New slope in Ross tunnel No. 6 unfinished. New tunnel slope No. 6, Ross to Ross, unfinished. Shaft No. 7 sunk 40 feet, concreting to rock and permanent engine and head frame foundations completed.

DELAWARE AND HUDSON COMPANY

Conyngham

No. 4 tunnel driven from the Abbot to Snake Island vein, 325 feet. No. 5 tunnel driven from the Abbot to Snake Island vein, 100 feet. No. 6 tunnel driven from the Abbot to Snake Island vein, 150 feet. The Abbot vein slope No. 4 was sunk a distance of 900 feet. Hillman shaft recribbed from rock to surface, and new head frame and house built.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Auchincloss No. 2 Shaft

A tunnel 7x12 has been driven from the Baltimore vein for the purpose of the development of the Hillman vein. Auchincloss No. 2 shaft.—The Baltimore vein has also been connected by a short tunnel to the Hillman vein for ventilating purposes.

Bliss Mines

The southwesterly side of this breaker was entirely reconstructed and improved upon by the installation of new shakers, belt conveyors and spiral slate pickers. A tunnel 7x12, 396 feet long, was driven from the Red Ash vein to the Ross vein for ventilation and haulage. One 10 ton electric locomotive was installed in the Ross slope, Espy tunnel, doing away with mules on this lift. A small 10 foot fan was located on the Forge vein for ventilation.

Truesdale

This is a new opening or operation. They are putting down at this location two shafts to be known as No. 1 and No. 2 Truesdale shafts. No. 1 will be a four compartment shaft, one pump way, two hoist ways and one airway, 45 feet 2 inches by 14 feet in the clear. No. 2 shaft will have two hoist ways and one air and will be 37 feet 2 inches by 14 feet in the clear. Operations have also been started to sink a slope to the Mills vein, a distance of 1,500 feet to the basin. They have also opened an old tunnel, known on geological survey maps as the Holland tunnel, and already gangways are being driven east and west to what is known as the Forge vein in this locality. The outside appearances of the collieries have been improved by the use of mineral paint and whitewash.

RED ASH COAL COMPANY.

Colliery No. 1

One 12 and 18x8x18 compound noncondensing duplex plunger Jeanesville pump.

feet on an average dip of 19 degrees. Ross vein No. 2 shaft has been re-opened east of shaft for a distance of 400 feet. Concrete brick and iron air-bridge was constructed across shaft level gangway east of No. 1 slope, Baltimore vein. Concrete walls have been erected at the entrance into air shaft at Mills and Ross seams. Concrete and iron pump room, located in George vein was completed during the year, and 20x36x10x36 double acting steam condensing pump was installed.

Bliss Colliery.—No improvements worthy of note at this colliery.

Truesdale Colliery.—No. 1 shaft has been sunk to a depth of 567 feet to the Red Ash seam. No. 2 shaft has been sunk to a depth of 562 feet. Preparations are being made for developments at No. 1 shaft east and west for mining purposes, north and south for ventilation and drainage. Permanent hoisting engines and other necessary apparatus for the mining of coal are now being installed. Breaker and washery will be completed early during the coming year. The work of development in the tunnel and slope is being pushed as rapidly as possible. A 24 foot Guibal Vulcan ventilating fan is on the ground and will be installed as soon as weather conditions will permit. Three high pressure Babcock and Wilcox steam boilers have been completed, enclosed in brick and iron building, which will be equipped with modern electric ash and coal conveyors and other up-to-date improvements. In connection with the above it would be well to state that it is the intention of the management to drive all the machinery in above breaker and washery by electricity. In order to accomplish this a large electric plant is now being erected on the east shore of the Susquehanna river to generate power for this work as well as the other collieries located in this section.

This plant will consist of Babcock and Wilcox boilers, five steam turbines, which will generate 5,000 H. P., to be distributed along high tension lines at high voltage to be converted to 250 and 275 volts at the collieries.

ALDEN COAL COMPANY

Alden Colliery

No. 1 shaft—Outside.—1 boiler plant with 3 sets of the 200 H. P. each finger water tube safety boilers.

No. 2 shaft—Outside.—1-8 inch bore hole, 507 feet deep, from surface to E vein for inside slope.

No. 2 Shaft—Inside.—Rock tunnel from Cooper to Hillman, 110 feet long; rock tunnel from Cooper to Cooper, through Anticlinal, 156 feet; rock tunnel from Cooper to Hillman and Mills, 120 feet; not yet completed.

No. 11 Sump vein slope equipped with 12x12 hoisting engine on surface and rope hole.

New stable finished in Sump vein.

Extraordinary repairs and changes made to breaker, circular screens being dispensed with shakers, also additional mechanical pickers.

Thirty-five new steel cars.

New rock slope started and sunk 200 feet during past year from surface. Idea being to connect with inside No. 10 slope, Ross vein.

Silting has been continued and extended in the top split of Red Ash and Ross vein district.

A new bore hole for silt.

William's crusher and engine installed, taking care of refuse from breaker.

Warrior Run Colliery

New boiler house finished.

One thousand five hundred H. P. return tubular boilers installed, equipped with eight foot fan blast, new feed pump and Cochran water heater. The three old cylinders and return tubular boiler plants dispensed with.

New steam lines have been completed between boiler house and Buck Mountain and Rope Hole engine houses.

Williams crusher installed and silting extended.

The breaker is now equipped with mechanical pickers.

A system of fire protection lines, fire hydrants, fire pump, etc., installed.

A bore hole is being drilled from surface to carry steam to the inside pump.

Every effort is being made by the present operators to bring this colliery in a safe working condition.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Auchincloss.—Made no improvements of note outside at this colliery.

Inside improvements consist of the following:

Seven by twelve rock tunnel from Baltimore to Forge vein. Length 190 feet.

Seven by twelve rock tunnel for ventilation, Forge to Baltimore vein, on a pitch of 30 degrees.

No. 5 tunnel No. 2 shaft was extended from Forge vein to Ross vein, a distance of 369 feet.

Besides this three other short rock tunnels were driven through faults, being necessary in connection with the development and ventilation of this colliery.

During the year several mine fires occurred at this colliery, some of which were very difficult to contend with, but fortunately no one was injured in subduing the fires.

Bliss.—No improvements of note were made either inside or outside at this colliery during the year.

Truesdale.—This mammoth breaker began operation on November 8, and is one of the largest in the Anthracite region. The management of the company has spared no labor or expense in putting up

this plant, consisting of improved and up-to-date machinery. Great results will be expected from this colliery some few years hence, when the shafts are fully developed, which of course is absolutely necessary in cases of this kind.

ALDEN COAL COMPANY

Outside.—A concrete reservoir 40x60x7 with a capacity of 112,000 gallons, has been erected to supply the colliery and dwellings with water.

An addition has been made on the breaker to be used for a washery for the purpose of washing the small size coal.

A steel conveyor line 300 feet long has been erected to carry fuel from washery to boiler house.

One set of 200 H. C. water tube boilers has been erected and enclosed.

An air shaft 16 feet x 18 feet has been sunk from surface to George vein, over which has been erected a 24 foot Vulcan fan, all of which is made of steel.

Inside.—A tunnel from Cooper to Hillman vein, 120 feet, completed.

A slope has been driven in the Cooper vein about 800 feet, also one in the Bennett vein; 900 feet of these slopes will continue to the basin.

Mine Foremen's Examinations

The examination for mine foremen and assistant mine foremen was held at Wilkes-Barre high school May 8 and 9.

The examining board was James Martin, Mine Inspector; Gwilym Edwards, Superintendent; Thomas Finn and Felix Wisniefski, miners.

The following persons received certificates:

Mine Foremen

Clarence S. Robbins, David W. Phillips, Walter E. Davis, Fred Lancaster, H. C. Kreiger, George A. Bound, John F. Kane, Joseph P. Evans, James C. Anderson.

Assistant Mine Foremen

Andrew Seletski, Henry Amos, William T. Dickie, Joseph P. Gibbon, D. J. Jones, Nicholas Cook, Lemuel E. Fine, Harry A. Mills, William Gwyn, Alfred W. Downs, David M. Stanton, Charles F. Gallagher, Edwin J. Richards, Wm. Broderick, John B. Corgan, John C. Hermansen, David W. Davies, Albin Molin, Evan T. Fulton, Zachariah Davis, Evan W. Owens, Evan O. Owens, Howard Davis, William James Varker.

With the intention of preventing mine fires this company has erected in its inside pump rooms and engine rooms, brick and concrete walls with iron I-beams.

Truesdale Colliery

A 12 foot ventilating fan has been erected on Truesdale tunnel. This fan is driven by a 30 H. P. induction electric motor and gives very good satisfaction.

LEHIGH AND WILKES-BARRE COAL COMPANY

Sugar Notch No. 9., Outside

Brick power house, Colliery shop, brick oil house, new breaker finished, 24 inch by 42 inch hoisting engines and brick house. Brick locomotive house.

Inside

Number 17 Tunnel extended to Baltimore Tunnel, Ross to Twin. Compound duplex pump and room.

Wanamie No. 18., Outside

Addition to mule barn at No. 19, new mule barn at No. 18. Brick oil house.

Inside

Number 15 Tunnel Baltimore to Cooper. Number 16 Tunnel Baltimore to Cooper. Number 17 Tunnel Baltimore to Red Ash to Top Red Ash. Number 18 Tunnel Red Ash to Top Red Ash.

LEHIGH VALLEY COAL COMPANY

Warrior Run Colliery

A new Washery was completed, capacity 800 tons per day. It was built for the purpose of reclaiming the old culm banks, also as an addition to the breaker to handle the wet or mud screen coal from the mines. The washery is complete with conveyors, elevators, shakers and mechanical pickers, with Williams crusher and silt outfit for handling the refuse to the mines.

A 12 inch steam pipe bore hole completed from the surface to the inside pump, and new steam line from boiler house down said hole. This dispenses with the old steam pipe line down to No. 1 Slope.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Auchincloss Colliery.—One 7x12 horizontal rock tunnel from Mills vein to Mills vein across the basin.

One 7x12 rock tunnel from Baltimore vein to Baltimore vein across basin on 5 per cent. grade.

One 7x12 rock tunnel from Baltimore vein to Ross vein 680 feet long, parallel with No. 5 tunnel, for ventilation and transportation.

Several other short rock tunnels were driven through faults and disturbances for ventilation and transportation, etc.

The work of installing a creosoting plant on the outside, for treating mine timber, will be completed early during the year 1908.

Bliss Colliery.—The Bliss breaker is undergoing a general overhauling and the work is now being completed. The extensive repairs that are being made are expected to be in shape to permit the operation of the colliery by February 1, 1908.

A 200 H. P. induction motor and electric hoist has been installed at Espy tunnel, Red Ash vein slope. This slope has been abandoned for many years and is now being pumped out with the intention of mining the balance of the coal in this territory.

The work of developing Twin vein has been started. Several rock tunnels have been driven from the Ross vein to the Twin vein.

One 7x12 rock tunnel has been driven from Ross vein to within 300 feet of Baltimore vein. This work will be completed early in the year 1908.

Wooden or combustible shanties and engine house pump rooms have been disposed of at this colliery and are being replaced with concrete and steel ones.

Truesdale Colliery.—Work of sinking slope from surface to Local basin, Mills vein, is under way and should be completed early in the year 1908.

A 200 H. P. electric hoist has been installed on Mills vein slope and is in operation.

The work of installing 5 stage centrifugal pump, electrically driven, is about complete. The building for this pump is made entirely of concrete, steel and brick, and will be lighted by electricity throughout.

Two rock tunnels from shaft level gangway No. 2 Shaft, 7x12, have been driven to the south basin from Ross vein to Red Ash vein. Equally distant between these there is one 7x12 tunnel being driven north from Ross vein to Forge vein. A concrete and steel room has been erected near the foot of the shaft for emergency hospital purposes.

A 200 H. P. electrically driven hoist is now being installed in No. 4 Slope No. 2 Shaft.

Two electric locomotives have been installed in these shafts and this has done away with all the mules formerly used.

Slopes are being sunk in the same with as much speed as possible for the development of this important colliery.

Operations were begun on the location of this plant, May 4, 1903, at a place known as Luzerne Grove, which was then practically a wilderness,

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Auchincloss Colliery.—During the year there has been erected and completed under the advice and direction of the United States Forestry Department, a chemical plant for the treatment of mine timbers to prevent decay. The plant has been in operation for some time.

This colliery closed down during the early part of the year to change the road gauge from 30 to 35 inches. By this change they are now permitted to use an entirely different motor in the locomotives and have been enabled to reduce the voltage in the trolley lines from 500 to 250 volts.

No. 1 hoisting engines have been equipped with the Nicholson overwinding device and will soon be in operation.

The new concrete and brick wash-house with metal lockers is about completed.

The work on the concrete and brick partition in No. 1 shaft separating the outlet and inlet airway is under way and will be completed early in the year 1909.

A Woodhouse chemical engine of 120 gallon capacity has been installed to be used for mine fires.

Bliss Colliery.—The general overhauling of the breaker was completed during the early part of the year and operation resumed with very satisfactory results.

A 200 H. P. electrically driven hoist was installed on No. 9 slope, Red Ash vein, to replace a small air hoist formerly used at this point.

The tunnel from Ross to Baltimore vein mentioned in my report for the year 1907 is now completed, and another 7 x 12 rock tunnel, on 15 degree pitch, has been driven from Ross to Baltimore vein for second opening and ventilation for the former tunnel. Work of connecting these two tunnels is now under way.

A rock tunnel 7 x 12 was also driven from Ross to Forge vein from what is known as Gorrigance gangway at the foot of Espy tunnel slope.

Truesdale Colliery.—The work of sinking Mills No. 5 slope to local basin, Mills vein has been completed and work of development is now going on.

No. 6 slope, which has been sunk on the Hillman vein, is being very rapidly developed and a 200 induction motor hoist has been installed in a brick and concrete building on this slope, which is now being sunk to a depth whereby the lifts East and West will be started from the same.

Other improvements: 60,000 gallon capacity reservoir; brick and concrete oil house with Bowser tank arrangement; wash house with expanded metal lockers; concrete and brick supply house; brick and concrete fire pump house; chemical engine house, and Woodhouse chemical engine of 120 gallon capacity.

The rock tunnel referred to in my last year's report from Ross to Ross vein through anticlinal to Red Ash vein has been completed.

Tunnel driven from Forge to Baltimore vein, No. 2 Shaft, has been completed.

A large opening has been driven from No. 1 East lift No. 1 Slope, to the surface, to increase the quantity of air entering this slope. This also reduces a large amount of work in connection with ice cutting on No. 1 Slope during the cold winter weather.

in the rock on a pitch of 60 degrees to the George seam, where it connected with the bottom of an air shaft 60 feet deep, sunk from the surface.

No. 18 and No. 19 rock planes were driven from the bottom to the Top Ross seam.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Auchincloss Colliery

Outside.—A new brick and concrete wash house, with expanded metal lockers, has been completed

Erection of 1,000 horse power boiler plant, enclosed in a concrete building, with feed-water regulators, pumps, governors, etc., is underway and will be completed during the early part of 1910.

One 25-foot ventilating fan and fan house for No. 1 shaft is in course of erection.

Inside.—The erection of a brick partition separating intake and return airways through No. 1 shaft will be completed during the early part of 1910.

Several new concrete and steel air bridges have been erected to improve the ventilation.

The work of sinking No. 3 slope through an anticlinal from Ross to Ross vein has been completed, and a second opening has been driven for the same.

A rock tunnel has been driven from George to Baltimore vein on the West shaft level gangway. This tunnel cut the Baltimore vein on a very heavy pitch, and the coal is giving off gas quite freely.

Bliss Colliery

Outside.—A 1,600 gallon Bronze centrifugal pump electrically operated has been installed in the breaker building for coal washing purposes.

Considerable improvements have been made in this breaker, including the installation of mechanical pickers, etc., to facilitate the handling and cleaning of coal.

A 2,000 horse power boiler plant, enclosed in a concrete building, is now under way and will be completed during the early part of 1910.

The shaft hoisting engines have been repaired by the installation of two new drums, clutch wheels, and other necessary equipments.

Inside.—Two 150 horse power electric hoists have been installed on coal slopes to replace air hoists formerly used.

Inside.—Rock tunnel from Ross to Baltimore vein on 15 degree pitch, which was nearly completed during the year 1908, was completed early in 1909.

The work of extending No. 4 tunnel from Twin to Forge vein was completed during 1909.

Rock tunnel driven from "E" gangway, Ross to Forge vein basin, is now about completed.

Extensive repairs were made to the shaft hoistways by repairing shaft timber, etc.

Truesdale Colliery

Outside.—Installed steam hoist on the surface to operate No. 3 slope Red Ash vein, the cable being conveyed through a bore hole to the slope, which operates very successfully.

A 1,200-gallon centrifugal pump installed on the wagon road near water dam, in a brick and concrete building, to furnish water for coal washing purposes.

Rock crusher installed to pulverize the refuse coming from the breaker, so that it can be flushed into the old workings.

A new 30 x 60 concrete and brick wash-house was erected.

A brick and concrete engine house for electric hoist on No. 6 slope was also completed.

A combination lamp room, mine foreman and fire boss office, was completed during the year.

A 1,000-gallon fire pump was installed.

Brick and concrete locomotive house was erected and the original wooden building removed.

One 300 H. P. Babcock and Wilcox boiler has been added to the boiler plant.

The work of installing a 500 KW Rotary converter in Sub-station is under way. This machine will furnish power for additional locomotives that are to be installed during the year, all of which was authorized in 1909.

Inside.—Rock tunnel driven from Ross to Twin vein, No. 2 slope, Truesdale tunnel; also one short rock tunnel on 30 degrees pitch for second opening and ventilation.

New concrete and steel mule barn is under way and will soon be completed.

The following rock tunnels have been driven inside for development, second opening and ventilation purposes.

Tunnel No. 2 slope, Ross to Twin vein, 7 x 12 by 455 feet long.

Tunnel No. 1 shaft, Ross to Forge vein, 7 x 12 by 350 feet long.

No. 1 slope and airway Mills to George has been completed, 7 x 12 by 350 feet long.

Tunnel Forge to Baltimore for second opening, 7 x 12 by 150 feet long.

Tunnel No. 2 slope, Ross to Red Ash, 7 x 12 by 260 feet long.

In addition, eight concrete and steel air bridges have been erected to provide for the proper ventilation of the workings.

The following electrical operating pumps have been installed to drain the various parts of the workings:

One 800 gallon centrifugal pump.

One 300 triplex pump for 300 horse power motor.

One 700 gallon centrifugal as an auxiliary to pump at foot of shaft.

Four small 250 portable truck pumps have also been installed at various points.

LEHIGH AND WILKES-BARRE COAL COMPANY

Wanamie Colliery.—Two tunnels, one from the Baltimore to the Cooper vein, and one from the Ross to the Baltimore vein, were completed, and No. 19 tunnel was extended from Ross to Ross vein.

ALDEN COAL COMPANY

Alden Colliery.—At No. 2 shaft a concrete block wash-house 18 x 22 feet, with hot and cold water shower baths, equipped with steel lockers, was erected.

A bore hole was driven from the surface to the bottom of No. 6 shaft.

No. 12 Slope was driven 149½ yards in No. 6 tunnel. New electric haulage was installed in No. 6 shaft.

Tunnel from the Bottom to Top Ross seam was driven 190 yards.

A 20 by 9 by 18 Duplex Plunger pump was installed.

No. 7 Shaft.—New rock plane was driven 109 1-3 yards.

No. 11—Slope was driven 88 yards.

No. 6 Shaft.—Installed new electric haulage.

No. 1 Drift.—An electric hoist with one Westinghouse Railway type No. 101 E 40 horse power 220 volts series wound 500 R. P. M. motor complete with R 32 single hand controller and grid resistance, has been installed in No. 11 slope.

Colliery No. 7.—An A. C. 150 K. W. engine and generator have been installed for the purpose of running electric motors to be installed in No. 1 shaft.

A. D. C. 200 K. W. engine and generator have been installed for the purpose of furnishing power for lighting the various offices, breakers and other buildings about the Nanticoke collieries.

New fan house, with a 5 by 10 foot Capell fan to be driven by electricity, was completed.

No. 1 North Shaft.—New slope No. 28 was driven 62 1-3 yards.

No. 1 South Shaft.—Second opening No. 19 Slope was driven 105 2-3 yards.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Auchincloss Colliery.—A 25 foot ventilating fan is being installed

The brick partition separating hoistway and airway, referred to in last year's report, is now completed.

Two rock tunnels have been driven from the George to the Baltimore veins, west of No. 2 shaft, by which a tremendous amount of gas has been liberated. It is intended to use one of these roads for development and transportation purposes, while the other will be used for ventilation and return.

There has also been erected on the outside a 10 by 12 concrete and brick building in which is housed the Draeger rescue apparatus, consisting of four helmets, oxygen storage tanks, pulmotor, electric lamps and other necessary equipment.

A 1,000 horse power boiler plant housed in a concrete building has been erected and is in operation.

A 200 horse power electric hoist has been installed on No. 3 slope, Ross vein.

A 6½ ton electric locomotive has been installed in the Baltimore vein, No. 1 slope.

Bliss Colliery.—A 2,000 horse power boiler, housed in a concrete building, has been erected and is in operation.

A 10-ton locomotive has been installed on West gangway, Espy tunnel, which hauls coal from the interior part of the workings to the surface.

The work of installing a 150 horse power hoist on No. 9 plane, Baltimore vein, is underway.

Truesdale Colliery.—The work of installing two new Jeffrey ventilating fans on Nos. 1 and 6 slopes is underway.

A 24-foot Vulcan fan is being installed on No. 1 shaft.

Inside: A new emergency hospital has been erected at No. 1 shaft.

Several air bridges have been erected during the year as necessity demanded.

Outside: An endless rope haulage has been installed on the trestle leading to foot of conveyor line, where coal is being dumped.

Five 6½ ton electric locomotives have been installed for transportation purposes, and one 10-ton locomotive, which assists very materially in handling the output.

A large, concrete and steel mule barn has been erected inside at the foot of No. 2 shaft.

Concrete side walls and "I" beams are now being placed on the head of No. 3 slope, doing away with a large amount of timber.

The following rock tunnels have been driven during the year for development, transportation, ventilation and second opening purposes:

One from Ross to Forge vein; one from Ross to Red-ash vein; one from Forge to Hillman vein; one from Top Split Red Ash to Bottom Split Red Ash.

All of these tunnels have been duplicated for second openings and ventilation.

ALDEN COAL COMPANY

Alden Colliery.—No. 2 Shaft: On February 1, 1909, the Alden Coal Company started to drive a shaft upwards from the Bennett to the Cooper seam. Figure 2 herewith shows the side elevation and method adopted while driving between the seams. When the shaft reached a point 18 feet from the bottom of the Cooper seam work was stopped, the face of the shaft securely timbered, and a rope hole 2 feet in diameter connecting the Cooper seam with shaft below was driven. The shaft was driven upwards a distance of 104 feet, timbered, and all loose rock removed in four months, working three shifts per day, with six men per shift, after which, work of sinking from the Bennett to the Bottom Red Ash seam, a distance of 419 feet, was commenced. Figure 1 shows method of hoisting and removing rock while sinking. A platform was erected at the Bennett seam, at which point the rock was dumped into cars and taken to other parts of the mine. The engine by which hoisting was done was located on the surface, the rope passing down the pump way compartment of the old shaft, thence through the bore hole mentioned above, the rope being controlled and centered by two sheave wheels placed between the Cooper and Bennett seams. After the Bottom Red Ash seam was reached the 18 foot rock protection left below the Cooper seam was removed and the shafts connected.

Figure 3 shows plan of shaft at the Bennett seam. Holes about 1 inch in diameter and about 1 foot deep were drilled in each corner, into which iron rods about 3 feet long were inserted when it was desired to plumb the shaft. The four open corners shown in this plan were used for manways and ventilation.

The dimensions of the new shaft are 12 feet by 20 feet 4 inches without timber, 14 feet 3 inches of which are to be used for hoisting purposes and 3 feet 5 inches for pump way.

The shaft required 248 sets of 8 by 10 inch yellow pine timber and 180 bearing sticks 10 by 12 inches by 16 feet long. The rock being of a hard laminated nature it was found necessary to case the shaft with 2 inch plank through its entire depth.

Colliery No. 7.—An electric sewing machine was installed in the harness shop.

Electric haulage was installed in No. 1 shaft and 2 electric motors were put in service to replace aid motors which were transferred to another mine.

A waterway was driven between Nos. 1 and 2 shafts a distance of 133 yards.

No. 30 slope in No. 1 shaft was driven 136 yards during the year.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Auchincloss Colliery.—The 25-foot ventilating fan referred to in last year's report is now in operation.

The work of erecting a brick partition between hoistway and airway, No. 2 shaft, is under way, and when it is completed a 35-foot ventilating fan will also be placed at the mines.

The work of erecting mule barns, pump-rooms, engine-houses, etc., of incombustible material will soon be completed.

Bliss Colliery.—The work of erecting brick partition in this shaft, separating hoistway and airway, is under way.

A brick and concrete wash-house for employes, with improved lockers, has been built.

A new fire-fighting apparatus has been installed on the outside, with new fire-pump, fire-line, etc.

The colliery has been equipped with four Draeger helmets known as the "Life-saving Apparatus," housed in a small brick building on the property, and men have been trained in their use.

Built a concrete and brick foremen's office and lamp-room.

The rebuilding of mule barns, pump-rooms, engine-houses, etc., of incombustible material, will soon be completed.

No. 13 slope has been sunk from the Mills to the Hillman vein. Second opening for this slope is now under way.

Truesdale Colliery.—The work of reconstructing the breaker with steel supports and pockets is under way.

The ventilating fans referred to in last year's report for No. 1 shaft and Nos. 1 and 6 slopes, have been completed.

A new rock conveyor and trestle erected from the breaker to the rock bank.

New and improved steam lines have been installed at this colliery connecting the boiler plant with various engines.

The colliery has been equipped with four Draeger helmets, known as the "Life-saving Apparatus," housed in a small brick building, and men have been trained in their use.

A rock tunnel has been driven for development, from the Mills vein, No. 5 slope, down Hillman and Baltimore seams to Forge vein.

A rock slope has been sunk through Warrior Run anticlinal to Red Ash vein.

Several short rock tunnels have been driven from Ross to Top Split Red Ash vein, which will be used for development and ventilation.

A new concrete and brick mine foremen's office has been erected at Nos. 1 and 6 slopes.

WEST END COAL COMPANY

West End Colliery.—During the year a double inlet, reversible, exhaust and blow fan was erected and put in operation at this colliery. The arrangement of the doors in the accompanying plan shows

No. 4 slope in No. 4 shaft was driven 88 yards.

Number 6 Colliery.—Installed in breaker new dump shakers and a new dust fan.

One hundred twenty-five new steel body mine cars were added to equipment.

No. 22 tunnel, No. 6 slope, was driven 129 yards, and a 10 by 5 double inlet fan, driven by electricity, was erected for the purpose of ventilating the workings therein.

No. 3 rock plane, No. 6 slope, was driven 60 yards and completed.

No. 35 tunnel, No. 7 shaft, was driven 54 yards and completed.

New airway No. 11 slope, No. 7 shaft, was driven 137 yards and completed.

A new hoisting engine and engine house were erected at the head of No. 7 shaft.

No. 9 slope, No. 7 shaft, was driven 68 yards.

Number 7 Colliery.—Installed in breaker new spiral slate pickers, new dump shakers and a new dust fan.

Installed in electric power house: 1 motor, 2 generators and 2 Ridgway electric engines, 10 by 10 and 25 by 24.

Placed in North and South shafts 64 sets steel timber—40 sets at foot of North shaft and 24 sets in South shaft barn.

No. 29 slope, North shaft, was driven 171 yards and completed.

No. 31 slope, South shaft, was driven 100 yards.

Nanticoke Washery.—The washery was completed and began operations May 22.

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Auchincloss Colliery.—The 35-foot ventilating fan referred to in last year's report is now in running order.

All mule barns, pump-rooms, hoist-rooms, etc., have been reconstructed of concrete and steel.

Bliss Colliery.—The concrete and brick partition separating hoistway and airway in this shaft is completed to the surface.

Built a new brick and concrete supply storeroom. Completed the rebuilding of mule barns, etc., reported under way in last year's report.

Several rock tunnels driven for development and ventilation purposes.

The hoisting engines on the shaft have been equipped with Welch automatic engine stop.

Truesdale Colliery.—The work of reconstructing this breaker with steel is now completed.

Shaft hoisting engines have been equipped with the Welch automatic engine stop.

Several rock tunnels have been driven for development purposes, return airway, and second openings, from Mills to George vein, Ross to Red Ash vein and from Forge to Baltimore vein.

At No. 20 tunnel, Sugar Notch, Truesdale mine, the work of driving through to Red Ash vein was completed during the early part of the year.

The parallel tunnel being driven from the Twin to Red Ash vein is about completed. It will serve as a second opening and return for the seams intervening between this vein and the Bottom Red Ash split.

The surface improvements consist of a brick and concrete powder house, a brick and concrete oil house, and a brick and concrete foreman and assistant foreman's office and lamp-room, all of which are considered fireproof.

Installed in the outcrop of Red Ash vein a 12-foot open-end running fan, electrically driven by belt connection.

LEHIGH AND WILKES-BARRE COAL COMPANY

Wanamie Colliery.—Completed Nos. 3 and 6 slope pumping plants.
No. 12 tunnel extended to Stanton.
No. 29 tunnel driven Baltimore to Cooper.
No. 28 tunnel driven and outside plane.

ALDEN COAL COMPANY

Alden Colliery.—One set 300 horsepower Harrisburg boilers.
New boiler house at No. 2 shaft.
One 20 by 12½ by 20 by 24 inch Norwalk air compressor.
One 7 ton Milwaukee gasoline locomotive.
One 12 by 6 by 12 inch Goyne pump.
Two 8½ by 12 inch Webster, Camp and Lane friction hoists.

PROSECUTIONS FOR VIOLATIONS OF THE MINE LAWS

December 18. Joe Wintergrass was prosecuted for swearing falsely to the age of his son. He entered a plea of guilty and was sentenced to pay the costs.

December 18. Frank Lavopis was prosecuted for swearing falsely to the age of his son. He entered a plea of guilty and was sentenced to pay the costs.

Commonwealth of Pennsylvania vs. Stackhouse Coal Company

The Stackhouse Coal Company erected a new breaker in Shickshinny, and, in violation of Section 2, Article 5, Act of June 2, 1891, were erecting a steam heat plant with boilers for the generation of steam less than 50 feet from said breaker. Under the law I served the required notice on the Company and notified them not to proceed with the erection of said steam plant, as, when operated, it would be a direct violation of the law.

I petitioned the court to issue an injunction to restrain the Stackhouse Coal Company from erecting said steam plant and generating steam therein nearer than 100 feet from said breaker. The Company in their answer to bill of complaint denied "that the steam plant in question when erected less than 50 feet from said breaker would be a violation of Section 2, Article 5, Act of June 2, 1891."

The plaintiff and the defendant agreed "that the Bill of Complaint and the Answer thereto should be submitted to the Court of Common Pleas of Luzerne County for judgment thereon, and that they would be bound by the decision of the court.

CONDITION OF COLLIERIES

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

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

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

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

SUSQUEHANNA COAL COMPANY

Numbers 5 and 6.—Ventilation, roads and drainage, fair. Condition as to safety, good.

Number 7.—Ventilation, fair. Roads, drainage and condition as to safety, good.

WEST END COAL COMPANY

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

LEHIGH AND WILKES-BARRE COAL COMPANY

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

ALDEN COAL COMPANY

Alden.—Ventilation and roads, fair. Drainage and condition as to safety, good.

E. S. STACKHOUSE COAL COMPANY

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

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Auchincloss Colliery.—Shaft timber in No. 1 shaft is being replaced with concrete and steel.

The work of driving several rock tunnels from one seam to another for development, ventilation, etc., was completed during the year.

Bliss Colliery.—The ventilation fan referred to in my last report has been installed and is now in operation. A rock tunnel has been driven from Baltimore to Forge vein. Concrete walls and I beams are being placed at the Ross vein shaft level.

Truesdale Colliery No. 20 Tunnel section.—A slope is being sunk from the surface to the Red-ash vein at this point. A 250 H. P. electrically operated hoist has also been installed. A rock tunnel No. 1 East lift, No. 10 slope, is being driven to the Ross vein. No. 6 slope is being extended from the Hillman vein across the measures for a distance of 900 feet more or less. A rock tunnel has been driven from the Mills to the George vein for development.

A rock manway is being driven parallel with No. 7 tunnel Red-Ash vein. Numerous other rock tunnels have been driven or are now

CONDITION OF COLLIERIES

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

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

Bliss and Truesdale Collieries.—Ventilation and condition as to safety, good. Drainage, fair.

SUSQUEHANNA COAL COMPANY

Nos. 5 and 6 Collieries.—Ventilation and drainage, fair. Condition as to safety, good.

No. 7 Colliery.—Ventilation fair. Drainage and condition as to safety, good.

WEST END COAL COMPANY

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

LEHIGH AND WILKES-BARRE COAL COMPANY

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

ALDEN COAL COMPANY

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

E. S. STACKHOUSE COAL COMPANY

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

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Auchincloss Colliery.—The work of replacing timber in No. 1 shaft with re-enforced concrete is still underway. The replacing of timber sets with steel along the main haulage road, from the end of the concrete walls in No. 1 shaft, Baltimore vein, has been pushed during the year with satisfaction. Several wood sets of timber supports have been removed, eliminating the fire risk. Several rock tunnels have been driven for developing ventilation and other purposes.

Bliss Colliery.—A small air shaft, extending from the surface to the Mills seam and used as a second opening, is being recribbed with concrete wall.

Truesdale Colliery.—The work of reconstructing this entire breaker with steel is underway, and the east side of same will be completed during the year 1916. For developing, transportation and ventilation, 18 rock tunnels of various lengths, have been driven from seam to seam.

Installed machines, tools, etc., in machine shop. Built bridge to No. 3 shaft. Installed one 500 rotary converter, transformers, etc., loaded and retail scales, main conveyor line from Nos. 1 and 2 shafts to breaker. Placed a concrete floor in compressor and fan house.

Avondale Colliery.—Built a blacksmith, carpenter and machine shop.

Truesdale Colliery.—Completed rock tunnel, 453 feet, in Bottom Red Ash vein; rock tunnel, Mills to Hillman vein, 222 feet in length; rock skip No. 4 west airway, No. 1 slope, Mills vein; surface rock slope, No. 20 tunnel, length 780 feet; rock plane from George to Mills vein, length 249 feet; Rock tunnel, Red Ash to Ross vein, No. 2 slope, length 72 feet; rock tunnel, No. 3 slope, for passing branch, length 87 feet; extension of No. 9 slope in rock, length 363 feet; extension of No. 8 tunnel, Cooper to Hillman vein, length 370 feet; second opening rock plane from Top Red Ash to Ross vein, length 61 feet; second opening to No. 2 west lift, No. 6 slope, Hillman to Mills vein, length 87 feet.

Installed one 500 steam hammer for blacksmith shop; motors in three small air hoists; 7-ton locomotive with reel, etc., in No. 2 East lift, No. 6 slope; 7-ton locomotive with reel, etc., in No. 1 slope, Mills vein; 7-ton locomotive with reel, etc., in No. 3 east lift, No. 7 slope; and steam hoist for Forge vein plane, No. 1 tunnel.

LEHIGH AND WILKES-BARRE COAL COMPANY

Sugar Notch No. 9 Colliery.—Completed No. 31 tunnel, Twin to Hillman; No. 33 tunnel, Five Foot to Hillman; No. 34 tunnel, Red Ash to Twin; and No. 32 tunnel, Twin to Hillman.

Maxwell No. 20 Colliery.—Completed No. 31 tunnel, Red Ash to Ross; and No. 30 tunnel, Hillman to Kidney.

Buttonwood Colliery.—Completed No. 10 tunnel and tunnel airway extension to Abbott; tunnel No. 4 to No. 4 vein, and No. 16 tunnel, Abbott to Abbott.

At Inman No. 21 shaft, completed concrete and steel timbering, Hillman shaft level.

Outside: Installed one 32 by 48 inch duplex Corliss valve shaft engine for Hillman shaft, and also one for Baltimore shaft at Inman No. 21. Also built a brick engine house. Two steel head-frames, one for Baltimore shaft and one for Red Ash shaft, were built.

At Parrish washery, a 600 H. P. boiler plant was installed for Parrish slope.

LEHIGH VALLEY COAL COMPANY

Warrior Run Colliery.—Built a new concrete hospital in No. 4 tunnel level.

Outside: Constructed 2,000 feet of new 4 by 8 foot flume to carry creek and surface waters. The old flume was destroyed and washed out by cloudburst of June 27, 1916.

Franklin Colliery.—Completed No. 33 tunnel, from Baltimore to Sump vein; extension of No. 34 tunnel from Ross to Skidmore vein. Started driving No. 35 tunnel from Skidmore to Skidmore; No. 36 tunnel, from Skidmore to Skidmore through an anticlinal; No. 37 tunnel, Sump to Sump vein through fault; and No. 11 tunnel, on No. 4 tunnel level to the breaker.

TRUESDALE

CONDITION OF COLLIERIES

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Truesdale, Avondale and Loomis Collieries.—Ventilation, drainage and condition as to safety, good.

LEHIGH AND WILKES-BARRE COAL COMPANY

Sugar Notch No. 9, Maxwell No. 20 and Buttonwood No. 22 Collieries.—Ventilation, drainage and condition as to safety, good.

LEHIGH VALLEY COAL COMPANY

Warrior Run and Franklin Collieries.—Ventilation, drainage and condition as to safety, good.

PITTSTON COAL MINING COMPANY

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

GEORGE F. LEE COAL COMPANY

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

WEST NANTICOKE COAL COMPANY

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

IMPROVEMENTS

DELAWARE, LACKAWANNA AND WESTERN RAILROAD COMPANY

Truesdale Colliery.—Completed an air shaft, 17 feet 8 inches by 17 feet 8 inches, length 343 feet, from the surface to Ross vein for the purpose of installing duplicate emergency fans thereon; No. 21 slope 7 feet by 14 feet, a distance of 216 feet, making a total of 350 feet from the surface; extension of No. 6 slope through the rock from the Hillman vein to the Mills vein; rock tunnel 7 by 12 by 75 feet from the Ross vein to the Top Red Ash vein, 5 east lift, No. 3 slope, No. 1 shaft; extension of No. 44 tunnel, 7 by 12 by 440 feet from the Mills vein to the George vein, No. 1 slope; rock tunnel 7 by 12 by 162 feet, from the Ross vein to the Red Ash vein, No. 4 slope, No. 2 shaft; second opening tunnel, 7 feet by 12 feet by 70 feet, from the Baltimore vein to the Hillman vein to ventilate No. 9 slope workings in the Hillman vein; rock tunnel from the Ross vein to the Top Red Ash, No. 1 plane, No. 1 shaft; haulage tunnel, 7 by 12 by 180 feet, from 2½ gangway Hillman vein to the Baltimore vein, No. 6 slope; tunnel 7 by 12 by 147 feet, east gangway, No. 12 slope, Ross vein to top Ross vein; rock tunnel 7 by 12 by 75 feet from No. 1 east lift, Ross vein to Top Red Ash vein, No. 12 slope; grading No. 6 slope, Hillman vein, 7 by 12 by 265 feet in rock to improve haulage; rock tunnel 7 by 12 by 378 feet from one half east lift, Hillman vein to

Baltimore vein in No. 6 slope; rock gangway in fault on No. 1 east lift, west of No. 12 tunnel from Red Ash to Red Ash vein No. 2 slope; extension of No. 33 tunnel, 7 by 12 by 100 feet from Red Ash to Bottom Red Ash vein, No. 3 slope, No. 1 shaft, and No. 21 slope, 7 by 14 by 216 feet, making a total distance of 350 feet from the surface to the Forge vein in the Sugar Notch section.

Installed two 10 ton electric locomotives and nine 7 ton with reel devices; one 1,000 gallon bronze centrifugal pump 400 feet head, 150 H. P., 440 volts, 1160 R. P. M.; in No. 4 west lift, No. 1 slope, Mills vein, one 2 speed electric hoist 1,000 pounds rope strain, 42 H. P., speed 250 feet in No. 16 slope; one 1,800 gallon centrifugal pump and motor complete to pump water from reservoir to annex; two stage turbine, size 10, No. 571191-W, 125 H. P.; electric hoist, rope speed 250 feet per minute, 500 pounds rope strain, 50 H. P. motor on No. 15 slope, Mills vein; new electric signals, cables, etc., in No. 2 shaft.

Erected two new houses for the mine foremen; 31 steel towers to support high tension transmission lines between Nanticoke power plant and No. 20 tunnel, Sugar Notch. Equipped the east end of store room building for emergency hospital purposes and doctor's office to take care of injured employes.

Installed automatic telephone exchange and 32 telephones, connecting the Superintendent's office with all important surface buildings and important parts of the mines. This apparatus was built by the Chicago Automatic Telephone Company.

Continued the erection of new steel breaker which is replacing the original wooden structure. This breaker when completed and equipped with machinery, jigs, etc., will be one of the most modern in the anthracite coal fields, being entirely constructed of structural steel and glass which will allow about 96 per cent. daylight space throughout the entire building.

LEHIGH AND WILKES-BARRE COAL COMPANY

Maxwell No. 20 Colliery.—Completed No. 32 tunnel, Ross to Top Red Ash veins. Retimbered hoisting shaft at Hillman vein.

Outside: Installed two 24 inch by 36 inch hoisting engines, and erected house for same at No. 5 slope.

Sugar Notch No. 9 Colliery.—Completed No. 35 tunnel, Five Foot to Stanton vein; and No. 36 tunnel, Stanton to Hillman vein.

Buttonwood No. 22 Colliery.—Completed tunnel, Hillman to Red Ash shaft, Inman section; No. 9 rock plane, Stanton to Kidney veins; No. 16 tunnel, Abbott to Abbott veins and No. 17 tunnel, Stanton to Hillman veins; rock plane airway, No. 3 to No. 4 vein; No. 18 tunnel, No. 3 to No. 6 vein; extension of No. 14 slope through fault; rock plane airway, Hillman to Kidney, and rock plane airway, Baltimore to Five Foot. Completed the concrete and steel timbering at Hillman shaft level in Inman section.

LEHIGH VALLEY COAL COMPANY

Warrior Run Colliery.—Installed a 16 inch by 8 inch by 18 inch Duplex Jeanesville pump on No. 2 slope.

Franklin Colliery.—The following 8 feet by 12 feet tunnels were completed: No. 35 tunnel, in rock slope workings, from the old Skid-