Butler Colliery.

This colliery is located in Pittston township and situated about two miles south-east of the Susquehanna river; it is operated by the Butler coal company. S. B. Bennett is general superintendent, Thos. Tetley mining boss and Robert Jaques outside foreman.

Description.—These mines are opened by a shaft and tunnels; the shaft is 67 feet to the Pittston and 106 feet deep to what they call the Butler vein; there is a double breaker attached to the shaft tower; they mine and prepare about 85 tons of coal per day; they employ 26 miners, 26 laborers, 10 drivers, 2 door-boys and 7 company men in the mines; 24 slate pickers, 6 head and plate men, 3 drivers and 8 company men, 6 mechanics and 2 bosses outside; in all 120 men and boys; they work one plane in the Pittston vein 250 feet long; the character of workings is drawing back top coal and robbing pillars in the Pittston vein, and in the Butler vein is driving headings and airways for opening up the mines; the shaft has been sunk to this vein since my last report; the average thickness of the Pittston is 14 and the Butler 8 feet; they work headings 10, air-ways 15 and chambers 25 feet wide; they leave pillars about 16 feet wide to sustain the roof; they leave cross-entrances about 20 feet apart for the purpose of ventilation; the roof is good slate and rock; the two veins are in tolerable good working condition.

Ventilation.—In the Pittston vein it is produced by the action of the atmosphere; there are several cave-holes in the surface which cause the ventilation in these mines to be good; ventilation in the Butler vein is produced by a fan; the intake for the Butler vein is located in the shaft; the air is conducted to the face of the workings by the aid of check-doors; the upcast is in the partition on the north side of main shaft; the area of the intake is 100 feet and the upcast 26 feet; the amount of pure fresh air is 13,800 cubic feet; there is no inflammable gas evolved in the mines; the main doors are hung so that they will close of their own accord; they have attendants at main doors; the amount of ventilation has been measured and reported; ventilation is good.

Machinery.—They use two hoisting engines of 40-horse power each, and one of "Knowles and Silsby's" donkey pumps in the mines; they have a metal speaking tube in the mines; they have two self-dumping hoisting carriages with an improved safety-catch, bridle, chains, &c., attached to them; the ropes, links, chains and connections are in good condition; the boilers have been cleaned and examined and reported in good condition; they have a steam-gauge to indicate the pressure of steam.

Remarks.—They have furnished a map of the mines; the miners, laborers, &c., walk in and out the man and mule way driven from the Butler vein to the surface, as they are not allowed to go up or down the shaft; the men wash and change their clothes in the engine room; the mining boss seems to be a practical and competent man; there are no boys working in the mines under twelve years of age; the engineers seem to be experienced, competent and sober men; the parties having charge know their duty in case of death or serious accident; the shaft landings are protected by safety-gates; the breaker machinery is fenced and boxed off so that operatives are safe.

Ontario Colliery.

This colliery is located on Little Mill Creek, in Pittston township, and situated 2 miles south-east of the Lackawanna river and on the Lehigh and Susquehanna railroad. The coal mined at this colliery is shipped by the Lehigh Valley railroad company; they have built a railroad from Pittston to this colliery. These mines are operated by the Luzerne coal and iron company. Fred. Mercur is general superintendent, Chas. Smith is mining boss, and Jos. L. Cakes is outside foreman.

Description.—The openings to the coal are 2 tunnels, namely: North and South: there is a breaker located about 300 feet east of North tunnel; they mine and prepare from 300 to 400 tons of coal per day; they employ 50 miners, 40 laborers, 15 drivers and 10 company men in the mines; 40 slate pickers, 2 drivers, 40 company men, 2 mechanics and 2 bosses outside; in all 201 men and boys; they are working what is supposed to be the same vein that they are working in the Rough and Ready and Butler shafts; average thickness 10 feet; they work

action in directing the men and in supplying them with everything required by the emergency; his foresight had everything on hand so that not a minute's time was lost; and had it not been for this, the fire, having gained so much headway before it was discovered, would have spread into the workings in spite of the untiring and faithful labor of the mine boss and fire boss, and the workmen under their charge, causing incalculable damage and loss to the company. It gives me pleasure to testify that all parties who took part in extinguishing the fire—the workmen as well as the superintendent and bosses—deserve great credit for the cool and sound judgment exercised in all that was done. It would be hard to find a set of men to work so well together to extinguish a fire, as these men of the Roaring Brook colliery.

Butler Mine Fire.—Considerable has been published relative to this fire in the columns of our local press, and a few lines relative to it may not be out of place here.

The fire originated in an old abandoned mine which was worked out many years ago, at a point near the outcrop of the fourteen feet or Pittston vein, and on the highest ground of the Butler property. It was undoubtedly set on fire by some scamps, who apparently made an old drift in that location their head-quarters. The attention of S. B. Bennett, Esquire, the superintendent of the Butler colliery, was first called to the fire some time in June, 1877. It had made considerable progress south-east of the pitch, along the standing pillars, when it was first discovered, and it was hoped, from the direction it was taking, that it would not travel down the pitch, and steps were immediately taken to cover up the cave holes through which the air penetrated to the fire. This in a measure retarded its progress, but it still continued to spread. As there was no water obtainable, an arrangement was made with a party to open and clear out an old chamber, with the view of cutting the fire off; but owing to the incompetency of said party, this work failed to answer the purpose and had to be abandoned.

Now, however, a plan has been adopted, (though it must incur very heavy expense,) which cannot fail to succeed. A point has been selected, about eight hundred feet from the fire, at which an open cut is being made from the surface down to the old workings, which will be about three hundred and fifty yards in length, twenty feet wide at the bottom, and the depth ranging from twelve to forty-five feet. The engineer in charge, Mr. C. T. Conrad, estimates the possible removal of fifty thousand cubic yards of materials, but he hopes to be able to tunnel a part of the way. The work is being pushed forward vigorously.

The progress of the fire is slow, but is more rapid in cold than in warm weather. About five acres have been burned over, and there are about five acres more to burn before the fire reaches the cut. No coal of any value will be destroyed, for there remains no unworked coal in this vein on this or any adjoining property, excepting about ten acres on the south-east,

owned or controlled by the L. V. Coal Company. The fire, where it was first set, seems to have burned itself out, and that section is nearly cold.

These old workings were never surveyed, and there is no map or plan of them in existence. The accompanying map will show the location of the fire and its proximity to the adjoining properties. The plan explains itself and needs no explanation in addition to what appears on its face.

The danger of damage from the fire arises from its spreading through the old workings into the workings of the Pennsylvania Coal Company, and consequently under the town of Pittston.

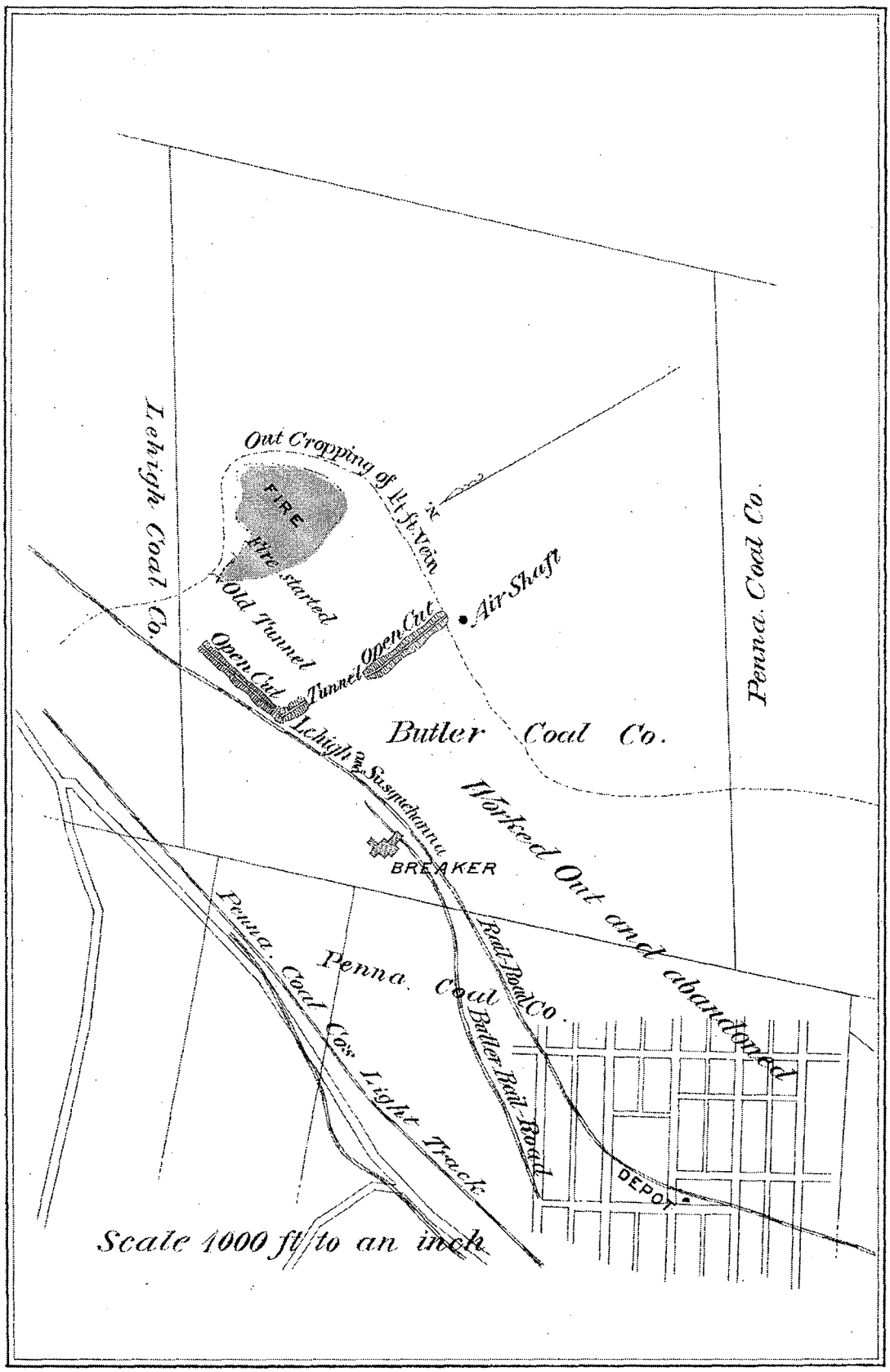
The Tables Explained.

Tables Nos. 1 and 2 contain a list of all the accidents that occurred during 1877, and their causes; and each colliery is charged with the accidents which occurred at each, respectively; and it is hoped that all parties in charge of those collieries will examine these tables carefully, and inquire into the reason why so many more accidents occur in their mines than in others.

Tables Nos. 3 and 4 require no explanation.

Table No. 5 contains some interesting statistics in relation to the amount of work done during the year. The figures relative to the amount of powder used by the three large companies are estimates, because the agents of those companies saw proper to deny me the exact figures. The estimates, however, are very nearly correct, and may be relied on, I have given the number of tons of coal mined at each colliery; but it is proper, perhaps, to explain that the tons of the Delaware and Hudson Canal Company and the Pennsylvania Coal Company, with several, if not all the smaller operators, whose coal is marketed by said companies, consist of twenty-seven hundred weight. Or, in other words, these companies require their miners to insure them a full ton of coal at tide water, after all the leakages and waste of transportation. But the ton of the Delaware, Lackawanna and Western Railroad Company, is a ton of two thousand two hundred and forty pounds at the mines, and all the smaller operators, who deliver their coal to this company, rate their tonnage in the same manner.

By referring to this table, parties in charge of each colliery can ascertain the ratio of coal produced by them for each life lost, and for each person injured during the year 1877, and during the last four years. The ratio ranges from 11,933.5 tons, at No. 6 slope, Pennsylvania Coal Company, to 159,268 tons, at the Von Storch slope, D. & H. C. Co., for each life lost during 1877; and from 15,691 tons, at Tompkins' shaft, to 459,575 tons, at the Sloan shaft, D. L. & W. R. R. Co., for each life lost during the last four years. It will be noticed that several collieries have escaped fatal accidents for four years. The ratio of coal mined per life lost by the large corporations is as follows: The average production of the D. & H. C. Co., for 1877, was 255,476 tons, and for the last four years it was 136,841 tons; the average for the D. L. & W. R. R. Co., for 1877, was 112,485 tons, and



PA Mine Inspection 1877

plea of necessity, Mr. Jermyn going so far as to intimate that it was impossible to operate that slope, without having Edmunds or some one else riding up and down upon every trip. But it was proven, to the satisfaction of the court and jury, that the only necessity for this, was the saving of another man's wages.

Another point which Mr. Jermyn labored hard to impress the jury with was the unfounded assertion that the prosecution was instituted by me out of spite and enmity against him. I was very much pained at this feature that was dragged into the case, for I certainly did not deserve any such base treatment at the hands of Mr. Jermyn of all the men with whom I have official relations; and no man can be so conscious of this fact as John Jermyn himself, for he knows that he has received nothing but unmixed kindness at my hands. If I had been capable of the spite attributed to me, the opportunity had not been wanting to strike a much more direct blow at Mr. Jermyn than by causing the arrest of one of his employés; but the fact is that if I have erred at all in my dealings with him, it has been in the exercise of too much leniency. In any event, I have never had the least desire to harm him; but I must be allowed to strive to do my duty, even where he is interested, and that I purpose doing regardless of consequences. Though the love of approbation is well developed in me, and though I would highly appreciate the good opinion of John Jermyn, and every other respectable man, still I cannot forfeit my own self-respect by neglecting my duty in order to secure it.

The sixth case was that of Robert Carter, the mine boss, which, through the earnest solicitation of Mr. Jermyn, was settled by his paying the costs. As I had gained the point for which I was contending in the suit against William Edmunds, and as Mr. Jermyn assured me that the law henceforth would be respected, and that he would give me no further trouble, I had no object in forcing Carter's case to trial. But had I been the spiteful and vindictive being that Mr. Jermyn would have the people believe me to be, I would have taken a very different course.

The Butler Mine Fire.

The Butler mine fire has now been raging since early in the year 1877. At the close of that year, when I last reported its condition, it had burned over an area of about five acres; but it has now spread over an area of about twenty-three acres, as shown by the carmine plot on the accompanying map of the colliery, which is a map of the Marcy vein immediately underlying the old workings where the fire is located. In the winter of 1877–8 an open cut from the surface was made all the way from the outcrop on the east and north to the outcrop on the south, a distance of about three hundred and fifty yards, with the exception of a section in the deepest part, which was tunneled. The open cut is twenty feet wide at the bottom, and ranges from twelve to forty-five feet in depth. The fire has now extended over all the plot thus cut off by the open cut and tunnel, but it is

believed that it can penetrate no further, the only doubt being as to its crossing the tunneled part of the cut. There is no doubt but its progress is wholly checked where the open cut is made, but there have been grave doubts, and they are not wholly dispelled yet, that the fire would cross at the section tunneled. When the fire reached the tunnel the intense heat caused it to cave in, and the company were obliged to flood it with water; and it was very doubtful for a time which of the elements would conquer. Water is being applied still, and the war of the elements is still raging with more or less fierceness, and it is uncertain at times yet which has the advantage, though it is believed on the whole that the water is master of the situation. There is danger, however, of letting off the water too soon, and it is impossible to say when it will be safe to do so, as the fire sometimes seems to die out and then burst out again with renewed force. It has cost the company nearly twenty-five thousand dollars to confine it within its present bounds.

The whole twenty-three acres are now overrun by the fire, but it must burn itself out within its present limits unless it crosses the tunnel—but if that should occur, no one can tell where it would end. The heat of the fire is so intense, that the forty feet strata of rock intervening between the burning vein and the Marcy vein below, is so hot in the latter vein in some places, that one can hardly bear his hand on it. The temperature in the lower vein up to a short time ago, was over one hundred degrees Fahrenheit, and the men worked there in that hot air as nearly nude as possible. There was no lack of air, but it had to travel through this hot region to reach the face of the workings, and it was too hot for men to work in it. When I learned these facts, I at once demanded an air-shaft sunk at the face of the workings, and outside of the line of the fire, so as to provide fresh and pure air for the men from the surface, instead of air conducted to them through the hot region under the fire. The superintendent at once laid the case before the directors of his company, and with their permission, he put down the shaft as suggested, and has since sunk two others, and his men at present get fresh and cold air to work in.

S. B. Bennett, esquire, the superintendent, has done himself great credit in acting so promptly in the matter, and his cheerfulness in doing what was asked of him, is very pleasant and agreeable for both the inspector and himself. If all superintendents would but take the interest in the welfare, and comfort of their men that is manifested in the conduct of Mr. Bennett, no mines would long remain in an unsafe or unhealthy condition.

New Collieries Opened and Under Way.

The company which has taken the lead in opening new collieries, and in developing new fields for coal production during the year, is the Pennsylvania Coal Company. They have opened a new shaft at Hughestown borough, known as the New No. 9 shaft, which is sunk to the "fourteen feet" vein. This takes the place of the old shaft of the same number, which has

been abandoned. They are also developing the Marcy vein at No. 4, and No. 11 shafts, in Jenkins township. But the main enterprise of the year, was the sinking of the Barnum shaft, on what is known as the Waddell farm, near Pittston. This shaft is one hundred and seventy-three feet and five inches in depth, from the top of the stone work at the surface, to the bottom of the "fourteen feet" vein, and is forty-seven feet long by twelve feet wide in the clear, giving a sectional area of five hundred and sixty-four square feet. It is to be divided into six compartments, one, eight feet five inches by twelve feet for an upcast, four hoisting ways, six by twelve feet each, and a pump-way, twelve feet square.

The sinking was commenced in October, 1878, by the company, who drove it down 36.5 feet by day labor. The balance of the work was done under contract, by James C. Smythe & Co., between the 1st of July, 1879, and January 1, 1880. The nature of the strata penetrated by the shaft is as follows: First, There is earth, slate, and rock for 49 feet and 5 inches, when a vein of coal three feet thick is met with; then there is 63.75 feet of fire clay and rock to the "seven feet" or "checkered" vein, which, at this point, proves to be 11.33 feet thick, and is said to be of good quality; then there is 27 feet and 11 inches of rock to the top of the "fourteen feet" vein, which, however, at this point is only 9 feet thick.

No timber is yet on the ground for the breaker, and it is, therefore, rather premature to venture any prediction as to what its capacity will be when built, but it is not likely to be less than one thousand tons per day. The time when shipping of coal will commence cannot at present be approximated, as there is a vast amount of work yet to be done before the colliery will be ready to commence operations; and the dispatch with which the work is driven will depend, in a great measure, on the demand for coal. They must make their connection with their second opening, which is eight hundred feet distant in both veins, and must drive their gangways, &c., in each vein before they can do much in the way of shipping coal.

The second opening is another new shaft eight hundred feet distant from the main shaft which is now being sunk, but is not yet over half way down. There is a large tract of land to be worked through these shafts; but the number of acres cannot be stated, as there are other collieries that will take in more or less of the territory. But it is very evident that when this colliery is completed and opened, it will be the model colliery of the company.

The Butler Coal Company is about to sink a new shaft, and the Lehigh Valley company is commencing to sink a shaft on their property adjoining the Butler colliery, in Pittston township; and the Pennsylvania Anthracite Coal Company are also sinking a shaft at their Greenwood colliery, in Lackawanna township, but neither of these are yet anywhere near the coal.

An Association of Mine Bosses Recommended.

There are about one hundred and fifty mine bosses, mine superintendents,

hoisting. It is true that ropes sometimes do unaccountably break when an empty trip is being lowered, or when a loaded trip is being lowered on a self-acting plane; but such cases are very rare, while ropes breaking from hoisting are of frequent occurrence. It is asserted, also by this class, that in lowering trips the drags sometimes drop from their fastenings and throw the cars off, or stop them on the slope. Now, there may be isolated instances where this has occurred, but the only damage done in such a case, at the worst, would be a few minutes' delay. Evidently those who advance such arguments as these must be extremely hard pressed for tenable ground to stand on. Their theory seems to be that because we cannot prevent every accident, then no attempt should be made to prevent any. But I am positive that there is no necessity for this last thing to happen. If the hooks are properly made, and if the drag is properly hung on the hook, it will not become detached as asserted.

The only cases in which these drags will not act effectually as safety-catches, is where the head-room, from thill to roof, on steep slopes, is too high for the length of the drag to reach, and perhaps where carriages are used. This objection has force, so far as such slopes are concerned, but it is not valid against their introduction where it is known they will serve the purpose intended. Let some of our mechanical geniuses devise some other means to provide for these steep, high-roofed slopes, and for slope carriages, and let us have drags where they will answer the purpose, or let some one suggest something better than the drag.

Another objection advanced against them, is their cost. Now this is a very small item, and cannot amount to more than about two dollars per car for the iron, and work in making and putting them on, and I will repeat that they will pay for themselves in a very short time in saving cars from destruction. The assumption that they interfere with the running of the cars, or that they are in any manner in the way, or dangerous, is so absurd on its face that none but the ignorant will make the assertion. I would finally recommend all to visit the Mt. Pleasant slope, where these drags can be seen in operation, and I have no doubt the superintendents there will be glad to explain away every objection to their use.

The Butler Mine Fire.

The Butler mine fire, I am happy to state, is the only mine fire in my district, and it is safe to say, I think, that this fire is under perfect control, and must exhaust itself within its present boundary. So far as surface indications show, it remains much as it was one year ago, except, perhaps, the location where it began and north of that point, where it is grown cooler. In the open cut the snow lies without melting, showing that it has exhausted itself at that point also. Owing to the tunnel caving in about a year ago, it is accessible only in part. Here there are signs of combustion—heat and gas—but the superintendent feels very confident that the tunnel is a success, and that the further spread of the fire i checked. This is the only point where there can be any doubt about the check of the fire, and this should be diligently watched.

The situation in the workings beneath the fire in the Marcy vein is also improved. In my last report I mentioned the sinking of air-shafts near the face of the workings in the lower vein. These have since been enlarged, and two additional air-shafts have been sunk above the out-crop of the Pittston vein, which is on fire; and the aggregate area of the in-take for air now equals three hundred and twenty square feet, and the outlet or up-casts equal two hundred and eighty-five square feet, and the displacement of air in November last was three hundred and ten thousand cubic feet per minute. During the warm weather in summer, the air-currents were not so strong, and it was deemed advisable to move the fan from the main shaft to one of the air-shafts, to which steam was conducted through pipes for two thousand feet. This was a material improvement, and S. B. Bennett, esquire, the efficient superintendent, is entitled to great credit for his untiring energy and cheerful readiness to do all in his power to make the workings of the Marcy vein comfortable for his men to work in. The displacement of so large a volume of air has had very good effect in reducing the temperature of the workings in the Marcy vein, and no inconvenience is now felt, except that some of the men complain of the cold! At one time in the summer, the upper lift, although above the fire, become so heated on account of hot air, that ten chambers were temporarily stopped. Having coal accessible elsewhere, this, however, was no inconvenience.

On account of irregular grades of the inside mine roads, and consequent delays in moving the coal to the shaft, it is purposed to drive a tunnel from a point at the face of the present workings out to the surface, and next spring to lay a surface track for mine cars from the tunnel to the breaker. The tunnel will be about two hundred feet long, six and a half feet high by seven wide, and this, when finished, will form another inlet for air.

Collieries Worked into One Another.

In view of the many fires that are raging in the coal mines of the anthracite coal field, I think it is high time to stop the practice of working collieries indiscriminately through into each other. A good, strong, continuous, and unbroken pillar of coal should be left on the dividing lines between all collieries, so that in case of a fire, a mine may be flooded at once without interfering with the working of adjoining mines. As it is now, there are collieries that cannot be flooded without inundating as many as a half dozen others, and all because there is no barrier left between them to hold the water. And it must be admitted that this is the rule and not an exceptional case. Instead of continuing to work on this system, not only should the line between collieries be left intact, but the successive lifts in the same colliery ought to be kept distinct and separate as far as possible. The coal thus left can be all won when the colliery is being finally abandoned. I am firmly convinced that a change is very much needed in this respect all through the coal region, and perhaps it is more necessary as a safeguard against fire in the pitch veins than in the flat or horizontal. But there is another danger threatening the flat veins that is not so common to

PITTSTON, PA., *April 9, 1884.*

Mr. PATRICK BLEWITT,

Inspector of Mines:

DEAR SIR: The new Butler shaft was begun in August, 1883, under a lease from the Butler Coal Company, of Philadelphia, to S. B. Bennett, of Pittston, Pa., given February 5, 1883, and conveys the right to mine all coal on the property under certain temporary restrictions. The shaft is 10′×23′, located five hundred feet from the old one, in a south-easterly course, and sunk from the surface in order to avoid standing water in the Marcy vein, and is at present writing sunk to a depth of two hundred feet, leaving probably seventy-five feet of rock yet above bottom or Red Ash vein, which will be worked first. Two other veins of coal have been passed in sinking which will ultimately become workable.

Sinking has been done with an Ingersoll 3½″ rock drill, actuated by a 10″×18″ air compressor, with three shafts of three men each working on bottom of shaft. An average of fourteen inches has been made per day, which is thought very fair work when hardness of rock, inclemency of weather, and number of men in shaft is taken into consideration. It is expected that shaft will be completed by the middle of July, 1884, and will have a capacity of five hundred tons per day. A small breaker will be erected for temporary use, as ultimately the Butler breaker will be used.

Hoisting will be done by a pair of 16″×30″ geared engines.

S. B. B.

SCRANTON, PA., *March 8, 1884.*

P. BLEWITT, Esq.,

DEAR SIR: Below please find report of the Amity Coal Company, Limited.

Leases of lands of Isaac B. Felts, about one hundred and thirty-two acres of coal lands, situate on line of Lackawanna and Bloomsburg Railroad, about three thousand feet north-west of Lackawanna river. Sinking shaft, 10″×32″, to be about three hundred feet deep; one pair of 24″×48″ winding engines; one pair of 18″×36″ breaker engine; one pair of 18″×36″ fan engine; one pair of twenty-five feet diameter Guibal ventilating fan; one pair of 10″×12″ plane engines; twelve 34′×40″ boilers; two mudge screens, 5×15 feet; two center screens, 5×15 feet; two main screens, 5×27 feet; two pony screens, 5×27 feet; two buckwheat screens, 5×12 feet; one pair of main breaker crushers, 36″×42″; one pair of pony rollers, 24″×36″; one pair of pony rollers, 10″×18″. Will commence shipment of coal about June. Capacity of breaker 1,200 tons daily. Second opening will be about 400′ from shaft, through Taylorville shaft.

S. N. STETLER,
General Manager.

six hundred feet. The sectional area is 8×12 feet; gradient, fourteen degrees. These slopes are intended to maintain the present production of the colliery.

Butler Coal Company.

At the Boston Colliery, two tunnels were driven from the Red Ash vein to Red Ash, a distance of four hundred feet; one tunnel to transport coal, the other for ventilation. They have, likewise, sunk two slopes on same vein, one six hundred and fifty feet, the other one hundred and fifty feet, which open up some good coal for this company, as some time ago this colliery was considered to be worked out.

Butler Coal Company.

At the Butler Colliery a new slope was sunk on the Pittston vein, a depth of one hundred and fifty feet, for the purpose of robbing or taking the pillars out.

Haddock & Steel.

A new air-shaft was sunk by this company from the surface to copper vein, a distance of one hundred and sixty feet. Size of shaft, 16×16 feet. A new twenty-foot Guibal fan was erected thereon; face of fan, eight and one half feet. Two side inlets, diameter eight and one half feet, working speed sixty revolutions per minute, giving ninety thousand cubic feet of air exhausted per minute, with one and a half inches of water gauge. The gearing is direct. This fan was started July 26, 1885, taking the place of the old fan.

W. G. Payne & Co.

A new twenty-five-foot fan, of the Guibal pattern, was placed in position at the East Boston Colliery, in place of the fifteen-foot fan which was done away with. The new fan is placed over the same shaft as the old one was, giving a result of one hundred and twenty-three thousand three hundred and eighty-six cubic feet of air exhausted per minute, with a water-gauge of eight tenths of an inch, with a working speed of forty revolutions per minute. It was started December 2, 1885. It is direct in gearing. This colliery has the means now to give their men all the fresh air they will want.

Waddel & Walters.

A new shaft was sunk in the Bennett shaft, from the upper to the lower split of the Baltimore vein, to a depth of two hundred feet. Size of slope, 6×18. Gradient of fifteen degrees. Likewise, a new gravity plane was driven in the lower split, three hundred feet, with a sectional area of 6×18, and a gradient of twelve degrees, which will open up some good coal, and enlarge the company's shipment from this colliery.

was erected thereon. The engine is seventy horse power, connected directly to the shaft of fan. It is used to ventilate the slope workings which were opened the year before.

The Maltby shaft of this company resumed operations in December, 1888, after being idle for four years.

Delaware and Hudson Canal Company.—This company has erected a new breaker at the Delaware shaft, located at Mill Creek. It was started to prepare and ship coal in August, 1888. It is one of the largest and best equipped, with the most improved machinery for the cleaning and preparing of coal that there is in the valley. The shaft workings are ventilated by the old twenty-foot fan that was formerly in operation at Pine Ridge shaft.

At the Laurel Run mines of this company an underground tunnel was driven from the bottom to the top split of the Baltimore seam a distance of eighty feet, likewise an air shaft to ventilate the same a depth of twenty-four feet, which will give good ventilation to this portion of the workings.

Butler Colliery Company.—The Mosier shaft of this company has been sunk from the Marcy to the Powder Mill seam, a distance of three hundred and eighty feet. The air shaft was sunk the year previous, so that the both shafts are now connected in the bottom seam, and the ventilation restored in the proper direction.

The Twin main and air shafts of this company have been sunk to the Powder Mill seam, a distance of two hundred and sixty-three feet. A new fan fourteen feet in diameter was erected on the air shaft, connected directly with a horizontal engine of forty horse power.

The Ravine shaft of this company was sunk to the Powder Mill seam, a distance of five hundred and seven feet, which opens up a large field of good coal for this colliery. A new fan twenty feet in diameter was erected on this shaft, connected directly by a horizontal engine of seventy-five horse power to ventilate this seam. A new air shaft was started from the surface and sunk to the Marcy seam connecting both shafts in this vein, the air shaft not having reached the Powder Mill seam yet, the second opening has not been completed in this vein. This company has likewise built a new breaker to prepare and ship the coal mined in the Twin and Ravine shafts. It is situated close to the Susquehanna river, in the borough of Pittston. It is the largest breaker in the district, and has a capacity of fifteen hundred tons of coal per day, having the latest improved machinery for the preparing of coal for market. All the machinery is covered or fenced off according to law. The coal is taken from the shafts, by two locomotives to the breaker, over a trestling one mile long.

Hillside Coal and Iron Company.—At the Consolidated slope a new fan was erected on a new air shaft, sunk for the purpose of ventilation. It is a closed fan twelve feet in diameter, connected with a horizontal engine by belt gearing. This slope was ventilated by a fur-

Newton Coal Company.

At the Twin shaft a twenty-foot Guibal fan was erected on the air shaft as a duplicate to the old one. It exhausts 130,000 cubic feet of air per minute with a working speed of 67 revolutions. The fan is driven by a horizontal engine, cylinder 16 by 30 feet, directly connected to fan shaft.

Butler Coal Company, Limited.

A new shaft 12 by 18 feet, called the Chapman, has been sunk to the Red Ash seam, a distance of 120 feet. The second opening is not completed at this writing. The shaft is situated 4,800 feet southeast of a new breaker, which was built for the purpose of preparing coal for this and the Butler shaft. The coal from the Chapman shaft will be taken to the breaker by a small locomotive. A new fan will be erected as soon as the second opening is completed.

Annora Coal Company.

At the Annora colliery a new Guibal fan 16½ feet in diameter was erected to ventilate the tunnel workings, exhausting 102,870 cubic feet of air per minute with a working speed of 78 revolutions, run by a vertical engine, cylinder 11 by 18 feet.

Stevens Coal Company.

At the Stevens colliery a new rock slope was driven from the surface on a gradient of 30°, cutting the seam at a distance of 818 feet. All the coal from the old slope will be hoisted out of the rock slope, which will shorten the transportation considerably.

Babylon Coal Company.

In the Babylon shaft an underground plane was driven a distance of 1,800 feet on a gradient of 6°. The coal is lowered down by a pair of engines located at the foot, as the greater part of the coal in this colliery is to the rise of the shaft. This plan will be extended from time to time as necessity requires it to be done.

Mount Lookout Coal Company.

Two shafts were sunk by this company on the west side of the Susquehanna river close to the town of Wyoming, on the land of J. B. Schooley. The contract for sinking through the sand and gravel was given to Sooy, Smith & Co., of New York. The size of the shafts being 12 by 24 feet and 12 by 16 feet. The distance from the surface to the rock being 105 feet. The shafts being started in 1889 and completed in 1891.

On January 15, 1892, I wrote to Messrs. Simpson & Watkins for information and drawings in regard to the sinking of these shafts for this report, and received a reply from Sooy, Smith & Co., New York, Simpson & Watkins having referred my letter to them, who submitted the following to me:

COLLIERY IMPROVEMENTS DURING THE YEAR 1892.

Pennsylvania Coal Company.

In Barnum No. 1 shaft, a new Guibal fan 18 feet in diameter, has been erected on the site of the one which was destroyed by the fire, which occurred on the evening of July 22, 1892. The old air-shaft of No. 2 Barnum has been enlarged from the surface to the depth of 150 feet, and a pair of double engines placed to hoist the coal through it from the 7 and 14 foot seams.

Lehigh Valley Coal Company.

In the Maltby shaft a rock tunnel was driven from the bottom of the 11-foot slope to the 6-foot vein, with a sectional area 7×14 feet, opening up a large territory of good coal.

Delaware and Hudson Coal Company.

In Laurel Run slope a rock tunnel was driven from the Checker vein to the lower Baltimore, a distance of 220 feet, with an area of 60 feet, to be used for transportation.

In the Pine Ridge shaft an air-shaft was sunk a distance of 22½ feet, from the upper to the lower Baltimore seam, to be used for ventilation.

In the Delaware shaft three rock tunnels, 8×10 feet area, were driven between the lower and upper Baltimore seams a distance of 40 feet each, to be used for transporting coal, and a new gravity plane was completed, 400 feet long, 8×10 area, with a gradient of 12°.

Butler Mine Company, Limited.

In the Fernwood shaft an inside slope was sunk a distance of 525 feet in the red-ash seam. A new Guibal fan, 12 feet in diameter, was also erected on the second opening to ventilate the workings, exhausting 22,000 cubic feet of air per minute with a water gauge of 3 inches, working speed of 35 revolutions per minute, driven by a horizontal engine, cylinder 10×24 inches.

In the Chapman shaft the second opening has been completed 130 feet in depth, with an area of 10×12 feet. A new fan, 12 feet in diameter, has been placed thereon to ventilate the workings, exhausting 30,000 cubic feet of air, with a water gauge of 2 inches, running 45 revolutions per minute. The fan is driven by a 20-horse power horizontal engine, cylinder 10×30 inches.

Newton Coal Company.

On the twin shaft a large pair of first motion engines were erected in place of the ones which were destroyed by the fire of September 11, 1892. They were built by the Dixon Manufacturing Company, Wilkes-Barre.

A rock tunnel was driven through an anticlinal from the bottom of the shaft in the Red Ash seam, a distance of 300 feet with an area of 7×16 feet which greatly shortens the transportation of coal to the foot of shaft.

Improvements by the Lehigh Valley Coal Company.

At the Oakwood shaft the second opening to the underground slope has been sunk to the red ash seam a distance of 325 feet, with a sectional area of 230 feet.

An underground slope was also sunk in the red ash vein a distance of 614 feet on a grade of four and one-half degrees. This slope opens up a large field of good coal for this colliery.

The Exeter breaker has been remodelled and enlarged and a new tower erected over the hoisting shaft. The shaft has been repaired from the top to the bottom and the inside workings placed in shape for a large transportation of coal. The buildings at the second opening with the shaft have undergone complete repairs.

At the Wyoming Colliery a 15-foot fan was erected on the old opening of the Hillman shaft, which gives very good results; it is run by a horizontal engine 14x24 inch, and driven by belting.

Improvements by the Old Forge Coal Mining Company.

The Columbia shaft of this company was sunk from the Marcy to the red ash seam, connecting with the workings of their Phoenix shaft and completing the second opening for both shafts.

Improvements by the Butler Coal Company, Limited.

A slope was sunk by this company on the outcrop of the Marcy vein to a depth of 200 feet on a grade of 18 degrees, sectional area 84 feet. The coal is taken to the breaker by a small locomotive.

Improvements by the Delaware, Lackawanna and Western Railroad Company.

A tunnel was driven in the Hallstead shaft from the second to the third seam, a distance of 656 feet, area 6x12.

Improvements by the Algonquin Coal Company.

Two underground slopes were sunk in the Pine Ridge shaft, a distance of 1,100 and 300 feet respectively.

Improvements by John C. Haddock.

In the Black Diamond shaft a tunnel was driven from the Bennett to the eleven foot seam, a distance of 200 feet, area 8x12. An inside gravity plane was built a distance of 1,500 feet for transporting coal to foot of shaft.

Twelve applicants appeared for examination for mine foreman certificates, of whom the following nine passed satisfactory examinations and were recommended to have certificates.

John D. Davis, James D. Campbell, Patrick H. O'Brien, of Avoca.

John E. Morris, Richard T. Jones, Daniel R. Williams, of Pittston.

William Hilburt Plains, John Conlon Hudson and John McKechnie, of Luzerne.

Six of the applicants for assistant foreman certificates were recommended as having passed a satisfactory examination and received their certificates.

The year 1896 was a remarkable one for this district on account of the deplorable calamity which occurred in the "Twin Shaft," Pittston, on the morning of June 28, 1896, whereby 58 persons lost their lives by a sudden caving in of the roof in the bottom or "Red Ash" seam.

There were fifty other persons who lost their lives in and about the collieries of this district during the year, as will be seen by the tables of this report, making a total of one hundred and eight killed. Mine caves or falls are of a general or local character, and there are few underground workings of any extent but have given the mine bosses a great deal of anxiety in this respect, and more especially in the local cases, as they are most frequent and are frequently attended with fatal results, especially where the overlying strata is composed of a wet fire clay or is of a friable nature; such roof gives little or no warning before the fall takes place, which may be from four to twenty feet in thickness only. But as to the former, a general crushing or squeeze having set in, the indications are so prominent from noises made by rending of the pillars and breaking of timber, with local falls taking place in the affected district, that ample warning is given, if it is heeded, for all to escape to a place of safety, and it is the height of indiscretion for any person to linger in such a locality while human life is in jeopardy as it is impossible for any person to tell the time when the general collapse may take place.

Fire in the Butler Shaft.

On the morning of October 5, 1896, a squeeze was detected in the abandoned workings of the underground slope in the Red Ash vein in the Butler shaft operated by the Butler Mine Company, Limited, and located in Pittston township.

The squeeze was discovered by Daniel Brady, the mine foreman, who ordered all of the workmen from the shaft out until a thorough examination of the slope could be made and the extent of the af-

fected workings be determined. I was notified in the afternoon by Superintendent S. B. Bennett, of the Colliery, who accompanied me to the shaft. We went down the shaft with the mine boss, Mr. Brady, and going down the slope to the first lift found the pillars crushing and the props and timber breaking so that it was not safe for any person to be down the shaft when the fall would take place. Therefore, I left orders that no one should be allowed to go down the shaft until the collapse had taken place and the roof settled. In the afternoon about five o'clock the mine boss and fire boss went down the shaft to make another examination and went a short distance from the foot of the shaft to listen for any working of the roof in that direction, and while passing through a door on the airway the fire boss, who had an open light with him at the time, came in contact with a body of explosive gas, igniting it, causing an explosion which ignited the feeders in the abandoned workings of the slope where the squeeze was in progress and also setting fire to the coal.

Fortunately neither of the men was burned, as the air current on the airway was very strong, keeping the flames from reaching them. The action of the mine boss and fire boss in using an open light under the above conditions cannot be too severely condemned, yet how frequently such carelessness is shown even by those who should know better. In going down the shaft that night after twelve o'clock with the fire boss of the "Schooley shaft," I arrived at the conclusion that the safest and best way was to flood the slope workings immediately with water, as there was no knowing how soon the fire would get above the shaft level. I therefore informed Mr. Bennett of my decision and requested him to keep all persons from going down the shaft until the danger of an explosion should be past. The next day they had two streams of water pouring down the shaft and it took about one week to flood the slope workings to the shaft level. On the 15th Mr. Moister and Mr. Owens, superintendents from the Lehigh Valley Coal Company, with Mr. Bennett and myself, went down the shaft and made a thorough examination and came to the conclusion that the fire was extinguished and the cave had been confined to the slope workings. As there were no indications of any squeeze on the shaft level the mine was placed in order again for resuming work.

The Burning of the Mount Lookout Breaker.

On January 8, 1896, the large and commodious breaker of the Mount Lookout Coal Company, located at Wyoming, was discovered to be on fire and was totally consumed and all the machinery destroyed or damaged.

CONDITION OF COLLIERIES

The condition of the mines in this district in regard to ventilation and drainage has been greatly improved since the last report. The ventilation is now conducted in a more satisfactory manner around the face of the workings. There are a few mines, however, whose foremen require constant hammering at to keep them in line in this respect. The foremen's time and attention are more taken up with hustling coal out to the foot of the shaft or slope, than with the proper distribution of the air current to the men. They leave this most important part of their work in charge of the fire boss or assistant.

The drainage and roads have received better attention, and are in fairly good condition, so that little complaint can be made. As for the safety of all the mines in this district from any sudden catastrophe from water, gas or general caving of the overlying strata, they are in good condition.

IMPROVEMENTS

HILLSIDE COAL AND IRON COMPANY

A new breaker was built at the Butler colliery of this company, having a capacity of 1,500 tons per day.

The machinery installed therein is of the latest for preparing the coal for market. An addition was built to the boiler house 35x55 feet and 600 additional horse power added.

Babcock and Wilcox had water tube boilers installed, a brick fire-proof power house was built 35x50 feet, and two 215 K. W. general electric generators, 275 to 300 volts driven by two 285 McEwen engines installed for the purpose of supplying power to five 7½ ton locomotives, electric drills, lights, etc.

A new slope was opened on the out-crop of the Checker vein at the Butler colliery 7x14 feet in area, and has been sunk 1,000 feet. A new engine house was built and a pair of hoisting engines installed in it for hoisting the coal to the surface. A new fan house was built and a 12 foot diameter fan erected to ventilate the workings.

The old No. 2 shaft of the Florence Coal Company, which was abandoned for some time, and now called the Thomas shaft Butler colliery, has been concreted from the surface to the rock, a distance of 23½ feet, and the shaft placed in first class condition for hoisting coal. A new gangway was driven in the Red Ash vein from the foot of the shaft to the Chapman shaft workings, the coal of which will be hoisted up the Thomas shaft and sent to Butler breaker, doing away with the Chapman except as a ventilating shaft. The fan will be run by electric motor doing away with the Chapman steam plant.

A steam plant has been projected in the Thomas shaft Red Ash vein from the shaft level up the east rise and driven a considerable distance which will work all the coal to the crop a distance approximately 3,500 feet. A pair of 16x20 inch engines is placed in position to handle all the coal.

A new slope called Butler Marcy slope, has been sunk from the surface in Marcy vein and through the old abandoned workings of the Butler shaft until at the present writing it has reached a distance of 3,500 feet. A pair of first motion 26x36 inch Vulcan engines installed for hoisting the coal, a new engine and fan house were erected and a 20-foot diameter fan built to ventilate the workings.

At the Consolidated colliery, of the above company, the No. 1 slope has been extended 140 feet to the bottom split of Red Ash vein.

DELAWARE AND HUDSON COMPANY

At the Delaware shaft, a new air return has been driven in the Cooper vein, a distance of 3,000 feet, to ventilate the territory covered by the mine fire of 1900, and also to ventilate numbers 19 and 20 tunnel workings.

At the Baltimore slope, No. 5 plane in Baltimore seam has been graded and a pair of engines installed on the surface which operate the plane by rope through a bore hole.

HUDSON COAL COMPANY

At the Laflin colliery a bore hole was drilled near the breaker and crusher plant installed for crushing the refuse from the breaker which is being flushed into the mine.

An engine plane in the Red Ash vein was driven 1,250 feet, a bore hole was drilled from surface to head of plane and a pair of 14x2 inch engines was installed on the surface to operate the same.

At the Laurel Run colliery, a rock tunnel from the Checker to Red Ash vein was driven a distance of 1,050 feet.

A new haulage road has been driven 450 feet toward Pine Ridge workings, to transport the coal up the Pine Ridge shaft to be prepared in the breaker. This road when finished will do away with the Laurel Run breaker.

Mine Foremen's Examinations

The examination of applicants for certificates of qualification as mine foremen and assistant mine foremen, was held on the 15th and 16th of June, at Pittston.

No. 8 slope extended 650 feet Red Ash vein to limit. The haulage road for transportation of No. 2 coal to Baltimore No. 5 shaft has been completed and equipped with electric motor. The haulage is 3,400 feet long. 10x12 inch engines installed on No. 4 slope Baltimore vein.

DELAWARE AND HUDSON COMPANY

Baltimore Tunnel.—No. 6 slope Red Ash vein extended 250 feet. New breaker at Baltimore tunnel equipped with machinery using electricity as power. Began operation December 1.

Baltimore No. 5.—No. 1 slope extended 1,600 feet. No. 2 tunnel driven 175 feet to bore hole for culm flushing. New electric power plant installed to furnish power for the Baltimore tunnel breaker and other uses as required.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery, Outside.—New office was built 30x30x21 and new barn for stock, 32x110x21—6.

Thomas Shaft, Butler Colliery.—Rock plane 250 feet long area 7x12 feet from bottom Red Ash to top split of Red Ash. This plane will be continued in the top split as a steam plane, and will also work the coal in the bottom split as a slope below the shaft level.

The fan at Chapman shaft has been replaced with another and larger fan, 4x16 feet, which is being driven with an electrical motor.

Marcy or Butler Slope, Butler Colliery.—The main slope has been extended a distance of 750 feet further toward the basin in the Marcy vein.

Checker Slope in what is known as the Checker vein, Butler colliery. At a point 950 feet from head of slope, a rock fault was encountered, and after proving ground by bore holes, it was decided to drive through the fault, a distance of 550 feet to strike the coal on the other side. This has been completed and the total depth of the slope is now about 1,800 feet.

Fernwood Colliery, Outside.—Blacksmith, carpenter and machine shop erected, 24x68x20. New supply house, 18x18x16, with fireproof oil house addition, tanks and pumps for handling the oil. A new barn for stock, 32x112x19-6, has been erected. The fan and fan engine house at No. 1 slope was torn down and rebuilt, and the fan engine changed, and is now in first class condition.

Consolidated Slope.—An additional gravity plane, 7x12x300 long has been driven in Stark vein. A duplex plunger pump, 20x10x36 has been installed for the purpose of furnishing water to the washery.

Consolidated Colliery, Outside.—Boiler house at breaker enlarged and two 150 H. P. return tubular boilers installed.

What is known as the annex to the breaker has been changed and converted into a washery for the purpose of preparing the small sizes from the breaker and also washing out what is known as the "Consolidated culm dump."

Mine Foremen's Examinations

The examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held on the 8th and 9th of May, at Pittston.

IMPROVEMENTS

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.--A tram road two miles in length has been built, by which the coal from the Fernwood slope openings is now being transported to the Butler breaker and there prepared; these openings now being a part of the Butler colliery. This necessitated changing the track gauge in the mines from 28 to 36 inches, as well as the car equipment, and adding about two hundred additional mine cars. A 26 ton steam locomotive was provided for transporting the coal outside, and one 7½ ton and one 10 ton Westinghouse electric motor were added to the inside equipment.

In the Thomas shaft two short rock tunnels were driven from the second to the third Red Ash vein.

In the Butler Marcy vein slope the No. 9 heading was driven up the basin tapping the old Pennsylvania Coal Company workings, and by the aid of two electric pumps the water standing there has been practically all pumped out.

Two General Electric 7½ ton gathering locomotives were added during the year, one in Checker vein slope and one in Thomas shaft. A 4 x 10 foot electrically driven ventilating fan was installed in connection with the Checker vein workings.

A new 240 K. W. General Electric generator and McEwen auto matic high speed engine added to the electric power plant, and a new and larger cold air blast outfit to the boiler plant.

HUDSON COAL COMPANY

Laflin Colliery.—No. 4 rock tunnel was driven through the fault from the Red Ash vein 100 feet to same vein.

No. 5 Plane was driven 1,450 feet to fault in the top split of the Red Ash vein.

Pine Ridge Colliery.—Electric plant was installed and put in operation to handle the coal from Laurel Run slope to Pine Ridge shaft underground.

MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as Mine Foremen and Assistant Mine Foremen was held in the Y. M. C. A. Rooms, Pittston, May 19 and 20.

The Board was composed of the following members: Hugh McDonald, Inspector, Pittston; James J. McCartey, Superintendent, Luzerne; David P. Williams, Pittston and Michael J. Healey, Avoca, Miners.

A mule stable in the Red Ash vein was extended and made ready for more mules.

At Coal Brook slope, a new plane, 7 x 14 feet and 186 feet long, was completed between the No. 29 tunnel and No. 35 tunnel levels.

HILLSIDE COAL AND IRON COMPANY

Butler.—Erected a new concrete building, 94 x 40 feet, with an annex 40 x 60 feet, fire-proof throughout, to be used as machine, car and blacksmith shop.

At Fernwood a new slope, 7 x 12 feet and 1,000 feet long, was driven on the west rise, from the surface to the bottom split of Red Ash vein, to open up the Fernwood mines to deliver the coal to the Butler breaker. A tunnel was also driven off the new slope to the middle split of Red Ash. A new plane opening was driven from the Fernwood to the Clarence mine, 7 x 12 feet and 400 feet long, the coal to be taken up the Fernwood slope, thence to the Butler breaker.

In the Thomas shaft, a tunnel, 7 x 12 feet and 38 feet long, was driven from the middle split to the bottom split of Red Ash, for developing purposes.

DELAWARE AND HUDSON COMPANY

Delaware.—The new shaft in the course of sinking was sunk 160 feet from the surface and will be continued to the Red Ash vein.

The Mill Creek air shaft was extended 105 feet to the Ross vein; No. 7 rock slope was sunk 1,100 feet to the Red Ash vein; No. 10 plane in the Ross vein was extended 900 feet; No. 8 slope Ross vein was sunk 1,100 feet towards the North basin. A return airway in the Ross vein was driven 300 feet towards Mill Creek air shaft.

A new slope, 12 by 8 feet, has been sunk from the surface to the Diamond vein, west of No. 6 shaft, a distance of 300 feet. A rock tunnel was driven in No. 6 shaft to the 14 foot vein, to tap the water in the old No. 2 slope workings.

In No. 5 shaft a new concrete mule barn was built that will take care of fifty mules.

For the purpose of rendering more effective and complete the work of their first aid teams, which have already attained a remarkable degree of proficiency, developed by the monthly lectures given by Drs. Shields and Mahon, and also at the annual contests in which the best teams only participate, the management of the Pennsylvania and Hillside Coal and Iron Companies installed in April a rescue station centrally located at No. 7 Junction, in the South Pittston District, for use at all of their collieries, covering a territory extending from Plains, Luzerne county, to Forest City, Susquehanna county. The equipment consists of four Draeger helmets and the following accessories: Two large oxygen cylinders, three Draeger electric handlamps, one small re-charging device, one Draeger refilling pump for refilling the small oxygen cylinder that is carried on the back, two hundred and fifty Draeger potash cartridges, 200 cubic feet of pure oxygen. This supply of oxygen is considered sufficient to meet any emergency that is likely to arise.

The installation of this life-saving apparatus by the progressive management shows their unceasing efforts to prevent mine accidents and also to give those who may become victims of such accidents the most efficient and up-to-date means of rescue, and at the same time protect the lives of those engaged in the work of rescuing life and preserving property.

The rescue station crew consists of twelve men picked from the officers of the company, who live in close proximity to the rescue station. These men are trained specially in the use of the helmets and first aid work, and are salaried men, available at all times for rescue work at any of the operations under the company.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—Built a new brick addition 35 by 50 feet to the power house, and installed one 360 horse power engine, one 250 K. W. generator, and one 100 horse power engine for additional lighting purposes. The boiler plant was increased with 600 horse power W. & B. boilers. Built a brick and sand house 17 by 20 feet, and one stone oil house 16 by 18 feet. A new steel tower was erected over the Thomas shaft. A rock tunnel was driven in the Thomas shaft from the middle split to the top split of Red Ash vein, with a view of robbing the pillars. A Sullivan undercutting machine was installed on trial and proved very successful and has been in operation for three months undercutting the Four Foot vein or top split of the Red Ash. At Fernwood a new slope was driven from the surface to the foot of No. 1 old slope, which has been abandoned. The engine house, boiler plant and electric plant were disposed of. A new boiler house and four return tubular boilers and an engine house 42 by 24 feet were erected for the new slope. The electric plant having been abandoned the electricity is now carried from the Butler colliery, alternating current, and a sub-station installed in the mines to furnish electricity for the whole plant. A tunnel

in the Red Ash vein, 3,000 feet. A fireproof mule barn to hold 17 mules was built in Red Ash vein, and one was also built in Marcy vein.

Number 14 Colliery.—A new fireproof mule barn 87 by 114 feet, was built on the outside at the tunnels, to accommodate 54 mules.

At the Courtright slope, a brick building 10 by 12 feet was erected outside for the use of blacksmith.

Two new shafts, one 12 feet by 16 feet 5 inches by 608 feet, and one 12 feet by 22 feet by 585 feet, were sunk from the surface to the Red Ash vein, for the purpose of working the veins below the Marcy.

A rock tunnel 7 feet by 12 feet by 250 feet was driven through the anticlinal in the Pittston vein for transportation.

A fireproof mule barn, to accommodate 45 mules, was built in the Checker vein.

HUDSON COAL COMPANY

Pine Ridge Colliery.—A rock slope was sunk from the Cooper to Red Ash vein, a distance of 900 feet, size 7 feet by 14 feet. The second opening was driven to the Laurel Run workings, a distance of 1,700 feet.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—Built a new washery, pockets of concrete and the balance of yellow pine, size 110 feet by 65 feet by 90 feet high. Washery is equipped with the latest machinery to prepare coal.

One-half battery 150 H. P. of B. and W. dutch oven type boilers added to the boiler plant.

One brick wash-house, 18 by 42 by 11 feet erected for the firemen, breaker and washery employes.

Thomas shaft. A rock tunnel 7 by 12 by 540 feet, was driven through the anticlinal for haulage road in the Red Ash vein.

A rock slope 7 by 12 feet is being driven from the Red Ash vein to the Butler workings through the fault, to be used as a second opening for the Butler slope Red Ash vein.

Butler Marcy slope. The Pittston water tunnel has been extended to the Marcy vein.

Fernwood slope. A new mule barn of wood has been erected outside to accommodate 20 mules; size 20 by 120 by 12 feet. A new building of corrugated iron was erected for supplies; size 32 by 112 by 12 feet.

LEHIGH VALLEY COAL COMPANY

Mineral Spring Colliery.—Safety over-hoists were placed on the shaft engines. Two powder cars were built for the transportation of powder to Coal Brook tunnel. Two closed passenger cars were constructed for the transportation of men to and from Coal Brook.

A new loading belt was installed in the breaker.

The mule barn in the Red Ash vein was made fireproof. A new concrete hospital was built in the first lift off the Baltimore slope.

The props and timber in No. 39 tunnel for a distance of 60 feet were replaced by concrete and steel beams.

At No. 10 shaft the rock slope, 7 by 12 by 300 feet, was driven from the Marcy to the Clark vein, and a pair of 12 by 24-inch engines installed. An air shaft 10 by 10 by 60 feet was sunk from the Marcy to the Clark vein near foot of the new slope. A rock plane was driven from the Pittston vein to the Abbot slope section of the Barnum, Checker vein, 7 by 12 by 200 feet.

Ewen Colliery: At No. 4 shaft a new brick enginehouse 27 by 40 feet was built, in which was installed a pair of 15 by 36-inch engines for operating the rope haulage in the Red Ash vein. A brick building was erected near No. 7 shaft, 107 by 33 feet, in which was stored hay, feed, lime, cement and sprags.

No. 6 Colliery.—Installed at the Wright slope a ventilating fan 20 feet in diameter, driven by a 4-valve Ridgway engine, 15 by 20 inches, inclosed with a brick building 18 by 48 feet. Erected a brick building 28 by 30 feet, to house the locomotive.

No. 14 Colliery.—Erected a brick locomotive house, 40 by 40 feet, and installed a 20-foot ventilating fan driven by a 12 by 14-inch Ridgway simplex side crank engine at Diamond slope. Built a brick supply house, 122 by 23 feet, containing loaders' room and cement, lime, feed, hay and sand rooms.

The second opening, 7 by 10 feet, to the New Diamond slope workings to the surface has been finished, a distance of 100 feet.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—At the Thomas shaft, installed a Vulcan fan, 14 by 6 feet, operated by an 18 by 20-inch Ridgway engine. Built fan house of steel with concrete connection to shaft, 35 feet 9 inches by 21 feet by 11 feet 2 inches, and brick engine house 12 feet by 25 feet by 11 feet 2 inches in connection with the new air shaft sunk to the Red Ash vein workings. Sunk an air shaft for ventilation 12 feet by 12 feet by 200 feet.

At the Butler Marcy slope completed second opening from the Red Ash vein to Thomas shaft workings. A part of the distance was driven through coal and part through rock. This also serves as a return air course to the new fan erected near Thomas shaft. Extended Pittston water tunnel 1,800 feet beyond the Marcy vein toward the Red Ash vein of Thomas shaft.

HUDSON COAL COMPANY

Pine Ridge Colliery.—No. 19 plane in the Red Ash vein was driven 800 feet to connect No. 23 slope with Millcreek shaft. Remodelled foot of shaft at Cooper vein. All timber having been removed and replaced by steel "I" beams and concrete.

Laflin Colliery.—No. 8 slope, top bench, top split, Red Ash vein, was driven 900 feet.

LEHIGH VALLEY COAL COMPANY

Mineral Spring Colliery.—Outside: The Checker vein fan house was made fireproof by the use of metal lath and plaster. The roof over the Red Ash fan house and over the return airway in the shaft was replaced with fireproof material. Erected a hospital and mine foreman's office. The box car loader at breaker was inclosed in a

Outside. Completed a brick, iron and concrete power house 38 by 96 by 16 feet, and installed therein one 330 H. P. McEwen engine driving D. C. generator to furnish electricity to Nos. 5, 6 and 11 shafts. Also completed a concrete, iron and brick building for sand-dryer, cement-house, lime, hay, feed, hospital and storeroom.

Number 14 Colliery.—At the Red Ash shaft installed a hoisting and a fan engine, and built houses for same. Also built an addition to No. 2 tower. At the Hillman slope installed an engine, and built a house for same.

Ewen Colliery.—Inside: Sunk an air shaft, 12 feet by 14 feet, from surface to the Marcy vein at Hoyt shaft. A new concrete pump-room was built in the Schooley shaft, Pittston vein, and a Jeanesville pump, 24 by 48 by 12 by 36 inches was installed therein.

Outside:—Erected a new concrete and steel breaker and washery to replace the breaker destroyed by fire on December 11, 1914. Installed a 14-foot fan, enclosed in a brick building, to ventilate workings in the Hoyt shaft. At the Schooley shaft, a new washery was erected to prepare coal taken from the culm bank for steam purposes.

DELAWARE AND HUDSON COMPANY

Laflin Colliery.—Extended No. 4 plane, Red Ash vein, a distance of 250 feet.

Delaware Colliery.—Extended No. 14 plane in the Red Ash vein, 350 feet through fault to the workable coal beyond. Completed a tunnel, from No. 7 plane Ross vein, a distance of 500 feet, to cut veins in back basin.

Pine Ridge Colliery.—Completed No. 26 slope, Checker to Bennett vein, and No. 30 slope in Red Ash vein was extended a distance of 250 feet toward the basin.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—Completed the water tunnel to Fernwood to take the water to the Pittston water tunnel.

LEHIGH VALLEY COAL COMPANY

Mineral Spring Colliery.—Inside: A fire line was installed in the Red Ash vein.

Outside:—A concrete dam was constructed at the reservoir to increase capacity of same. Completed structural steel work under an empty car trestle. Drilled a bore hole from the surface to the Red Ash vein, a depth of 265 feet, to conduct signal wires from outside engine house to No. 5 plane.

MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held in the Y. M. C. A. Hall, Pittston, May 18 and 19. The Board of Examiners was composed of Hugh McDonald, Inspector; H. T. McMillan, Superintendent, West Pittston; Frank J. Parks, Miner, Pittston; and Michael J. Ford, Miner, Pittston.

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

CONDITION OF COLLIERIES

PENNSYLVANIA COAL COMPANY

Number 14, Ewen, Number 6, Number 9 and Barnum Collieries.—Ventilation, drainage and condition as to safety, good.

HILLSIDE COAL AND IRON COMPANY

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

LEHIGH VALLEY COAL COMPANY

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

McCAULEY COAL COMPANY

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

IMPROVEMENTS

PENNSYLVANIA COAL COMPANY

Number 14 Colliery.—Completed a new slope to Hillman vein, 500 feet long, on a 25 per cent. grade; also a slope to Hillman vein near Red Ash shafts, 450 feet long, on a 25 per cent. grade. These slopes are steam hoist and electric fan. At Checker vein shaft completed five rock tunnels to Top Split Checker vein, each 100 feet long, also five air shafts to ventilate these tunnels, each 15 feet deep.

Outside: Installed two 200 KW. sub-stations at Courtright slope, and erected a brick office building.

Ewen Colliery.—Installed in a new brick building, size 32 by 32 by 16 feet, one AC 320 KW generator, one pair of engines, size 14 by 18 inches, for No. 7 shaft. Also installed one DC 200 KW generator to furnish current to No. 4 shaft, and a 2-stage 2,000-gallon centrifugal pump in the Pittston vein at Hoyt shaft.

Number 9 Colliery.—In No. 1 shaft, Marcy vein, two centrifugal motor driven pumps, 1,200 G. P. M., pumping from the Marcy vein to the surface, were installed to replace two steam pumps at this point.

Outside: At No. 3 shaft, installed two 200 KW generators and one shaft hoist driven by a 52 H. P. motor, to take the place of the old steam engine at this opening. A concrete, brick and steel ventilating fan house was erected, housing a motor-driven Jeffrey fan with a capacity of 175,000 C. F. M. operating at 140 R. P. M.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—Built a new brick locomotive house at Thomas shaft, which will hold five locomotives. Built an addition to washhouse, making it twice its former size.

HILLSIDE COAL AND IRON COMPANY

Butler Colliery.—Completed a rock tunnel in No. 6 Slope, Fernwood, from Red Ash vein to Babylon and Clark vein, and a rock tunnel from Red Ash vein to Stark vein; also air shaft from surface to Marcy vein. Installed a Ridgway engine and dynamo in power-house. Erected an addition to boiler plant and installed one and one-half sets of Sterling boilers, 1,600-hp. Also installed two Ridgway 10-foot draft fans.

MINE FOREMEN'S EXAMINATIONS

The annual examination of applicants for certificates of qualification as mine foremen and assistant mine foremen was held in Pittston, April 23 and 24. The Board of Examiners was composed of Robert Johnson, Mine Inspector, Pittston; H. T. McMillan, Superintendent, West Pittston; Frank Parks, Miner, Avoca; M. J. Ford, Miner, Pittston.

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

MINE FOREMEN

Joseph Addonizio, Charles Addonizio, Jenkins; William A. Roberts, Parsons; Peter Sindaco, Burt Paulhamous, Paul Sindaco, James L. Kinney, Plainsville; Vania Price, George H. Johnson, John W. Davis, Avoca; Michael Bell, Yatesville; Santo Volpe, Paul Valerious, Edward Roberts, Pittston; Charles Aitken, Anthony Malacheskey, Arthur Pattison, Plains; John R. Routledge, Inkerman.

ASSISTANT MINE FOREMEN

Thomas Davis, Harold J. Herbert, John Purcell, Martin A. Golden, William A. Monahan, Joseph T. Tigue, Alexander Tait, Thomas Loftus, Robert Thompson, Frank Peoli, Pittston; John A. Gerrity, Harry Custren, Bart B. Jopling, John J. Williams, Edward F. Bennett, William Custer, Anthony P. Lavelle, Nicholas Mascioli, Plains; Walter B. Graham, Dominick Delesandro, Avoca; William G. Bradley, Darrell E. Baldwin, West Pittston; John W. Parry, Joseph F. Ziobro, Dupont; John N. Swartz, Wyoming; William A. Muldering, Inkerman; David E. Jenkins, Miners Mills.