Miscellaneous Coal Companies.

At the Steven's colliery a new Guibal fan 20 feet in diameter was erected on the air shaft connected directly to the crank of the fan· all the connections to the fan are not completed at this writing.

At the Avoca colliery a new fan 12 feet in diameter was erected on the air shaft which ventilates both seams in the shaft and does away with the furnace which ventilated the bottom vein.

At the clear Spring colliery a new Guibal fan 20 feet in diameter has been erected on the air shaft taking the place of the old Dawson fan which has been abandoned. This fan increases the quantity of air considerably.

At the "William A" colliery two new shafts have been sunk from the surface to the Red Ash seam, a depth of 164 feet by William A. Connell Sons and on the west side of the Lackawanna river in Old Forge township, Lackawanna county.

The hoisting shaft is 16½x11. The other shaft which is used for hoisting and lowering men and for ventilation is 27x11 feet area. A new Guibal fan 17 feet in diameter has been erected on the air shaft.

A new breaker has been built and supplied with first-class machinery for cleaning and preparing a large output of coal; the capacity of breaker is about 1,000 tons per day. It was started to prepare and ship coal in the month of May, 1890. The machinery in and around the breaker is properly fenced or boxed off for the safety of the employes.

The Babylon Coal Company, operated by Simpson, Watkins & Co., has opened up a new colliery on the west side of the Lackawanna river, opposite the town of Duryea. The openings consist of two shafts sunk to Red Ash seam, a depth of 289 feet. The hoisting shaft is 12x16, the other shaft is used for an air shaft and for hoisting and lowering the men; it is 12x18. A new fan has been erected on this shaft 20 feet in diameter which supplies the workings with a large quantity of air. A new breaker has been erected which is a large and commodious structure with a capacity of 1,200 tons per day. It is heated throughout with steam. It was started to prepare coal for market in the month of July, 1890. An inside rock tunnel was driven from the 5-foot to the 6-foot seam, a distance of 100 feet; sectional area 12x7.

Jermyn & Co. have opened a new colliery close to the town of Old Forge in Lackawanna county. The openings consist of two shafts sunk from the surface to the Red Ash seam, a depth of 236 feet. A new fan 18 feet in diameter has been erected on the air shaft, which supplies the workingmen with a large quantity of fresh air.

A new breaker has been built and supplied with the latest improved machinery for cleaning and preparing coal for market. Its capacity is about 800 tons per day. It started to prepare and ship coal in the month of July, 1890.

Nos. 1 and 2 Shafts, Old Forge and Breaker. At Old Forge breaker four Babcock & Wilcox water tube boilers of 600 horse power in two nests or batteries were erected in 1896. Pressure carried, 110 pounds. They were put in operation November 27, 1896, and supply steam to Old Forge breaker, Old Forge shaft No. 2, and to shaft No. 13 of Central Colliery, and have supplanted three cylindrical boilers 60 feet by 30 inches, formerly at the breaker; five 36 feet by 30 inches at Old Forge shaft No. 2, and ten 36 feet by 30 inches at No. 13 shaft; the latter fifteen have not as yet been removed but are not in use at this date.

At Old Forge Shaft No. 1, one Babcock & Wilcox boiler of 130 horse power was also erected in 1896 and put in operation November 18, 1896, and is an addition to the boiler power at that place. The pressure carried is 110 pounds.

William Connell & Co.

A plane has been driven from the abandoned workings in the old tunnel in No. 5 vein to the present workings in No. 4 vein; length, 150 feet; sectional area, 84 feet; gradient, 33 1-3 degrees.

The Connell Coal Company.

"William A" Colliery. A plane has been driven having the following dimensions: Length, 230 feet; sectional area, 7 x 16 feet; gradient, 12 per cent.

An opening has also been made from the Marcy vein to the surface.

Lawrence Mine. A shaft for ventilation has been sunk from the upper to the lower drift workings; depth, 26 feet; sectional area, 8 x 8 feet.

Two planes have been driven, one 485 feet long; 7x21 feet sectional area; gradient, 10 per cent.; the other 1,600 feet long; 8x14 feet sectional area; gradient, 2 per cent to 5 per cent.

An additional plane is in course of construction in lower drift.

Jermyn & Co.

Jermyn No. 1 Shaft. A shaft has been sunk for hoisting coal; depth, 220 feet; sectional area, 11 x 26 feet.

West Ridge Coal Company.

The main hoisting shaft was completed to a depth of 556 feet; sectional area, 12 x 30 feet.

A second opening is being sunk from the Clark vein to the China vein; present depth, 80 feet; sectional area, 8 x 10 feet.

A new slope has also been completed in the No. 4 vein: length, 500 feet; sectional area, 6x15 feet; gradient, 4 per cent.

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Pyne colliery.—A new belt-driven ventilating fan 5x4½ feet by 16 inches was erected at the Pyne. The fans erected in 1903, together with this one, were attached to the breaker, which was a source of danger from fire.

One Rock Plane tunnel located about 1,700 feet north-east of shaft from the Clark to the Big vein; 7x14 feet, length 663 feet, pitch 12 degrees.

Six 6½ ton electric locomotives have been installed, four of which are equipped with reels to work in chambers. Sub-station erected outside for 200 K. W. rotary converter which supplies 250 volts power for the six (6) electric motors inside.

Power is supplied from the central power station near Hampton colliery.

The new 1,500 horse power B. & W. water tube boilers and brick house are now nearly completed. Located about 250 feet north-east of breaker.

Sloan Colliery.—One Rock plane tunnel located about 2,000 feet north-east of shaft from Clark to N. C. vein, 7x14 feet length 275 feet, pitch 10 degrees.

Central Colliery.—One rock tunnel plane, located about 800 feet north-west of shaft, 7x14 feet length 375 feet, from Clark to New County vein, pitch 10 degrees.

Hampton Colliery.—One rock plane tunnel, located about 2,600 feet south of shaft, from Rock to Diamond vein, 7x14 feet, length 200 feet, grade 5 per cent.

Holden Colliery.—Air shaft from the Big vein to New County vein, size 6x8x36 feet deep, for ventilation.

LEHIGH VALLEY COAL COMPANY

William A. Colliery.—A rock tunnel was driven from the middle to the upper-split of Red Ash vein, at a point near foot of long slope, just west of the Lackawanna river. It was put at this point in order that the coal in this vein between the river and shaft could be mined separately from the same vein east of the river, the coal under the river being kept as a barrier or safety pillar. Since the Hallstead mine was flooded a system of silting has been in operation at this mine. All of the finer refuse from breaker, together with the dirt from culm banks on surface, has been silted into the old workings.

The workings along the Hallstead mines have been thoroughly filled from barrier pillar to main gangway. The work is being continued in the old workings along the Pennsylvania Coal Company's line. A slope has been driven from the shaft level to the lowest point in the Flag and Drake tracts. This was for the purpose of saving in haulage, the foot of Long or Main slope being a considerably higher elevation.

Pyne Colliery.—A second opening rock tunnel was driven from the New County vein to the Big vein, size 7 feet x 12 feet, length 200 feet, pitch 18 degrees. Installed one 200 K. W. electric rotary converter for mine haulage purposes. Installed and working two 6½ ton motors without reels, and five 6½ ton motors with reels. Installed new water fire lines for protection outside to breaker and out-buildings. Installed 2½ batteries or 10 boilers of the Babcock and Wilcox water tube type, 1515 horse power. Brick building, boilers brick lined, iron trusses for roof, and equipped with Parson's steam blower. Cylinder boilers and old boiler house removed. Hoisting engines were remodeled and removed further away from breaker onto a new foundation and in a new brick building.

Archbald Colliery.—Installed two batteries or 8 boilers of the Babcock and Wilcox water tube type, 1212 horse power. Brick buildings, boilers brick lined, iron trusses for roof, and equipped with Parson's steam blower. Old cylinder boilers removed and old boiler house torn down and removed. Installed fire lines and plugs on the outside for fire protection. Rock tunnel driven from Rock to Diamond vein, size 7 feet x 12 feet, and 75 feet long. Rock plane tunnel from New County vein to Big vein, size 7 feet x 14 feet, length 220 feet.

Continental Colliery.—Second opening rock tunnel driven from Dunmore No. 2 vein to Clark vein, size 7 feet x 12 feet, length 125 feet.

Sloan and Central Collieries.—Second opening rock tunnel driven from Clark vein to New County vein, 7 feet x 12 feet, length 150 feet. Also to do away with hoisting coal at the Central main shaft to the surface, and hauling over with steam locomotive to Sloan breaker; the coal is now transported by electric motor from Central to Sloan under ground, in the Clark vein. Six additional reel motors were installed at this mine during the year.

Dodge Colliery.—A new brick hoisting engine house, size 36x36; and a new pair of direct acting engines, size 22 inches x 36 inches. A new washery annex, size 24 feet x 60 feet for small sizes, capacity 400 tons per day.

Taylor Colliery.—Installed 4 new tubular boilers, 150 horse power each, also brick boiler house for the same, size 53 feet x 41 feet. Installed pair of breaker engines 12x30 inches in a new brick building 36 feet away from breaker. Rock tunnel driven from New County vein to Clark vein, size 7x14x184 feet, also new air shaft for ventilation from New County vein to Clark vein to ventilate above tunnel, size 8x10x23 feet.

LEHIGH VALLEY COAL COMPANY

William A. Colliery.—A new boiler plant consisting of seven batteries, with 2100 horse power was completed. A steam line was extended from this plant to the Lawrence and Bablyon mines, and the steam for the three collieries is now furnished from this plant. New cribbing was placed in the main shaft. One pair of 12x22 inch hoisting engines was placed in the Clark vein to replace the old pair which was too small for the work. One 1000 and one 600 gallon pump was placed in the Red Ash vein for silting.

Lawrence Colliery.—A William's crusher was installed to dispose of refuse from breaker, which is run in the mine.

Avoca Shaft.—The tracks in the Avoca mine have been narrowed to the gauge of Laws shaft. Rock was taken down on some heading roads to accommodate the Central mine cars. All the coal in the Avoca mine will be footed at Laws shaft and prepared in Central breaker, when operations are resumed.

Old Forge Colliery.—The addition to the washery is nearly complete; jigs to prepare buck, pea and nut coal have been erected and will be in operation in two weeks.

No. 1 shaft was thoroughly repaired during the year; the old wood cribbing was taken out and replaced with concrete; the wood engine house was torn down, and replaced with a brick building; all buntons, guides and brattice work were renewed and the shaft remodeled.

Six, seven and one-half ton cable reel motors have been added to the electrical equipment, as follows: two at No. 2 shaft, two at No. 1 shaft, and two in the Clark Mountain drift. At Old Forge No. 2 shaft a new mine hospital and foreman's office has been built in the Five Foot vein.

The ventilation is being continually improved. A new air shaft to be sunk near the most advanced workings will give another outlet and an abundance of air.

The Old Forge mines are in good condition.

LEHIGH VALLEY COAL COMPANY

William A. Colliery.—The company drove a plane in the Red Ash vein, connecting the Lawrence and the William A. mines and installed an oil burning locomotive for inside transportation between Babylon and William A. All the coal from the Lawrence shaft workings and drift workings and also from the Babylon shaft workings and drift workings, is being conducted underground to the foot of William A. shaft and prepared in the William A. breaker.

The condition of the Lehigh Valley collieries in this district is such that a great deal of care is required on the part of the Inspector which is very annoying to the officials in charge.

Seneca Colliery.—The No. 9 slope in the Twin Shaft, Marcy vein, has been driven to the 5th and 6th veins, which are being developed near Scovel Island.

Rapsons tunnel has been driven through the big fault near or on the Phoenix lease, and the Marcy veins are being developed on the west side of this line of disturbance; the new air returns for the Columbia shaft workings and the Twin Marcy slope have been completed; a very modern concrete mule barn to accommodate 60 mules has been built, and also a concrete station house inside for the ambulance car. A pump house is being built at the foot of the Marcy vein slope for the installation of some heavy pumping machinery.

In the Pittston vein, the thickness of roof cover is the problem. The workings are parallel to and under the Susquehanna river, and the quantity of sand wash over the vein is a condition sufficiently serious to impress the company with the advisability of keeping the development of this vein isolated from their other workings, and advancing only when a bore-hole, sunk ahead, proves the thick-

ness of the rock covers. These bore-holes are driven at intervals of 100 feet. Whether the rock cover will give out, or a pot hole or crevice be tapped between bore-holes, remains to be seen.

At the Twin shaft, the Clark 5th and 6th veins are being developed at Scovel Island, a substantial coal barrier being retained between the new and the old workings.

It was the 5th and 6th veins that collapsed at the time of the Twin shaft disaster, when there was a great loss of life, and the condition of these workings to-day is problematical. It is known, however, that they contain a large quantity of water, and it is the Company's intention to try to get it out with the pumps now being installed. It is also known that these old workings contain some gas, but how much is not known. A careful inspection, however, fails to show anything alarming. The action of gas and water in bore-holes, driven to caved territory in the 5th and 6th veins, prompted me to ask the Department of Mines to appoint some other inspectors to look over the ground, and report the result of their investigation to me in writing. This was done and the report filed in Harrisburg.

At the Babylon Colliery the robbing, which is about all that is being done, is progressing very well. A large percentage of coal is being won, and a fatal accident is a rare thing.

At the Lawrence the management has, in my opinion, persisted in risking life to rob the pillars, which in some instances are reduced to culm in the squeezed territory in which the men labor, contrary to my requests and instructions in the matter, the argument advanced being that the men are reasonably "safe" and the coal must be won. The territory that could now be robbed with some degree of safety is left to be destroyed by the cancerous growth of this squeeze, which must advance, as the resistance now retarding its development is reduced, by removing the crushed masses of coal that once did duty as pillars.

William A. Colliery.—This is a pillar problem, the solution of which has caused the most serious thought on the part of the officials in charge. The three splits of the Red Ash vein are mined, and the relative position of one to the other, with three pitches, (two to the basin, and one at right angles to it,) the Lawrence being above them at the highest elevation, and the only anchoring point being the pillar under the Lackawanna River, are the problems they must overcome to win the coal, preserve their property, and not sacrifice life. To my knowledge nothing definite has been decided upon.

HILLSIDE COAL AND IRON COMPANY

Consolidated Colliery.—There have been some new developments in the Red Ash vein, which will increase the tonnage and continue the life of this colliery.

CONNELL ANTHRACITE MINING COMPANY

Connells Colliery.—This company has increased their electrical equipment by the installation of motors, undercutters and dynamos. They have also constructed a large dynamo house and increased the horse power of their boiler plant.

The mines are in good condition.

A new 3-stage Norwalk high pressure air compressor, 600 cubic feet capacity, was installed in a brick building erected east of the boiler house. A new tower was erected over the Knight shaft. Washery walls rebuilt, jigs renewed; and washery was given a general overhauling.

Installed dust exhaust fan at breaker.

Constructed a 75,000 gallon capacity colliery emergency reservoir.

Westmoreland Colliery.—A new second opening plane had been driven for a manway from the Marcy to the Pittston vein; also a tunnel through the fault in the Pittston vein for a manway.

Electric haulage has been installed in the Marcy and Pittston veins with great success. A concrete and steel over-cast was built in Marcy vein.

Several drainage bore holes have been driven from Pittston to Marcy veins to drain water to the central pumping plant. Silting is being successfully done in the old workings of the Marcy vein.

Maltby Colliery.—Two drainage holes have been driven from Baltimore to Six Foot vein. Old cribbing in No. 1 Shaft was renewed. Steel roof supports are about to be placed at foot of No. 2 Shaft.

A new 800 gallon electric-driven pump was placed in west No. 4 lift, and main return airways have been enlarged generally through the mines.

The old Six Foot gangways are being reopened to connect with Hunt shaft workings.

Seneca Colliery.—A new pumping plant was installed in the Marcy vein at the basin. A Jeansville Duplex pump, size 28 x 12 inches, fed by steam dropped from surface through new bore hole, lifts 2,000,000 gallons of water per day through a 16 inch bore hole lined with 12 inch terra cotta pipe cemented, a height of 275 feet, to the surface, where it discharges near the west bank of the Lackawanna river and flows to the river. This improvement over numerous local pumps and drainage holes, with the main pumping station in the Bottom or Sixth vein, has proven satisfactory.

No. 6 Slope in the Bottom Marcy vein has been graded through the dividing rock and top Marcy vein, so as to connect the head with main motor road, thus reducing the haul between head of slope and the shaft 2,500 feet. This slope extends to No. 11 tunnel, driven through the main fault, and is operated by 12 x 16 inch engines with tandem drums and tail rope.

At the Sixth vein landing of the shaft a concrete arch has been built and all timbers removed. This affords ample room to work and has stopped the flow of water previously known.

No. 12 Rock Slope has been sunk from the Marcy vein to the Clark vein, which will develop the Clark vein at a lower level and west of the present Clark vein workings at Phoenix.

The Phoenix Shaft was concreted from the rock, thus replacing the old cribbing. These concrete walls were built to a height of six and one-half feet above the ground, thus replacing the wooden fence that previously enclosed the shaft and making any inflow of water impossible.

William A. Colliery.—At William A. Colliery, in the Red Ash vein, the method of pumping is being changed to handle the water while robbing the pillars at the foot of No. 3 Slope or at the southern corner of the Flagg-Drake property. A Jeansville pump, size 22 x 18 x 10 inches, has been placed on the lower gangway off No. 3 Slope

The slant slope mentioned in the last report was extended. A concrete dam was built for turbine sump. A Jeanesville pump was installed at the foot of shaft to replace the old Griscom pump removed. Steel timbers put in on east and west side of the shaft, and steel girders at the foot of the same.

Arched roof consisting of high-rib and concrete put in to support roof between steel timbers. New concrete office for fire bosses and electricians completed near the foot of shaft in Marcy vein. General repairs made in the barn.

Westmoreland Colliery.—Outside: Extensive repairs made to breaker, consisting of new pockets and chutes and steam heating system. Six L. V. jigs were installed. Test holes to prove rock cover from Pittston vein progressing on last report were continued in the territory between Wyoming Avenue and the river and the work is now completed. Fire alarm system installed.

Inside: One small electric triplex pump installed in Marcy vein, No. 3 slope. No. 3 slope, Marcy vein, extended to Mt. Lookout anticlinal. Two diamond drill holes put down Pittston vein to prove Marcy vein south of Mt. Lookout anticlinal, and plans completed for driving tunnel through said anticlinal. 280 feet of grading, 180 feet of tunnel, and 320 feet of plane on 11 degrees completed from Marcy to Pittston vein, for dropping the latter coal to the Marcy vein. New road was driven through the old workings in the Pittston vein to mine virgin coal in northeast corner of property. Main haulage road in Pittston vein south of Mt. Lookout anticlinal graded for motor. Electric haulage system was extended. Inside bore holes put down from Marcy to Red Ash to prove veins.

Exeter Colliery.—Outside: Series of test holes were put down to prove Checker vein on the east end of the property beyond the fault. Concrete side-walk was laid in Exeter borough along the west side of Wyoming Avenue and drainage connections made with the Exeter borough sewer. New cage was put in Knight shaft. Old engines were replaced with 12 by 12 Clark and fan hoist repaired. An additional locomotive was installed. Fire alarm system installed. Extensive repairs were made in the breaker. Changes were made in the washery and two L. V. jigs added for egg coal. Building formerly used for compressor house equipped for housing locomotives.

Inside: A new concrete pump room mentioned in the last report, constructed in the Pittston vein and a 24 by 39 by 16 by 48 Goyne pump installed. The Marcy vein barn was enlarged. Old timber stalls are gradually being replaced with concrete, fourteen of which have been completed. 10 by 12 Flory engine placed in Checker vein and roads laid to develop northwest section. No. 8 slope, Marcy vein, extended. No. 4 plane workings in Top Red Ash vein connected with Nos. 5 and 6 plane workings. Work was commenced on the installation of a balance plane in Bottom Red Ash vein. A 7½ ton air locomotive added to present equipment in Red Ash vein. Work commenced in Marcy vein for installation of an air motor for haulage mentioned in last report was continued and is nearly completed.

William A. Colliery.—A new balance plane, 900 feet long, was laid outside at Campbell's Ledge, and a drift driven into the Marcy vein.

The mine tracks at No. 10 tunnel were rearranged so as to dump the coal from mine cars into railroad cars, to be transported to the William A breaker for preparation. Coal from railroad cars is dumped on to a 36 inch belt conveyor, about 90 feet long, which conveys coal into the mine cars near William A shaft.

An 8 inch hole, 150 feet deep, lined with 4 inch terra cotta pipe, was drilled from surface to Middle Red Ash near William A breaker, to run silt from the breaker into the mines.

The wooden cribbing and buntons at William A shaft were replaced by steel.

Seneca Colliery.—A new concrete mule hospital for the treatment of sick and injured mules was built near the outside barn. A concrete mule barn was also built at Pittston shaft. Steel cages were placed in the shaft to take the place of the wooden ones. An automatic electric fire alarm was installed.

A new 20 by 30 double geared engine was installed at the head of No. 9 slope; steam is exhausted through a 12 inch bore hole to the surface.

Bore holes were drilled from Marcy vein and Clark veins for drainage, eliminating small pumps.

A 10½ ton motor replaced the 7½ ton motor which hauls coal from Nos. 5 and 9 slopes to the foot of the shaft.

A motor barn was built in the Marcy vein, equipped with electric lights and chain hoist.

Shaft timbers at the Marcy vein landing in Twin shaft were renewed and concrete footing placed under cage fans.

Telephones were installed in different parts of the mines.

No. 11 tunnel was extended to Clark vein north of fault; No. 12 tunnel was driven from Marcy to Clark vein, to develop Clark vein north of fault and west of No. 11 tunnel.

No. 16 slope was driven from Marcy to Clark vein, to develop the Clark vein south of fault. A rock plane for return was driven back to Marcy vein.

A 9 inch by 10 inch triplex electric pump was installed in No. 12 slope, Clark vein.

Motors were installed in the Fifth and Sixth veins to handle coal, replacing mules. A concrete barn to accommodate 20 mules was built in the Sixth vein.

Stevens Colliery.—Inside: Motor road built and motor installed in the Marcy vein, to handle the coal west of slope.

Tunnel was driven from Marcy vein to develop Top Marcy.

Outside: Self dumping cages were installed in the shaft and the coal dumped into railroad cars and transported to the William A breaker for preparation.

Conveyor line built to run culm bank through the old breaker.

TEMPLE IRON COMPANY

Mt. Lookout Colliery.—A brick oil house, 18 feet by 19 feet, with concrete floor and iron roof, has been erected, and is equipped with Bowser oil tanks.

A concrete wash house, 17 feet by 38 feet, with iron roof, has been erected and equipped with 93 sheet steel lockers.

A vacuum system was installed for removing the ashes from the boiler house. This consists of a concrete ash bin, 16 feet by 16 feet by 26 feet high, from which the air is exhausted by a No. 6 Root

Maltby Colliery.—Inside: No. 7 slant slope was extended in the Marcy vein. A 30-degree rock plane, 206 feet long, was driven from the Eleven Foot to the Six Foot, as a second opening to the No. 8 slope, mentioned in last year's report. No. 9 slope in the Marcy vein was extended and graded. No. 10 slope was driven in the Six Foot. No. 11 slope in the Marcy vein was started. Three small single drum electric hoists were installed, also two 8-inch by 9-inch electric triplex pumps. Plans were completed for a 30-degree rock plane from the Ross vein to the Nine Foot vein, No. 6 slope. A new balance plane was installed in the Six Foot vein, river district, which released one motor taken to the Eleven Foot. The reopening of roads in the Eleven-Foot, Six-Foot and Four-Foot veins was started to rob pillars northwest of the shaft. A 4-inch bore hole was drilled from surface to the old plane, which broke into the sand years ago, and cement was pumped through this hole in the hope of sealing off this plane. It is intended to carry on this work by drilling more holes to fill, if possible, the old plane with cement. New roads were driven in the Marcy vein and the electric haulage extended so as to concentrate the coal east of the slope to one lift. The mule barn in the Marcy vein is being reconstructed of concrete to make it fireproof.

Outside: Drilling operations were carried on in the river district to prove the Four-Foot vein rock cover. New engines were installed on the head of the outside refuse plane to handle breaker refuse and hoist coal from the Four-Foot slope. Extensive repairs were made in the breaker and new rolls were put in. The colliery fence was extended. Feed water regulators were installed at the boiler plant. One Welch overwinding device was installed in the shaft engine house.

William A. Colliery.—Inside: The following planes have been driven and put in operation: One 500 feet long in the Clark vein; one 800 feet long in the Marcy vein; and one 1,800 feet long in the Fifth vein. These planes are operated by engines located on the surface.

Outside: A conveyor 270 feet long, was built to handle ashes from boiler house. A new boiler house was erected at Campbells Ledge, containing two 72-inch by 18-foot boilers, to provide steam for engines on Marcy, Clark and Red Ash Planes. Two engines (one 13 by 18 inches and one 14 by 18 inches), were installed, and two rope holes put down, one to Marcy vein and another to Clark vein. A 14 by 18-inch two-drum engine was installed and rope hole put down to Red Ash vein.

Westmoreland Colliery.—Inside: The main haulage road in the Pittston vein, south of the Mt. Lookout anticlinal was extended. No. 7 tunnel, 250 feet long, was driven through the fault in the Marcy vein to mine the coal south of the Mt. Lookout anticlinal. In addition to this 220 feet of bottom rock was blown on the motor road outside of this tunnel. No. 4 rock plane, 63 feet long, was also driven through the fault as a second opening to the tunnel mentioned above. The foot of the main slope in the Marcy vein was graded to facilitate the handling of loaded and empty cars. Work was also commenced to reopen the old gangways at the head of Six-Foot slope to rob pillars east and west of the slope. One new 7-inch by 9-inch triplex electric pump was installed in the Six-Foot vein. The main tunnel was ex-

plane. An additional 10-ton compressed air motor was installed in Checker vein. Ten additional concrete stalls were added to the mule barn in Checker vein.

Outside: The erection of the 463 horse power Sterling boiler mentioned in last year's report was completed and work commenced on an additional 463 horse power Sterling boiler. An 8-inch bore hole was drilled from surface to Red Ash vein to be used for slushing ashes from the boiler house. A 10-inch bore hole was drilled from surface to the Red Ash vein for silting purposes. New drums were put on the Pittston Shaft hoisting engines, and Welch overwinding devices were installed on both the Pittston and Marcy shaft hoisting engines.

Maltby Colliery.—Inside: No. 8 rock plane, 230 feet long, was driven on a 30-degree pitch from Ross vein to Nine Foot vein, No. 6 slope, to be used for a second opening. Completed Marcy vein mule barn, which is built of concrete and is fireproof throughout.

Outside: The wooden cribbing in the intake and return air shafts was removed and replaced with concrete. Extensive repairs were made to the main timbers in the breaker and 3 additional Lehigh Valley jigs installed.

William A. Colliery.—Inside: No. 24 slope was driven a distance of 1,000 feet and connection made to the Phoenix old workings north of the fault in the Fifth vein. Electric haulage in Middle Red Ash vein was extended about 3,200 feet. An air shaft was put down to Clarke vein at No. 10 tunnel, to be used as a second opening for this vein.

Outside: On August 25, the engine house at No. 10 tunnel was destroyed by fire. It has been replaced with a fireproof building of tile. The 6-foot diameter fan at No. 10 tunnel has been replaced by an 8-foot fan. A Welch overwinding device was installed on the shaft hoisting engines at William A. shaft.

Seneca Colliery.—Inside: No. 15 rock tunnel was driven through the anticlinal 280 feet long for a second opening. No. 8 rock plane, 68 feet long, was driven from Clarke vein to Marcy vein for a second opening. No. 15 slope, Marcy vein, was graded through the anticlinal a distance of 52 feet and steel timber put in for roof support.

Outside: On June 28, the two 20-foot ventilating fans at the Twin shaft were destroyed by fire. These fans have been replaced with a 24-foot steel fan of the Guibal type, propelled by an 18 by 30 inch 4 valve rotary Vulcan engine, in a fireproof building of concrete and steel. The 3,000 horse power boiler plant mentioned in last year's report was completed. It contains 6 batteries of 2 drum Sterling boilers, each battery having a capacity of 501 horse power. The engine room contains one 4,000 horse power Cochran heater, two 7 by 12 inch Goyne feed water pumps, and a 12-foot Sturtevant blast fan, propelled by a 16 by 18 inch Vulcan engine; the building, 28 feet by 183 feet 6 inches, is constructed of brick with a steel roof. An electric driven conveyor line of steel construction was built from the breaker to the new boiler house to supply boiler fuel. A concrete subway was constructed under the main line of the Lehigh Valley Railroad at Coxey shaft to provide a safe traveling way for men who are employed in and about the breaker. The old power house at Coxey shaft was torn down and replaced with a building of tile construction. An additional equipment was also installed

Maltby Colliery.—Inside: A rock tunnel 130 feet long was driven from the Bottom Ross vein to the Red Ash vein in No. 5 slope workings. A 300 gallon triplex electric plunger pump was installed in No. 8 slope in a concrete pump room. Silting was commenced in the Six Foot vein.

Outside: Installed 9 Lehigh Valley four-foot jigs and rebuilt pockets in east side of breaker. Drilled a 12-inch bore hole to Marcy vein for silting purposes. Erected fireproof hospital, saw house and scale house. No. 2 fan shaft was concreted and No. 1 fan house made fireproof.

Seneca Colliery.—Inside: Installed one 500-gallon triplex electric pump in Clark vein, one 16½ by 26 by 36 inch Duplex Jeanesville pump in No. 5 slope, Marcy vein, and a simple pump in the same pump room was compounded. Both pumps are equipped with condensers. Drilled a 17-inch bore hole from surface to Marcy vein. 160 diamond drill test holes were put down to ascertain the rock cover over the Pittston, Marcy and Red Ash veins.

Outside: Built hospital and locomotive house of brick and tile west of breaker.

William A. Colliery.—Inside: Built a medical room of concrete at No. 10 tunnel and completed an additional air shaft from surface to Marcy vein at this opening.

Outside: Built head frame over the tender shaft, and placed new cribbing in Babylon air shaft. Foreman's office was converted into a hospital. A new office is being constructed. Built tile and concrete locomotive house at No. 10 tunnel.

Westmoreland Colliery.—Inside: Installed a 150-gallon horizontal triplex electric pump in the Pittston vein.

Outside: Built hospital of hollow tile. Made roof of boiler house fireproof. Two diamond drill holes were put down to the Pittston vein from the surface and extensive repairs were made to the breaker.

KINGSTON COAL COMPANY

Kingston No. 4 Colliery.—Outside: Installed a double intake 8 by 25 foot ventilating fan at No. 4 shaft, driven by 18 by 30 inch direct connected Corliss engine. The fan house and approach to the shaft are made of concrete and steel. The Bennett and Orchard fan engines at No. 2 bore hole were equipped with new 18 by 20 inch Corliss valve engines. Completed 12-inch concrete steel partition in the airway compartment of No. 4 shaft, from the Red Ash to the Bennett vein, and the old brattice in that section was removed. Drilled an eight-inch bore hole from surface to Bennett vein, 330 feet, for pumping purposes. No. 4 breaker engine was replaced by a cross compound Lentz engine, 19½ inch high pressure and 32½ inch low pressure cylinders and a 21 inch stroke. This engine is of the poppet valve type. No elastic or metallic packing is used; the valve stems are kept steam tight by means of the labyrinth system of water seal packing. Made two additions 22 by 68 feet to the wash house, which is now equipped with 6 shower baths, 12 wash stands, 36 concrete wash tubs and 435 lockers. Constructed a new warehouse 30 by 80 feet, with brick walls and concrete floor and roof. Completed fireproof building 30 by 68 feet for electrical department. Concrete fuel bins and a new concrete ash pit were made in the boiler room. The old warehouse has been remodeled so as to allow

fire protection was installed in the breaker and washery. Repairs to boiler plant were completed. Red Ash shaft engine house was rebuilt with brick and made fireproof. Tile hose house and scale office were erected. Colliery yard was regraded.

Maltby Colliery.—The pumping plant at this colliery has been abandoned. The water in the Marcy vein is carried in pipes to the lower elevation and forced up through an 8-inch bore hole to the Six Foot vein. It then flows to bore holes which were put through the barier pillar to the workings of the Henry colliery, where it is pumped to the surface. A slope is being sunk in the abandoned Six Foot workings, Fuller shaft. Until recently these workings were under water. A Morgan-Gardner undercutting machine was installed in the Top Red Ash split. A spray system was installed in the breaker for fire protection. A concrete reservoir having a capacity of 50,000 gallons, together with a pumping plant, was installed near the breaker, to furnish water for the fire system. A steam shovel is at work picking up the culm bank at the Fuller colliery. A plane was constructed at the breaker and a locomotive track constructed for the purpose of transporting the culm to the breaker.

Seneca Colliery.—Two tunnels were driven from the bottom split of the Marcy vein to the top split. Two 7½-ton Jeffery electric motors were installed in the Clarke vein. One 6-inch bore hole was drilled through the barrier pillar to the workings of the Stevens Colliery in the Marcy vein. A Jeanesville pump was installed and a fireproof pumphouse erected at the Twin shaft to supply the breaker with water. A Pennsylvania crusher was installed at the breaker to crush the refuse for silting in the Marcy vein. Safety automatic gates were installed at Twin shaft. Colliery yard was regraded.

William A. Colliery.—Electric haulage was installed from No. 10 tunnel to Evan's Farm section and the system was rebuilt to William A. shaft. This will allow all coal to be transported underground instead of dumping part of the output into railroad cars for shipment to the breaker for preparation. A new concrete engine house was constructed inside and a bore hole put down for exhaust steam to handle the coal on the Lawrence plane. A tile washhouse and foreman's office was built at No. 10 tunnel. Steel lockers for 32 men have been provided. A substation for electric power has been established at Babylon shaft. A spray system for fire protection has been installed at the breaker. Automatic safety gates were installed at William A. shaft.

Westmoreland Colliery.—A new second opening was driven from the Pittston vein to the surface. The plant for generating electricity and a new substation built. Power is now purchased from Luzerne County Gas and Electric Company. The feed wire system was also rebuilt. A new tile shop building is under construction. A spray system for fire protection was also installed.

Stevens Colliery.—Two 6-inch bore holes were drilled through the barrier pillar in the Pittston vein and two in the Red Ash vein. These bore holes were 250 feet long, and will be used for the purpose of draining Stevens colliery and abandoning the pumping plant. Steam blowers were dispensed with at the boilers and a blast fan installed. Old boiler plant was dismantled. Work was commenced to reopen the Pittston and Checker veins for pillars. Refuse banks are being silted into the mines through a new 10-inch bore hole. A rock crusher is used to crush the material.