

The Gaylord Coal Company.

A new air-shaft constituting a second opening to the Red Ash vein was sunk from the Ross seam, a depth of 120 feet, having an area of 10×12 feet. They also made two new planes, one in the Ross and the other in the Red Ash seam. Their lengths are 500 and 400 feet, respectively, on a grade varying from 13 to 18 degrees.

A. J. Davis.

At the **Warrior Run colliery** a new tunnel was driven from the D to E vein, a distance of 120 feet, and another is in progress from the D to B or Red Ash vein.

W. G. Payne & Co.

At the East Boston mine of this company, a new air-shaft was sunk convenient to the main workings, a depth of 150 feet, having an area of 10×15 feet, from the surface to the Cooper and Bennett veins, and the fan was removed from the old shaft and placed upon this. The ventilation of the mine has been greatly improved by this change, and is produced at less cost.

Haddock & Steele.

This company bought the Black Diamond colliery from J. C. Hutchison, and took possession March 1, 1882. Since then they have graded the underground slope, and made considerable improvements in the work.

The Red Ash Coal Company.

This company completed their second colliery ready to begin shipping coal on the 1st of March, and mined 69,204 tons of coal by the end of the year. All the coal, yet mined, is above the level of the breaker, and the Ross and Red Ash seams have been cut by a tunnel, through which the coal is brought out. A new slope was sunk, reaching a lift of coal below the level of their No. 1 colliery, from which a considerable quantity of coal can be very conveniently obtained.

Waddell & Walter.

This company completed their shaft at the Raubville colliery, and effected their second opening by connecting with the workings of the Black Diamond mine. The shaft was 170 feet to the Bennett vein. A new fan was erected to ventilate the workings, a description of which can be seen elsewhere in this report.

Waddell & Company.

The Bennett shaft, 10×20 feet, was completed, and cut the Bennett vein at a depth of 320 feet; also an air-shaft for the same mine. The breaker was set in operation in May, 1882, and during the remainder of the year they mined 26,226 tons of coal. This colliery is situated in Plains township, east of Mill Creek. A new fan was erected to ventilate the colliery, having a diameter of 22 feet, which is producing a ventilation of about 80,000 cubic feet per minute.

The Kingston Coal Company.

The No. 4 shaft of this company was completed upon reaching the Red Ash seam at a depth of six hundred and sixteen feet. Its size is 30'×12'. This opens a very large tract of convenient coal.

The Gaylord Coal Company.

At the Gaylord colliery a tunnel is in progress from the Ross to the Red Ash seam. Its sectional area is 7'×10', and its length, at present, is six hundred and fifty feet. This is intended to work the coal above the level of the bottom of the Gaylord slope.

A. J. Davis.

At the **Warrior Run colliery** a tunnel was driven from the O to the D vein. Its sectional area is eighty-five square feet, and its length one hundred and ten feet. The seam of coal was found eleven feet thick, and of good quality.

The Franklin Coal Company.

This company has started to sink a new slope, from the surface diagonally through the measures, to cut and work the Red Ash seam. Its sectional area is one hundred and sixty feet square, grade thirty degrees, and it was driven to a depth of one hundred feet at the end of the year.

W. G. Payne & Co.

At the East Boston mines of this company the shafts are being sunk or extended from the Bennett to the Ross vein. They had not struck the expected point at the close of the year, but they were approaching it closely. The blasting-hole in the air-shaft was thought to have penetrated the coal seam.

The Red Ash Coal Company.

A new tunnel is being driven from surface at the outcrop of the Baltimore seam, and is intended to drain and mine the coal lying above that level, and between that and the Red Ash slope, of both the Ross and Red Ash veins. It was driven a distance of three hundred and seven feet at the end of the year, and is expected to be finished sometime in 1884. This will open a wide extent of very convenient territory and desirable coal.

The West End Coal Company.

This company is opening a new mine and building a new breaker about three miles east of their West End colliery, in Conyngham township. It is to be named East End colliery. The breaker is expected to be ready in March, 1884. The vein is opened by two tunnels—one on each side of the basin—and they will mine and ship coal as soon as the breaker is completed.

The Delaware and Hudson Canal Company.

This company is sinking two new shafts in Plains township, near the Baltimore mines, for the purpose of mining the Red Ash seam. The main

General Condition of the Mines.

Eighty-four openings, including the new shafts and slopes in progress of sinking, were in operation in this district during the year 1884. All of these except eleven produced more or less coal for the market. The underground workings are maintained in about the same condition as they were upon my previous report for the year 1883, excepting that a marked improvement was made in some of the mines in which the ventilation was not then satisfactory. A fan was erected in the West End mine, which improved the ventilation very effectively. The workings are now kept clear of smoke, and are much healthier for the workmen therein. Since the present proprietors began operating the Black Diamond colliery, in Luzerne borough, the colliery has been very effectively improved, and a new shaft is now being sunk upon which a new fan is to be erected to produce a more effective ventilation. I have complained frequently of the ventilation of this mine, but under the old management the required improvements were continually deferred. Now the improvements in progress will shortly bring the mine to a satisfactory condition.

The Conyngham and Baltimore Slope mines, both of which were seriously damaged by inundation of water the latter part of 1883, have since been restored to their former order. The second openings, and all matters pertaining to the safety of the men employed therein, are satisfactory.

At the **Warrior Run colliery** the ventilation, for some time past, was rather small, but they have succeeded in increasing its volume to a small extent by enlarging the outlet air-passages. Now it is in a fair condition; still, the margin is small, and they will have to be watchful, or, as the workings advance, it may soon become inadequate again.

The air-ways in every mine, where practicable, should be made of sufficient area to have the cars follow the miners. The old system of wheeling the coal in a wheelbarrow should be abandoned; it is both laborious and expensive, and the miners very reluctantly drive the air-ways wider than is necessary to pass the wheelbarrow, where such system is in vogue. The inevitable consequences of having small air-ways is a small quantity of air for ventilation.

At the Old Slope Franklin colliery a marked increase of ventilation was effected by making a change in the construction of the outlets of the double fan, and also by enlarging the main air-ways in the mine. This mine is now in much safer and better condition generally than it was at the beginning of the year 1884. Other improvements are contemplated, which, if made, will still enhance the safety and producing capacity of this mine.

The mines of the large companies, those of the Lehigh Valley, Lehigh and Wilkes-Barre, Susquehanna Coal Companies, and Delaware and Hudson Canal Companies, are generally in good condition. I find, though, that even in the mines of these companies the ventilation is conducted through the faces of the workings better in the gaseous mines than in the ones producing no gas. The bosses of some of the mines in which no explosive gases

reported to exhaust 30,000 cubic feet of air per minute while running thirty revolutions.

Parrish Coal Company.—This company erected a new fan on their slope. It is twenty feet diameter, running forty-five revolutions per minute and exhausting 68,000 cubic feet of air per minute.

A. J. Davis.—At the **Warrior Run colliery** a new air-shaft was sunk, effecting a second opening to the new tunnel. It is 9x9 feet and 206 feet deep, and connects with the Baltimore seam. The main slope is being extended also to a further depth of from two to three hundred feet.

Hanover Coal Company.—The Maffet shaft of this company is being extended from the Ross to the Red Ash seam. It was down a distance of 185 feet below the Ross at the close of the year, and when completed it will open an extensive lift of good coal. A number of other improvements were made during the year.

Coal Breakers Consumed by Fire.

On Sunday, January 16, 1887, between one and two o'clock A. M., the Boston breaker of the Delaware and Hudson Canal Company, at the upper end of Plymouth, took fire and was totally consumed. It is not known how it originated, but everything in and about the breaker was destroyed. By November 3rd, a new breaker was erected near the Boston shaft, about a mile and a quarter north-east of the site of the old one. This is a great improvement on the old one. They began to pass coal through it on the date mentioned. They worked eight and one-fourth days before the old breaker took fire and forty-one and three-fourths days with the new one before the close of the year.

Burning of the Parrish Coal Company Breaker.

At about ten o'clock P. M., January 25, 1887, the breaker of the Parrish Coal Company, at Plymouth, was discovered to be on fire, and although strenuous efforts were made to prevent its destruction, it was completely destroyed in a short time. It was comparatively a new breaker, having been in operation only since December, 1884, about a month more than three years. Preparations were immediately made to erect a new one, and on July 7 it was completed and started to prepare coal for shipment to market. The new one is a fine structure, larger than the old one, and has the best appliances for preparing and separating coal.

Burning of the No. 10 Breaker.

The No. 10 breaker of the Lehigh and Wilkes-Barre Coal Company, at Sugar Notch, took fire from a passing locomotive early Monday morning, May 2, 1887, and it, with every building within a radius of two hundred feet was completely destroyed. The engine-house and slope head house on the old No. 10 slope was burned, and the cage

Hillman Vein Coal Company.

At the Hillman Vein colliery two tunnels were driven to the Abbott seam. One was an extension from the Kidney to the Abbott, 7'x12' area and 325' in length, driven for the purpose of hauling the coal through; the other was driven to effect a second opening from the Hillman to the Abbott seam and to constitute a return air-way. It is 7'x10' area and 150' long.

NEW VENTILATING MACHINES ERECTED DURING 1889.

At the No. 5 shaft, South Wilkes-Barre, of the Lehigh and Wilkes-Barre Coal Company, a new fan of the Capell double-power type was erected. The inventor G. M. Capell claims that this machine is superior to all well-known fans. This is the first to our knowledge that has been erected in this country and we are not prepared to state how it compares with the fans generally in use in this district, as we have not yet had an opportunity to make the necessary tests for that purpose. It is a peculiarly constructed machine, differing considerably from the pattern of the fans generally used. It is constructed very strongly, and adapted to run at a very high speed. It is 12' wide and 12½' diameter; has an inlet for the air on each side, but it is divided by a disc at the center of the blades, so as to form a partition from the fan shaft to the blade-tips. The air is delivered from the blades into a wide expanding chimney. The accompanying cut will show the construction lines of the machine, and may assist the reader to understand how it is made. If circumstances permit, we shall report its work in the future.

At the Dorrence colliery, Lehigh Valley Coal Company, a new Guibal fan, 30' diameter, was erected in the air shaft. It is 10' wide and has one inlet 15' diameter. This makes a second 30' fan at this colliery. The engine cylinder is 30"x60", connected directly to the crank of the fan.

At the **Warrior Run colliery** a new fan was erected on the air-shaft. Its diameter is 15', face 7', and running eighty revolutions per minute exhausts 79,000 cubic feet of air. This has improved the ventilation of this mine considerably, and the location of the fan is favorable for circulating the air through the face of the workings.

At the No. 2 Baltimore shaft, Delaware and Hudson Canal Company, a 20' fan was erected and enclosed with brick work. This is a new mine and the fan provides ample ventilation without running it at its maximum speed.

At the No. 2 shaft, Plymouth, of the Delaware and Hudson Canal Company, a new fan was erected in place of an old one. It is 17½' feet in diameter, of modified Guibal type, and it is doing very satisfactory work.

NEW BREAKERS IN COURSE OF ERECTION.

At the No. 2 shaft, Wilkes-Barre, the Delaware and Hudson Canal Company is building a new breaker. It is expected to be completed by

Improvements by the Hanover Coal Company.

A new underground slope was sunk a distance of 960', extending from the west shaft gangway to work the coal lying to the dip from the shaft in the Red Ash seam. A new fan was also erected to improve the ventilation. This is 16' diameter and exhausts 65,000 cubic feet of air per minute when running 50 revolutions.

Improvements by the West End Coal Company.

A new underground slope was sunk in the Conyngham drift a distance of 600', and a new gravity plane was made on surface near the old drift to lower the coal from an opening made to work the coal near the north outcrop.

Improvements by the Newport Coal Company.

The No. 1 slope was extended to the basin, which point was reached at a distance of 550'; all on the Ross seam. A new drift was opened also on the Red Ash seam. It was in a distance of 1,524' at the end of the year.

Improvements by the Hillman Vein Coal Company.

Two rock tunnels were driven by this company from the Hillman to the Kidney seam at different levels. Their lengths are 112' and 170' and the size of each is 7' x 12'.

Improvements by A. J. Davis & Co.

At the **Warrior Run colliery** both underground slopes were extended. The Red Ash, which is the main slope, was extended a distance of 600' below the lowest working lift, and the Front slope was extended a distance of 300', and the sinking is continued in both.

RECORDING INSTRUMENTS ON VENTILATORS.

All the mines of this district are ventilated by exhaust fans. Section seventeen, article ten, of the mine law requires that "All ventilators used at mines shall be provided with recording instruments by which the speed of the ventilators or the ventilating pressure shall be registered for each hour, and such data shall be preserved at the colliery for future reference for a period of three months." Nearly all the fans of this district have been provided with instruments as required. There are three types of instruments in use, viz: The Bartle speed recorder, Sharar's speed and time recorder, and Williams' self-recording pressure meter and pressure alarm for mine ventilators. The latter is a new instrument and has a number of excellent points. The ventilation of a mine is produced by a difference of pressure produced in the fan or ventilator, and this difference of pressure varies with the speed of the ventilator. It varies also when affected by high winds and storms. This instrument makes a record of all these variations and also by closing an electric circuit

Improvements by the Lehigh Valley Coal Company.

At the Franklin colliery a new tunnel has been driven from the Bottom Split of the Red Ash to the top split, a length of 210 feet, and a sectional area of 7×12 feet.

Improvements by the Alden Coal Company.

In the Red Ash seam of the Alden mine, a tunnel was driven across an anticlinal to the basin north of the present workings. It has an area of 90 square feet and is 1,400 feet in length. This is expected to open an extensive area of a good quality of coal.

Improvements by the Parrish Coal Company.

The underground slope of the Baltimore seam in the Parrish colliery has been extended a length of 1,450, feet making it a total length at present of 2,150 feet. It has a grade of about 6½ degrees and a sectional area of 7×12 feet.

Improvements by the Hillman Vein Coal Company.

This company has driven two tunnels, one from the Hillman to the Kidney seam, and the other from the Hillman to the Abbott seam. The former is 170 feet in length and the latter 337 feet. The sectional area of each is 7×12 feet.

Improvements by A. J. Davis.

At the **Warrior Run colliery**, a new pair of first motion hoisting engines have been erected. The cylinders are 30×48 inches, and the Cone Drum is large enough to carry 2,500 feet of 1.5 inch rope. This was procured to take the place of a single geared engine and is an effective improvement. A short tunnel was also driven from the B to the C vein, a length of 120 feet, having an area of 90 square feet.

Improvements by the Newport Coal Company.

At the Lee colliery two new drifts were opened to the Red Ash seam, and a new slope was driven to a length of 546 feet. It has a varied pitch, the steepest being 70 degrees.

NEW SHAFTS IN PROGRESS OF SINKING.

The Maxwell shaft No. 20, of the Lehigh and Wilke-Barre Coal Company, after being sunk to the rock, was walled with excellent mason work up to the surface. The size of the shaft inside of the walling is 54×12 feet, and at the end of the year 1892 it was at a depth of 134 feet. Workings are being opened ready in the Jersey mine to run coal for this shaft, and the construction of a breaker is in progress.

The Delaware, Lackawanna and Western Railroad Company is sinking three new shafts in Hanover township. The first is named Bliss,

CLASSIFICATION OF FATAL AND NON-FATAL ACCIDENTS.

Causes of Accidents.	Killed or fatally injured.	Severely injured.
By explosions of fire-damp,	7	33
By falls of roof and coal,	44	68
By falling down shafts,	2	. . .
Crushed and run over by mine-cars,	7	59
By explosions of powder and blasts,	4	23
By miscellaneous causes underground,	6	27
By miscellaneous causes on surface,	7	23
Totals,	77	233

Number of widows, 46; orphans, 182.

The Collieries of the Fourth District.

During the year 1894 there were forty-three breakers and sixty-six openings at work more or less time, mining and preparing coal for market in the Fourth Anthracite district. An average of 46,789 tons per day worked was produced, making a total production of 7,162,961 tons in an average work of 153.1 days.

The collieries in operation less than 153.1 days were those of the Lehigh and Wilkes-Barre Coal Company. The No. 3 colliery of the Delaware and Hudson Canal Company, which, after working 153 days, was destroyed by fire on the evening of November 15, and remained idle the remainder of the year. The No. 3 colliery of the Susquehanna Coal Company, where the production is not sufficient to keep the breaker working all day owing to the partial exhaustion of the mine. The Gaylord colliery of the Kingston Coal Company, several weeks' idleness caused by the disastrous cave of February 13th. The collieries of the Lehigh Valley Coal Company, the Red Ash Coal Company, the Parrish Coal Company, the Maffet colliery of the Hanover Coal Company, and the **Warrior Run colliery** of Mr. A. J. Davis.

The Lee colliery of the Newport Coal Company did not work more than 100 days. It was suspended on August 25th, and since then has passed into the possession of another company. The Buttonwood colliery of the Parrish Coal Company is an old mine enlarged and reopened. It was lying idle since 1866. The shaft was enlarged and sunk to a deeper seam and a new breaker was erected. It began shipping coal in September, 1894, and worked 50 days until the end of the year.

William H. Sayre, second vice president, South Bethlehem, Pa.

John R. Fanshawe, secretary, Philadelphia.

John B. Garrett, treasurer, Philadelphia.

Israel W. Morris, general land agent, Philadelphia.

W. A. Lathrop, general superintendent, Wilkes-Barre, Pa.

Directors, Robert H. Sayre, George H. Myers, Joseph Wharton, Thomas McKean, Beauvéau Borie, John B. Garrett, Wm. L. Conyng- ham, James I. Blakslee, C. O. Skeer, Charles Hartshorne, W. A. Ing- ham, John R. Fell.

Collieries of the Miscellaneous Coal Companies.

Beside the collieries commented on in the foregoing articles, there were twelve collieries operated by smaller companies in the Fourth district. These together produced 1,296,722 tons of coal and shipped to market 1,192,806 tons, in an average of 129.76 days of work. They employed 3,890 persons and mined 185,246 tons of coal per life lost. Three of the seven fatal accidents took place in the Hillman vein colliery, two in the West End, and one each in the Alden and Dod- son collieries. The Nos. 1 and 2 collieries of the Red Ash Coal Com- pany, the Parrish and Buttonwood, of the Parrish Coal Company, and the Maffet, **Warrior Run**, Lee and Chauncey, did not have one fatal accident.

These mines are all in safe condition and efficiently ventilated. More or less firedamp is emitted in each, but not in such quantities as we find in the deeper mines. They are working closer to the out- crops where the roof is generally better than in the deeper portions of the basin.

The names of the collieries and of the officers are as follows:

Nos. 1 and 2 Red Ash Coal Company.

M. B. Williams, general superintendent, Wilkes-Barre, Pa.

P. H. Ganahan, assistant general superintendent, Wilkes-Barre, Pa.

Daniel J. James, mine foreman No. 1 Red Ash.

Joseph Hopie, outside foreman No. 1 Red Ash.

Timothy Theopilus, mine foreman No. 2 Red Ash.

John Herriotts, outside foreman No. 2 Red Ash.

Officers of the Parrish Coal Company.

H. H. Ashley, general superintendent, Plymouth, Pa.

Thomas R. Evans, general mine foreman, Plymouth, Pa.

Parrish colliery, Henry G. Willilams, inside foreman, Plymouth, Pa.

Parrish colliery, Thaddeus Eddy, outside foreman, Plymouth, Pa.

Buttonwood colliery, Wm. T. Pritchard, inside foreman.

Buttonwood colliery, Merrit Frederick, outside foreman.

Improvements by the West End Coal Company.

A new slope was opened at the West End colliery on the Red Ash seam and sunk to a depth of 500 feet, having an average grade of 10 degrees. When completed it is expected to be about 3,000 feet in depth.

Improvements at the Warrior Run Colliery.

A new fan was erected at this colliery to replace an old one. It is 20 feet in diameter, run by an engine 16-inch diameter, directly connected. At a speed of 62 revolutions per minute 86,000 cubic feet of air is exhausted, the water gauge being 1.8 inches.

The Buttonwood Colliery.

This was an old colliery and was abandoned in 1866 after working but a short time. The Parrish Coal Company re-opened it under a lease from the Lehigh and Wilkes-Barre Coal Company. During the years 1892, 1893 and 1894. The shaft was enlarged to a size of 32x12 feet and sunk through four coal seams, the lowest of which is cut at a depth of 686 feet, which is the present depth of the shaft. They are working the two lower seams, viz: the Hillman and Bennett.

An air shaft was sunk from the surface to the Hillman seam, a depth of 574 feet, having an area of 12x22 feet. The two lower seams are connected also by a tunnel 370 feet in length. A tunnel is being driven to the Kidney seam, which was driven a distance of 42 feet at the end of the year. When this is completed, the workings of the three seams will be connected to the air shaft, which is the second opening.

A new 24-foot fan was erected on the top of the air shaft, run by an engine 20x36 inches, directly connected. At 48 revolutions it is exhausting 93,600 cubic feet of air per minute, with a pressure of .7 inch water gauge.

The new breaker was completed and started to ship coal in September, 1894. It is substantially built and equipped with the best kind of machinery, and every dangerous part is protected by railing or covering, as the law requires. At the shafts and breaker there are three pairs of hoisting engines, aggregating 2,170 horse power.

Concerning the history of the Old Buttonwood colliery and the cause of its abandonment, the following account was kindly furnished by Mr. James E. Roderick, who was in charge at that time.

Stockton, Pa., February 28, 1895.

Mr. G. M. Williams,

Inspector of Coal Mines:

My Dear Sir: Yours of the 26th received. In reply will say that in the early part of 1866 John T. Griffith secured the contract of Buttonwood shaft to put the coal on big cars at so much per ton. Some

Improvements by the Susquehanna Coal Company.

This company drove a tunnel from the George to the same seam which is 700 feet long.

Two tunnels were also driven which are not yet completed. One from the Mills to the Mills seam 8x14 feet area which is now 300 feet long. The other tunnel is from the Hillman to the Hillman, through an anticlinal, having an area of 8x14 feet and is also 300 feet long.

The Kingston Coal Company.

In the No. 1 colliery an air shaft has been sunk from the Cooper to what is thought to be the Bennett seam and a short tunnel has also been driven from the Checker to the Bennett seam. The size of the shaft is 8x10 feet; depth, 125 feet; size of tunnel, 7½x12 feet and 250 feet in length.

Lehigh Valley Coal Company.

At the Dorrance colliery a new slope has been driven from the Hillman seam through the rock on a grade of 7 degrees to the Baltimore seam and following that seam on the north rib of the anticlinal. Its length is 1,300 feet and size 8x12 feet.

At the Franklin colliery a slope has been sunk from the outcrop on the next small seam above the Baltimore. It is 1,000 feet long and will work the upper lifts of said seam. A new fan has been also erected at this colliery to ventilate the upper seams. It is fifteen feet in diameter and operated by a vertical engine. It is the first machine put up in this district to act as a forcing fan. The conditions here are favorable for that, but in gaseous mines where the haulage roads would be the return airways such a method is not practicable.

The Parrish Coal Company.

The inside slope in this mine has been extended to a length of 3,814 feet. It was 3,216 feet before.

At the Buttonwood colliery two tunnels have been driven, one for coal haulage from the Hillman to the Kidney 335 feet long, and one for ventilation and "second opening" from the old Bennett to the Hillman seam. This is 62 feet long and has an area of 70 feet.

New Breaker at Warrior Run Colliery.

The old breaker having worn beyond the power of repair has been replaced by a new one having a capacity of about 1,000 tons per day. The machinery and stairs are boxed and fenced in a satisfactory manner. The old one was abandoned at the beginning of

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

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.

New return air course in Baltimore between Hillman and No. 1 levels completed.

Diamond drill provings in Drift level. Silting operations in Rock Slope and Baltimore vein district.

Warrior Run, Outside.—Back switch head on No. 1 or Buck Mountain slope; engine plane and tippie to dump mine cars into railroad cars for transportation to Seneca colliery for preparation.

Boiler fuel conveyor line for washery.

Crusher and conveyor line to reclaim culm bank south of breaker.

Ash and rock bank fire confined to harmless territory. Two shafts and two churn drill bore holes and 2 crushing outfits were necessary to accomplish this. Diamond drill proving for overlying veins.

Inside.—Reopened "D" vein on outcrop.

Reopened "C" No. 1 Lift, east.

Reopened "F" No. 3 Lift, east.

New slope in "C" No. 2 west to north dip.

Telephone communication throughout.

Silting operations in South and North basins.

DELAWARE AND HUDSON COMPANY

Conyngham.—Shaft retimbered and relined.

Baltimore No. 2.—No. 10 Slope, Ross Vein, extended 825 feet to limit and completed.

No. 11 Slope extended to limit of property, a distance of 200 feet.

No. 8 Plane graded and driven 410 feet.

Baltimore No. 5.—Hole for slushing refuse into mines drilled to depth of 739 feet.

MINE FOREMEN'S EXAMINATIONS

The examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held May 19 and 20, at the Y. M. C. A. Building, Wilkes-Barre.

The Board of Examiners was composed of Thomas H. Price, Inspector, F. H. Kohlbraker, Superintendent, Thomas D. Lloyd and Patrick McGrane, Miners.

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

Mine Foremen

Edward W. Davis, Charles Enzian, James Stevens, Wilkes-Barre; James Gallagher, Pittston; Lewis R. Thomas, John B. Magee, Henry R. Kettle, David R. Jones, Plymouth; Henry H. Hughes, Wyoming; James C. Wallace, Dorranceton.

Assistant Mine Foremen

Thomas Beynon, Bernard Conyngham, William R. Davis, Charles Hammonds, William R. Humpleby, Peter Johnson, John N. Jones, David Werner, Wilkes-Barre; Henry Carver, David S. Jones, David

plan. An 8-inch bore hole was completed from the lower Baltimore to the Red Ash vein. A concrete-steel air bridge was built in the Five Foot vein east of No. 14 slope.

Dorrance Colliery

Outside: A new brick garage was completed. New foundations were constructed under the breaker plane and a B. G. Carpenter and Co. dust collector was installed on the east side of the breaker. The 35 x 12 foot Guibal fan was moved from No. 1 shaft to No. 2 shaft, for the purpose of ventilating the upper veins. No. 1 Shaft was concreted to the Rock on north side.

Inside: The concrete and steel roof supports at the Hillman landing were continued and considerable loose rock and old timber were removed. Silting operations were continued in the Hillman West Plane district and diamond drill bore holes to prove the Bennett vein north of the fault were completed. Electric motor haulage was installed in the Red Ash tunnel level district. No. 24 slope in the Red Ash vein was started and No. 13 slope extended. A mule stable was constructed in the Red Ash vein. New engine planes were started in the Hillman, Bowkley and Abbott veins on the east side. Preparations were made to resilt the Baltimore and overlying veins on the east side of the shaft.

Extensive developments were made in the No. 21 slope district in the Hillman vein.

Franklin Colliery

Outside: Extensive repairs were made to the breaker. A series of test holes was made to prove upper veins in the Gin and Brown slope basins. The Bowkley vein upcast shaft was concrete lined.

Inside: A new rock manway was completed from the Bottom Red Ash to the Top Red Ash, near the foot of Rock slope, and No. 25 tunnel from the Top to the Bottom Red Ash vein was completed.

No. 16 Slope in drift, Skidmore vein, was started. The Bottom Five Foot gangways on No. 2 level were cleaned of mud and debris from the Bowkley cave. No. 1 tunnel was cleaned to the Hillman vein. A new hospital has been completed in the drift workings. Silting operations were continued in the Rock slope and Baltimore vein districts. A second opening is being driven for the Snake Island vein to the Hillman level, and a second opening to the drift Skidmore was completed. The pumping plant on the Hillman level was discontinued and the water is now handled directly from the No. 2 level. Preparations were made for reopening Brown slope, to extend No. 21 tunnel to the Hillman vein, and to drive No. 27 tunnel from the Bottom Five Foot to the Hillman vein, and the head of No. 6 Plane level, and also to drive No. 26 tunnel from the Top Red Ash to the Skidmore vein on No. 25 tunnel level.

Warrior Run Colliery

A series of test holes to prove the overlying veins was completed.

A new slope from the surface to the Hillman vein was sunk. Work was started on dismantling the old breaker. Colliery buildings were repainted and the silting of the burning rock bank continued.

Dorrance Colliery.—Outside: The dust collector at the breaker was remodeled. A new addition to the compressor house for the dynamo was built and a new drum on the Red Ash shaft engine installed. A series of test holes for proving the rock cover in the river bed was drilled.

In the breaker a complete fire alarm system was installed.

Inside: Concrete steel roof supports were continued at the Hillman Foot of Shaft, and grading the head of No. 24 slope in the Red Ash vein was practically completed. A new electric hoist and "I" beam roof supports were installed. Electric haulage was installed in the Hillman vein No. 21 slope district, using one motor. In the Red Ash vein the electric haulage was extended and a new motor installed. Three new planes were graded in the Upper veins on the east side of the shaft and two electric hoists were installed.

Diamond drill proving of the fault in No. 6 Extension slope was continued. A new tunnel to shorten haulage in the Bennett and Cooper veins was started and Nos. 13 and 23 slopes in the Red Ash vein were extended.

Franklin Colliery.—Outside: Extensive improvement to the breaker were made, practically rebuilding same. A new engine house was built for No. 10 slope. Diamond drill provings for the Five Foot sump veins in the Gin and Brown Slope basins were carried on. A second opening shaft to the Snake Island vein was sunk and concreted.

Preparations were made to silt the Bowkley vein, and about 1,000 feet of wooden silt line laid. A complete fire alarm system was installed in breaker, and to the equipment was added 100 new standard steel under-frame cars.

Inside: In the Bottom Ash vein a new slant slope was started to develop the northern section of the property. A new slope in the Skidmore vein was also driven in No. 4 tunnel workings. Diamond drill provings for the Ross vein in No. 4 tunnel were carried on. Silting was continued in the rock slope district. A new manway for No. 9 slope in the Top Red Ash vein was completed. In these workings No. 26 tunnel with a length of 230 and 290 feet respectively was driven from the Bottom Five Foot to the Hillman and Bowkley veins in the Long Slope workings. Work on the new concrete barn in the Rock Slope was started. It is the intention to install on No. 25 tunnel level a new 12 by 32 by 36 Scranton pump.

Warrior Run Colliery.—Inside: A new second opening plane from "B" to "C" veins in the robbing section was started, and also the reopening of lifts off No. 1 slope. Good progress was made pumping water from No. 2 slope, which has been flooded on account of fire.

Outside: A new slope was sunk from the surface to the Hillman vein and 100 feet of concrete roof supports installed. A trestle, dump and siding from Lehigh Valley Railroad were constructed and an engine with 1400 feet of 6 foot steam line installed.

WILKES-BARRE ANTHRACITE COAL COMPANY

Hillman Vein Colliery.—The inside slope was extended 264 feet and a 325 horse power electrical hoist installed.

when finished bore holes will be drilled from the Henry Skidmore to the Maltby Six Foot. At the New Skidmore landing in the Red Ash shaft, which is the point at which the Henry and Wyoming coal is concentrated, side walls with roof of reinforced concrete and "I" beams were constructed.

Outside.—Two Welch overwinding devices were installed in the Red Ash engine house. Plans were completed for the installation of an electric plant to light the inside and outside buildings. New conical drums with clutch device were placed on the Red Ash engines, in connection with the new haulage concentration. The old slope in the Hillman vein in the yard near Wyoming shaft was reopened to serve as an airway to the proposed new 20-foot fan to be installed; this will replace the two Hillman fans now outside the colliery yard. Test holes were put down in the vicinity of Anthracite Park, Dorrance-ton, to prove the rock cover for the Hillman and Bowkley veins. Test holes were also put down to prove the rock cover over the Five Foot vein near No. 8 outside slope and Henry shaft. A new feed water heater was installed. The Wyoming shaft engines were removed to Mineral Spring and a small pair temporarily installed, which will be removed on the completion of the Henry Baltimore barn, and the Wyoming shaft will be entirely abandoned.

Warrior Run:

Inside.—A second opening was driven from the first lift west, Hillman slope, to the surface. Tunnel was started in the basin in the Hillman vein to the Mills vein. The second opening Rock plane, mentioned in last year's report, 130 feet in length, was driven from the B to C vein in the robbing territory. A slant slope 350 feet long was driven off No. 2 slope in the B vein to mine the coal south of the fault. Work was started on the reconstruction of the inside mule barns to make them fireproof.

Outside.—Two air shafts 10 by 10 by 35 feet deep, one on each side of the Hillman slope, were sunk from the surface to the Hillman vein and concreted. A concrete air duct was constructed over the slope connecting these two shafts, and a 14-foot Guibal fan installed, the entire construction being of concrete. A concrete powder house was built. A new road was graded along the Lehigh Valley Railroad for hauling timber by team from the colliery yard to the Hillman slope.

Dorrance Colliery:

Inside.—All wood was removed from the engine house on the head of No. 7 Cooper slope and concrete retaining walls put up with roof of reinforced concrete and "I" beams. Diamond drill holes, mentioned in last year's report, from the face of the Bennett workings No. 6 extension slope, through the fault to prove the Cooper and Bennett veins on the other side, were completed. No. 21 tunnel, to shorten haulage in the Bennett and Cooper veins, mentioned in last year's report, was completed, total length 816 feet in the solid and 238 feet of bottom rock grading. The construction of side walls and concrete roof was continued at the head of No. 24 slope, Red Ash vein. The mule barns in the Hillman vein shaft, Baltimore vein, and Rock slope, Baltimore vein, were dismantled and are being reconstructed to make them fireproof. A new barn of fireproof construction is being built in the Red Ash vein. Electric haulage was extended in the Hillman, Baltimore and Red Ash veins, and several new motors installed. A

Outside.—A concrete fan house was built in which a 20-foot fan was installed to ventilate the Hillman and Five Foot veins, releasing two old 15 foot fans. A concrete crusher house and conduit to take ashes from the boiler house to two 10 inch bore holes from the surface to Lower Baltimore vein were constructed. An addition to the outside barn, to quarter an additional number of mules, was also completed.

Warrior Run.—Inside: No. 8 tunnel was driven from the C to the D vein a distance of 210 feet. No. 22 tunnel was driven from the Hillman to the Mills vein, a distance of 210 feet to develop a virgin area. No. 5 rock plane on 30 degrees was driven a distance of 105 feet from the Hillman to the Mills vein to serve as a second opening. Built pump house of fireproof material at the foot of the old slope in the B vein.

Outside.—A concrete fan-house was built, in which was installed a 16-foot fan to replace two fans that were in poor condition, one of which was destroyed by fire. A concrete powder house was also constructed.

Dorrance Colliery.—Inside: The Hillman, Baltimore, Red Ash and Rock slope fireproof barns were completed. Two electric motors were placed in the Cooper vein, No. 21 tunnel section, and 2 in the Red Ash vein, No. 24 slope section. A 4-inch hole was drilled from the Hillman to Cooper vein 384 feet deep, and a 4-inch hole was drilled from the Cooper to the Red Ash vein 265 feet deep, to carry electric cables. A 4-inch drainage hole, 62 feet deep, was drilled from the Bowkley to the Hillman vein, to release the pump in the Bowkley vein. A 10-inch hole was drilled from the surface to the Baltimore vein for silting purposes, depth 605 feet. No. 19 rock plane was driven at foot of No. 6 extension slope from Bennett to Bennett vein, through a fault a distance of 90 feet. New guides were placed in the Hillman shaft from the surface to the Hillman vein, and also in the Red Ash shaft from the surface to the Baltimore vein. The construction of a pump room in the Baltimore vein and also in the Hillman vein was started, for the installation of two 1,500-gallon capacity pumps to take care of the large silting operations being carried on.

Outside.—The breaker was practically rebuilt, concrete retaining walls being placed at the foot of the breaker plane to replace wooden posts.

Franklin Colliery.—Inside: No. 18 rock slope was driven from the Brown slope in the Baltimore vein to the Sump vein, a distance of 243 feet. The fireproofing of the rock slope barn was completed. A 4-inch drainage hole was drilled from the Skidmore to the Baltimore vein, a distance of 292 feet, to unwater a large territory.

Outside.—The concrete foundation for the new breaker was completed and a shaft 8 feet square was sunk a depth of 60 feet from the surface to the old workings in the Baltimore vein, with a view of silting the openings under the breaker foundations. Entrance of the rock slope was concreted. Built engine house for No. 9 slope and installed therein a pair of 20 by 30 engines.

DELAWARE AND HUDSON COMPANY

Baltimore No. 5 Colliery.—Rock plane air return, Red Ash to Red Ash Top Split in Conyngham shaft, 7 feet by 12 feet by 120 feet, 12 degree pitch.

tinued. Installed two Williams crushers in order that the refuse could be silted into the mines. A 14-inch bore hole was drilled from the surface to the Baltimore vein for that purpose. A concrete ditch was constructed from the boiler house to the bore hole in order to flush ashes into the mines. An outside hospital was also constructed. A ditch for the installation of steam lines from the Dorrance Colliery to the new office building was constructed and the lines laid.

Prospect Colliery.—The rock work for the installation of the large pump in the Midvale-Hillman vein was completed and concrete side walls were started. A 15-degree rock plane was driven from the Upper Baltimore through a fault to the Five Foot vein. The work of fireproofing the barns in the Baltimore and Red Ash veins was completed. Roof supports were placed in the Midvale slope to support the engine house. A concrete overcast was built in the Red Ash vein. An electric hoist was placed on No. 26 slope, the new slope being driven in the Skidmore vein.

Outside: The Midvale-Hillman slope and No. 10 slope engine houses were made fireproof. A concrete retaining wall was built along the plank road east of Midvale shop. Two 8-inch bore holes were drilled from the surface to the Hillman vein for the purpose of silting boiler ashes. A concrete ditch was constructed to carry ashes from the boiler house to the bore hole. An addition to the small pump house was made to serve as an outside hospital. A mess house which was provided with all conveniences for the employes was completed.

Franklin Colliery.—Concrete batteries were built in the Baltimore vein under the new breaker to allow openings to be filled with silt. A new concrete fire boss station was started in the top Red Ash vein at the head of No. 9 slope. An 18-degree rock plane 150 feet long was driven from the bottom to the top Red Ash vein to mine a basin of virgin coal.

Outside: A new steel breaker to replace the old wooden structure was constructed. A new fireproof office and shop of tile was started. Concrete reservoir was constructed and a 12 inch C. I. pipe line was laid to conduct the water from Worthington pump bore hole to the reservoir. Installed new heads at the Rock and Long slopes. A new fuel conveyor line from the breaker to the boiler house was constructed. One 16 inch and two 8 inch holes were drilled from the surface to the Red Ash vein, a distance of 450 feet, to conduct the silt from the breaker to the mines. A 6 inch hole was drilled from the surface to the old Baltimore workings for drainage of the condemned coal conveyor pit. The Long slope engine house was reconstructed of fireproof material. A 16 by 20 inch engine was placed on the Brown slope to facilitate haulage.

Warrior Run Colliery.—Drove a tunnel from the Hillman to the Five Foot vein, a distance of 505 feet, for which a second opening 230 feet long from the Five Foot to the Hillman vein, was started. A concrete overcast for the return air from the Mills vein was built in the Hillman vein. No. 8 tunnel from the C to the D vein was completed. The mouth of the B vein slope was concreted.

Outside: A concrete fan house over the E vein shaft was completed. The outside plane engine house was made fireproof. A new hospital 10 by 14 feet was also constructed of fireproof material. Part of the wooden flume to conduct water across the property was reconstructed.

to Hillman vein to conduct steam pipes. A 6-inch bore hole from the Abbott to Bowkley and a 6-inch bore hole from Bowkley to Hillman vein were drilled so as to concentrate drainage at Midvale in the Hillman vein. The placing of concrete and steel roof supports at the foot of the Red Ash was started. An electric hoist was installed at foot of slopes Nos. 26, 28 and 29. Installed an air compressor at head of No. 4 plane. A concrete overcast was constructed in Red Ash vein.

Outside: The Midvale Abbott fan house was reconstructed of reinforced concrete. One Gates crusher, two Williams pulverizers and an 18 inch by 30 inch engine were installed under the breaker to crush refuse before flushing into the mine workings. A shaft was sunk from the surface to Hillman. A concrete and terra cotta ditch was constructed from the breaker to the shaft to conduct refuse from the breaker into the mines. A 16-inch bore hole was drilled from the surface to the Hillman vein, a depth of 520 feet, and 12-inch column line installed for discharge from the new pump in the Midvale-Hillman vein. A spray system for fire protection was installed in the breaker and pump placed in the boiler house to pump water from the reservoir to head of breaker. Seven Simplex jigs were installed in the breaker. Installed a 125 K. V. A., Allis-Chalmers, 220 volt engine, which will furnish light for Dorrance, Prospect and Henry collieries, and the new office building of the Company.

Franklin Colliery.—Inside: Completed No. 30 tunnel, Baltimore to Sump vein. Started No. 14 rock plane, Red Ash to Top Red Ash; No. 15 plane, Skidmore to Baltimore vein. Completed concrete fire boss station on No. 9 slope, and one in No. 6 tunnel.

Outside: A new fireproof engine house of concrete and terra cotta tile was constructed for the Rock slope. A mess and wash-house of concrete and hollow tile was also constructed for employes. The tile shop and office were completed. Concrete foundations for installation of a new Multi-vane steel fan and engine house at the Red Ash shaft were completed. The exhaust from the breaker engine was conducted into the feed water heater in the boiler house. Driveways under breaker were paved with brick. A 20-inch bore hole for discharge from the Worthington pump has been drilled.

Warrior Run Colliery.—Inside: No. 30 rock plane was driven from Five Foot to the Hillman vein for ventilation and second opening. An engine was installed in the Mills vein to handle coal from the west side of No. 22 tunnel. A drift was driven from the surface into the "E" vein.

Outside: The "B" slope engine house, inside slope engine house and compressor house were made fireproof with metal lath and plaster. Foundation walls under the boiler house were reinforced. Two new fireproof foremen's offices were erected.

DELAWARE AND HUDSON COMPANY

Baltimore No. 5 Colliery.—Completed tunnel, through anticlinal, Baltimore to Baltimore vein; electric locomotive road through fault in Red Ash vein on shaft level; 6-inch bore hole, 267 feet deep, Hillman to Baltimore vein at Conyngham. Installed an 8-inch centrifugal 1,500 gallon Sludge Pump on surface. Washery refuse from Baltimore No. 5 to Conyngham for inside filling.

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 conveyer 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.

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-

Sugar Notch No. 9 Colliery.—Completed extension of No. 31 tunnel from Hillman to Kidney vein; extension of No. 32 tunnel from Hillman to Kidney vein; and extension of No. 9 tunnel from Ross to Red Ash vein. No. 37 tunnel was driven from outside tunnel east, Top Red Ash to Bottom Red Ash vein; No. 38 tunnel from outside tunnel west, Top Red Ash to Bottom Red Ash vein; and tunnel through fault, Stanton to Stanton, No. 15 tunnel west.

Buttonwood No. 22 Colliery.—Installed 18 by 30-inch hoisting engines and houses at Red Ash shaft and Inman No. 21 shaft.

LEHIGH VALLEY COAL COMPANY

Franklin Colliery.—Completed No. 17 rock plane, Top Red Ash to Bottom Red Ash vein, in rock slope workings; No. 39 tunnel, Long slope workings, from Bottom Five Foot to Hillman vein; No. 40 tunnel, Long slope workings, from Bottom Five Foot to Top Five Foot vein; and No. 18 rock plane and second opening in the drift workings, from Sump vein to Bottom Five Foot vein. Installed electric dynamo, and placed lights at foot of rock slope and in mule barn.

Warrior Run Colliery.—Completed fireproof foreman's office on No. 1 lift, New slope.

GEORGE F. LEE COAL COMPANY

Chauncey Colliery.—A new breaker has been erected to replace the old one. Completed rock plane from Red Ash to Ross vein, and installed electric power to operate all machinery inside and outside of mines.

WEST NANTICOKE COAL COMPANY

West Nanticoke Colliery.—Completed rock slope from surface to Ross vein. Preparations are being made to erect a new breaker.

MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held in the Lehigh Valley Coal Company's Office Building, Wilkes-Barre, April 23 and 24. The Board of Examiners was composed of Frank Kettle, Mine Inspector; Sheldon Jones, Superintendent, Wilkes-Barre; George W. Raub, Miner, Plymouth; Patrick McGrane, Miner, Sugar Notch.

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

MINE FOREMEN

Raymond A. Gottshall, Askam; Joseph R. Jenkins, Ashley.

ASSISTANT MINE FOREMEN

Percy F. Bray, Millard Kressler, Idris Morgan, John Mainwaring, Nanticoke; Edward Collett, Charles Carey, Wilkes-Barre; Daniel Evans, Buttonwood; Thomas F. Mooney, Plymouth; William Roachford, Askam; David Richards, Edwardsville; Thomas Williams, Lee Park, Wilkes-Barre.