David R. Evans, Miner, Olyphant; William F. Malloy, Miner, Carbondale.

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

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.

THE SPENCER COAL COMPANY

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

CARNEY AND BROWN COAL COMPANY

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

BULL'S HEAD COAL COMPANY

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

CLEARVIEW COAL COMPANY

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

NO. 6 COAL COMPANY

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

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

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

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

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

PENNSYLVANIA COAL COMPANY

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

Additional slate-pickers were installed in the breaker.

SCRANTON COAL COMPANY

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

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

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