Reports

Dated
01/1909 - 03/1909

Lick Branch Mine

Pittsburg, Pa., Jan. 20, 1909.

MEMORANDA, REFERENCE LICK BRANCH MINE EXPLOSIONS, W. VA.

The Lick Branch Mine is located at Switchback on the line of the Norfolk & Western Railroad in MacDowell County, West Virginia and is operated by the Pocahontas Colleries Co., Ltd. The coal operated is the typical #3 Pocahontas bed and throughout this mine has an average thickness of not less than eight feet. The roof is extraordinarily good, requiring very little timbering. The ventilation of the mine is produced by a large fan of the Guibal type. There are two pairs of entries, each pair of which are about 1500 feet apart, running about parallel, known as the old drift and the new drift. One of the old drift entries runs through the mountain on to the Tug River drainage. The ventilation of the mine is conducted on two main splits, one split of the air entering the new drift and one split of the air entering the Tug River drift. The cross entries within the mine have connections with the old and new drifts.

On December 29, 1908 at three o'clock P. M. an explosion occurred in the part of the mine known as the old drift a short distance from the Tug River opening. The effect of this explosion was to kill fifty workmen in that part of the mine, while many workmen working in the other part of the mine were not effected by the explosion. Some of the men continued working until the end of their shift. The force of the explosion went out the Tug River opening and followed down the old mains, breaking a door only a short distance inside of the main drift but not in any way effecting the ventilating fan. In the vicinity in which

the explosion occurred the stoppings and doors were demolished. Upon learning of this disaster through newspaper accounts, I immediately made preparations to take the rescue apparatus from the Pittsburg station and with three of the mining engineers started for Switchback, arriving there on the morning of the 31st of December.

By the time of our arrival the state inspectors had been on the ground since within a few hours after the explosion and a large force of men had been at work and the majority of the bodies had been recovered and the condition was such that it was found that the apparatus could not be used within the mine to any advantage. In view of this, I detailed one of the engineers to exhibit the apparatus and explain its workings to a number of the mining men. The apparatus was fitted on several of the mining men in that section and given some training on the outside of the mine. The apparatus on the following day was returned to Pittsburg.

After the state inspectors had started on their official examination of the mine with two of the mining engineers of the service, Messrs. Groves and Ramsay, I made a complete examination of the part of the mine effected by the explosion. In this examination I took samples of the air, coal and gas with the hydrometer and barometer. The result of my investigation convinced me that the explosion had its initial point in what is termed the dip entries in one of which there appeared to have been a shot fired in the face of the entry which had not blown down the coal but which had merely cracked the coal. The physical condition of of this entry and other entries in connection with it fully con-

firmed a theory that the maximum of charred and coked dust appears on exposures opposite the point from which the initial explosion occurred. I have information that the state inspectors detailed to make a careful examination and report upon the cause of this disaster have concluded that the explosion was due to the blowing out shot in the same part of the mine but on another entry. They apparently have arrived at that conclusion by reason of finding the charred dust and coked dust on exposures facing the point at which the blowing-out shot may have occurred.

In my examination of that particular point in the mine, I was not satisfied that a shot had blown out, since I found an empty mine car immediately in front of and within about four feet of the rib of the pole where the blowing-out shot is supposed to have occurred, and it is improbable that a miner would leave an empty car so close to a shot which had resulted in the breaking of the car.

A second explosion within the Lick Branch Mine occurred at 8:35 A. M. on January 12, 1909. My first information of this explosion was conveyed in telegram from Mr. Pope of the Geological Survey, dated Switchback, advising that the mine had exploded but no details were known. I had a wire sent to Mr. Pope for further details, requesting whether or not the rescue apparatus could be of service. He later in the day wired that about fifty bodies were lost and that the rescue apparatus could not be gotten there in time to be of service. On the following day I left Pittsburg, arriving at Switchback on the evening of the 14th, being joined en route by Mining Engineer R. Y. Williams.

At this time the mine had not been fully explored and all

the bodies had not been recovered. On the morning of the 15th with Mr. Williams and the State District Inspector, I entered the mine and went with the party in search of bodies and early in the afternoon there were eight bodies found in the part of the mine in which the first explosion had occurred, making a total of sixty-five bodies removed from the mine after the second explosion.

On the Friday preceding the second explosion, the part of the mine which had not been effected by the first explosion was started in operation and coal had been taken out of the mine Friday, Saturday and Monday, and the men were in the mine on Tuesday for purpose of getting coal when the explosion occurred. At the time of this explosion that part of the mine in which the first explosion had occurred had not been rehabilitated but men were working in that part for the purpose of putting it in condition for operation, and at one point in the mine bodies of men were found who had been engaged in washing dust off the ribs with water.

The first explosion appears to have been a typical dust explosion, black powder being used exclusively for shooting coal. On Friday the 15th, the state inspectors advised that they would not give their official examination of the second explosion until the arrival of the chief and other inspectors and that it would be several days before they would conclude their official investigation. In view of this, I determined to return to Pittsburg, which Mr. Williams and I did. On leaving Lick Branch Mine on Friday night and for reason of the state inspectors not having started their investigation, I thought it advisable to allow them to precede me in the examination. I was convinced, however, from what I saw in the mine that the second explosion had originated in a part of the mine different from that

in which the first explosion was in.

I will return to the mine on the morning of January 21st to make an examination of this part of the mine and in due course make a final report.

Respectfully submitted,

J. W. Paul E.

Mining Engineer.

REPORT ON LICK BRANCH MINE EXPLOSION.

Hon. John Laing,

Chief of the Department of Mines.

Dear Sir:-

In compliance with your instructions of January 2nd, 1909, that myself and Inspector P. A. Grady make a thorough investigation of the Lick Branch Mine, with a view of ascertaining, if possible, the cause of the disastrous explosion which occurred therein about 2:30 P. M., December 29th, 1908, whereby 50 persons lost their lives, we beg to submit the following report:

A superficial examination of the mine, made January 1st, 1909, by yourself, accompanied by Inspectors Earl Henry, Wm. Warner, P. A. Grady, D. R. Phillips and several officials of the Company, developed the fact that the explosion was confined to the Eleven 1, Eleven 2, No. 12 and the Dip Entries, the forces exhausting in the No. 9 Entry Pillars in one direction and through the Tug River Opening, and down the Old Main Entries in the other.

We began our investigation January 4th, 1909 and concluded it in the evening of January 5th, 1909. We first visited the dip workings, which consist of the Main Dip B Entries and the Dip A-1 and Dip B-1 Entries, which turn off to the right

and left respectively from the Dip B Entry. We traveled from there to the Old Main Entry, No. 12, Eleven 1, and Eleven 2 Entries in the order named, returning again to the Dip workings for further investigation.

At the Junction of the Dip B Entry with the Main, we found a heavy switch tie moved outward about four feet at one end, and an examination of the sides showed that the forces had traveled outward. This was more or less plain along this entry to the intersection of the Dip A-1 Entry. We continued down this entry to the face, in the last room of which we discovered such conditions as led us to the conclusion that this might have been the place in which the initial explosion had taken place. In order to make clear to you the manner in which we arrived at this conclusion, it is necessary to explain the method of driving the entry and Aircourse at this point, which method was entirely different to that employed elsewhere throughout the mine, and one which is certainly not to be commended in any mine.

The Rooms were turned to the left off 1st Entry, which should have been the Air Course, according to general practice.

The Aircourse was maintained by driving a line of Break-throughs from one Room to the other, and ine line with each other. This system necessitated the use of either doors or Brattice Cloth on each Room. There are four rooms driven on 120 ft. centers. This last room is driven several feet beyond the Break-throughs or so-called Air-course. The first cut

was being made directly in front of the Aircourse, as if to continue the same towards the next room. A shot had been fired in the left side of this cut, the hole pointing directly into the Aircourse.

The shot was on the solid and had simply cracked the coal from the hole downward, and was undoubtedly a windy shot, blowing out into the Aircourse. On the nearest corner opposite the hole, charred dust was deposited, and about 20 to 25 feet outward in the Aircourse the ribs from floor to roof were blistered and coked, as if subjected to such heat as might be generated by the explosion of a keg of powder. In no other part of the mine did we find any indication of great heat on the ribs near the floor.

The Room neck and Entry showed indications of their having been considerable heat and force. Charred dust was deposited in the offsets, and the projections of the ribs were worn off on the inbye side. Traveling out along the Entry and Air Course, the evidence of the force having gone in that direction, increases. At the intersection of the Aircourse with the Dip B Entry, against the rib, we found the remains of a dinner pail and powder keg. A careful examination of the torn sheet of the keg disclosed the fact of its being a new keg, and that it had been ruptured by an internal explosion. This was in the direct path of the force coming out of the Aircourse of Dip A-1. Several kegs were found throughout the mine, some whole and some battered, but a careful examination of the latter, proved them

to be old, andnone were burst open by internal force.

A careful examination of each of the Rooms on the Dip A-1 Entry, disclosed more or less heat extending toward but not quite reaching the faces.

Following the Main Dip B Entries to the face, very little evidence of heat was visible, but a heavy deposittof soot covered every exposed part. In the last Break-through there had b been considerable heat, as indicated by the coked coal on the ribs.

The Left or Dip B-1 Entries showed indications of heat in each breakthrough, and for some distance on either side. The force traveled out from these two Entries to the Old Main Entry. At the intersection with the Main Entry is a sidetrack. An empty car had been standing at the mouth of the Dip B Aircourse. The car was hurled by the force across the loaded track to the opposite rib. The force divided at this point, a portion going out through the Old Main Entry to be exhausted in the Old Main workings, and out of the Tug River opening, the other turning, going upwards towards the face of the Main Entry and derailing three empty cars in its progress, on the sidetrack just mentioned, one of which had the side blown out.

The force was greatly diminished from this point to the face. The soot deposit was very heavy in the right-hand Aircourse.

A considerable increase of force was noticeable in the

lower end of No. 12 Entry and Aircourse. This was due probably to the fact that these entries were dry and might have had a heavy deposit of fine dust on the ribs at the moment of the explosion. There was no indication of there having been any flame at the face of the No. 12 Entry. On the bumper of the car at the face, there was found two 5 lb. powder flasks full of powder, and a roll of cartridge paper. These had been placed there by the miner preparatory to making a cartridge.

Rooms No. 15 and 16 on Eleven-1 Entry showed the effect of some heat on the ribs.

At the foot of No. 13 room, which is the connection between Eleven-1 and Eleven-2 Entries the projections are considerably worn on the inbye exposures, indicating that the force had increased here, owing to the contracted area at this point.

The force divided here, part going down Eleven-1 Entry toward No. 9 and the Old Main Entries, the other going up No. 13 Room.

At the head of 13 Room the Aircourse of Eleven-2 Entry had been headed through to 13 Room and was driven about sixty feet with the entry. A car in this place had both ends torn out in opposite directions, showing that a reactionary force had operated here. In one or two other places, there was some indications of reactionary force, but this is perhaps the best example. The track was worn up for some distance here. A heavy deposit of soot was deposited from Room 13 connection to the face of Eleven-2 Entry.

The rooms on this entry show more or less evidence of flame having passed through thr breakthroughs.

The greatest force in this Entry is in evidence near the Junction of the Entry with No. 11 Entry, and from this point outward it diminishes, becoming spent in the pillar workings of No. 9 Entry, where there is no indication of flame.

In our investigation of the mine, we found thattin several instances Entries and Rooms had been driven beyond the distances permitted by law between breakthroughs, and while we do not believe that this had any bearing or effect upon the explosion, it does show a disposition to neglect upon the part of the official upon whom this duty devolved. At the last visit of the District Mine Inspector no such violations of the law were noted or found.

We also found that there had been shooting upon the solid in several places, either of the whole cut or in part.

The greater portion of the coal in the affected area, was undercut by 7 foot Electric Machines, and in the majority of the places it was very evident, that there had been an attempt to shoot this cut down its full height, 8 ft., with two shots, one in each rib. We found that some of the miners had placed a center shot and two side shots. Many of the holes examined had been improperly placed and tamped with coal.

This mine was considered an especially safe one. No fire damp has ever been found, and though not a wet mine, it was not a dusty one. Owing to the undercutting of coal by machines,

there was undoubtedly a deposit of fine impalpable dust wherever it could find lodgment, and in suspension, throughout portions of the affected area, and this propagated the explosion, after the windy shot and exploded keg of powder referred to heretofore, had supplied the required force and heat, to put it in motion and distill its gases. The Company seem to have exercised vigilance and energy in prohibiting the miners from carrying kegs of powder into the mine, despite which, it would appear from our findings and the sworn testimony of one witness, one man did have a keg of powder in the mine in violation of the rules of the Company, and the law of the State.

It is evident to us that this explosion was due to the excessive use of powder, and the improper placing of the hole, and the violation of the law. The miners employed in the mines in this District are chiefly negroes, and ignorant unskilled foreigners, who have no conception of their own danger, or those about them, arising from the careless handling of powder, and the excessive charging of the holes.

A repetition of this deplorable calamity is possible at any time in the best conducted mine unless there are some changes in the method of blasting the coal. We therefore recommend for this and all other mines that the blasting of coal shall be done by shot firers, who shall have the entire charge of the placing of holes, and the amount of powder to be used, and that the shooting be done after the employees have retired from the mine. That all holes shall be tamped with clay. That the

ribs and top near the working faces of a machine mine be washed down with water at fixed intervals, and that the bug dust be loaded out before firing the shots, and for this particular mine, or any other where the coal exceeds six feet in height, that it shall be shot down in two benches.

In conclusion, we beg to report that the haulage and ventilation are thoroughly up to date. The fan produced 96,000 cu. feet at the last inspection of the District Inspector. The air was divided into two currents, and was well distributed throughout the workings.

Yours very respectfully,

(Signed) D. R. Phillips,

District Inspector.

Jan. 8th, 1909.

Lick Branch Mine Relief Committee,

Headquarters: Kelly & Moyer Building, Bluefield, W. Va.

Hon. W. E. GLASSCOCK,
Governor-Elect of West Virginia, Honorary President.

Hon. F. M. PETERS,
Mayor of Bluefield, W. Va., Honorary Vice-President.

Col. L. E. TIERNEY,
President Flat Top National Bank, Bluefield, Chairman.

JNO. J. LINCOLN,
Superintendent Crozer Land Association, Vice-Chairman.

L. G. TONEY,
President First National Bank, Northfork, W. Va., Secretary.

R. E. BOLLING,
Cashier Flat Top National Bank, Bluefield, W. Va., Treasurer.

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General Manager Pocahontas Coal and Coke Co., Roanoke, Va.

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Rt. Rev. P. J. Donahue,
Bishop of Wheeling Diocese, Catholic Church.

J. W. Edwards,
Postmaster, Welch, W. Va.

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Treasurer Thacker Coal and Coke Co., Elkhorn, W. Va.

Phillip Goodwill,
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Dr. H. D. Hatfield,
Physician, State Senator, Eckman.

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Judge United States Circuit Court, Southern District West Virginia.

N. D. Maher,
Vice-President and General Manager Norfolk & Western Railway, Roanoke, Va.

W. D. Ord,
Vice-Pres. and General Manager Empire Coal and Coke Co.

R. B. Parrish,
First National Bank of Northfork, Northfork, W. Va.

Rt. Rev. Geo. W. Peterkin,
Bishop of the West Virginia Diocese Protestant Episcopal Church, Parkersburg, W. Va.

W. A. Phillips,
General Manager Ashland Coal and Coke Co., Ashland, W. Va.

Chas. B. Reed,
Assistant Secretary, Bluefield.

Geo. A. Shirey,
Agent Castner, Curran & Bullitt, Bluefield, W. Va.

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Sheriff, McDowell County, Welch, W. Va.

Hugh Ike Shott,
Daily Telegraph, Bluefield, W. Va.

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General Manager Thomas, and Crystal Coal Companies, Godfrey, W. Va.

George Wolfe,
Superintendent, Berwind-White Coal Mining Co., Berwind, W. Va.

Rev. J. W. Ward,
Minister, Methodist Episcopal Church, Abingdon, Va.

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W. W. Coe.
F. M. Peters.
Wm. J. Beury, Secretary.
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N. H. Franklin,
L. G. Toney, Secretary,
George A. Shirey,
W. D. Ord.

Bluefield, W. Va., Feb. 24, 1909.

DEAR SIR—

On Tuesday, December 29th, 1908, at Switchback, West Virginia, seventeen miles west of Bluefield, an explosion occurred in the Lick Branch Mine of the Pocahontas Consolidated Collieries Company, Inc., resulting in the death of fifty-one employes. Operations were resumed in the mine on January 7, 1909, by permission of the State Mine Department, and on Tuesday, January 12th, another explosion occurred, causing the destruction of sixty-six more lives, making a total of one hundred and seventeen lost in the two accidents, only two weeks apart.

Switchback has, normally, a population of 1,000, and is a typical mining village, consisting of a store and houses, all owned by the Company. The employes of the Lick Branch Mine, and those of other mines of the same Company, located nearby, rent these houses, and live in them with their families, or as boarders.

From the statistics furnished by the Company, it is shown that fifty-three widows, and seventy-six children under 16 years are left without means of support; that fifty-seven of the victims were unmarried, but how many of these contributed to the support of parents or other relatives is unknown and must be developed; and that there were seven bodies that were unidentified, about whose relatives, consequently, nothing is now known, but about whom information is hoped to be obtained later.

The Company has paid the traveling expenses of relatives from their homes to Switchback, and return, and for the transportation and burial of the victims, and has thus far provided for the maintenance of the bereaved families residing in and near Switchback. Thus has the temporary relief situation been met.

The Lick Branch Mine Relief Committee has been organized in an endeavor to make some provision for the future of the sufferers from these disasters —to help them to re-establish themselves. The Company has contributed $5,000.00 to the fund, and subscriptions from other sources, aggregating about $3,000.00, have been received to date. The Relief Committee has recently been reorganized, and its plans and scope broadened, and now proposes to make a vigorous effort to collect a fund of at least $50,000.00, which it feels, after careful investigation, is most urgently needed to adequately provide for the destitute despondents.

The Committee begs to express its profound gratitude for the contributions already so generously made, and to earnestly appeal for the further assistance that it believes is necessary to prevent suffering, promising an honest systematic pro-rata distribution of the fund, and a full accounting to the public, certified by a disinterested auditing concern.

West Virginia can not cope with this situation unaided. It commands wide-spread attention, and the Committee feels assured that its appeal will be heard, and will receive a general and generous response.

All Checks should be made payable to the Lick Branch Mine Relief Committee, R. E. Bolling, Treasurer, Bluefield, W. Va. It is especially desired that the enclosed envelope be used.

Subscription Committee:

W. E. GLASSCOCK, Governor-Elect of West Virginia, CHAIRMAN.
WM. J. BEURY, General Manager Algoma Coal and Coke Co., SECRETARY.
W. W. COE, General Manager Pocahontas Coal and Coke Co.
B. F. KELLER, Judge of the U. S. Circuit Court, Southern District, W. Va.
F. M. PETERS, Mayor of Bluefield, W. Va.
W. H. THOMAS, General Manager, Thomas Coal and Coke Co.

REPORT OF THE MINE INSPECTOR FOR THE TERRITORY OF NEW MEXICO, to the Secretary of the Interior, Washington, D. C., for the year ending June 30, 1908.

JAHRBUCH FUR DAS BERG- UND HÜTTENWESEN, by C. Menzel. Published by Craz & Gerlach (Joh. Stettner), Freiberg, price 11 marks.

BIENNIAL REPORT OF COLORADO SCHOOL OF MINES, Golden, Colo.

NEW BRITISH COLUMBIA OFFICIAL BULLETIN No. 22. Handbook of British Columbia, Official Bulletin No. 23. Alberni District, British Columbia, Official Bulletin No. 24. R. M. Palmer, Secretary Bureau of Provincial Information, Victoria, B. C.

REPORT OF THE DIRECTOR OF THE MINT UPON THE PRODUCTION OF THE PRECIOUS METALS IN THE UNITED STATES DURING THE YEAR 1907. Published by Frank A. Leach, Director of the Mint, Washington, D. C.

THE EXPLOSION AT MONONGAH MINES, FAIRMONT COAL COMPANY, by Frank Haas, supplementing Annual Report of Operation, 1907. Fairmont Coal Co., Bulletin No. 11, Fairmont, W. V.

THIRD BIENNIAL REPORT OF THE COMMISSIONERS OF THE STATE GEOLOGICAL AND NATURAL HISTORY SURVEY OF CONNECTICUT, 1907-1908, Hartford, Conn.

STATE OF WEST VIRGINIA DEPARTMENT OF MINES, Bulletin 5. James W. Paul, Chief of Department of Mines, Charleston, W. Va.

UNITED STATES GEOLOGICAL SURVEY, WASHINGTON, D. C. The Production of Silver, Copper, Lead, and Zinc in the Central States in 1907, by L. C. Graton and C. E. Siebenthal. The Guadalupian Fauna, Professional Paper 58, by George H. Girty. Mineral Resources of the United States, Part I—Metallic Products. Part II—Non-Metallic Products. Bulletin 353, Geology of the Taylorsville Region, California, by J. S. Diller. Bulletin 358, Geology of the Seward Peninsula Tin Deposits, Alaska, by Adolph Knopf. Bulletin 359, Magnetite Deposits of the Cornwall Type in Pennsylvania, by Arthur C. Spencer. Water-Supply Paper 226, The Pollution of Streams by Sulphite Pulp Waste, a study of possible remedies, by Earle Bernard Phelps. Geologic Atlas of the United States, Accident—Grantsville Folio, Maryland-Pennsylvania-West Virginia.

REPORT OF THE MINING AND METALLURGICAL INDUSTRIES OF CANADA, 1907-8. Issued by the Department of Mines of Canada, Dr. E. Haanel, Director, Ottawa, Canada, price $1. This report has been issued to meet the increasing demand made upon the Department of Mines for information on the mining and metallurgical industries of Canada from all parts of the world. The work comprises 936 pages of text, descriptive of all the metallic and non-metallic mineral mines; and metallurgical and clay industries in the Dominion, illustrated by 144 engravings and drawings, and mineral maps of the respective provinces.

A brief historical sketch prefaces the industrial review of each province, and a description of the magnitude, equipment, and mode of operation of every important mine and plant mentioned is given, together with the capitalization and personnel of each organization or company.

COPPER RESOURCES OF CALIFORNIA, Bulletin No. 50 of the California State Mining Bureau, Ferry Building, San Francisco, 366 pages, handsomely illustrated and neatly bound, price $1.20. This Bulletin furnishes a description of the different copper mines in the state, together with their location, names of owners and their addresses. Maps and descriptions of the new copper districts are also included.

STORAGE BATTERIES, by A. E. Watson, E. E., Ph. D. Published by Bubier Publishing Co., Lynn, Mass., U. S. A., and H. Alabaster Gatehouse Co., London, England, 135 pages, 48 illustrations, price $1.50. This book contains a short history of the Plante and Faure types of storage cells; a simple explanation of the action of the cells; and directions for making them. Instructions are provided for setting up a battery, for charging and discharging it, and for its proper maintenance. The connections of the battery, the dynamo, and auxiliary apparatus are shown. The modern types of storage batteries are described and their applications to commercial work set forth.

Removal of the Coal Duty

*Written for "Mines and Minerals," by F. A. Hill**

When General Hancock was a candidate for President of the United States, he said that the question of the tariff was largely local, and was generally laughed at. We have learned since, however, that it is true, and at the present time, the removal of duty on coal will affect the coal-mining industry of Washington, Montana, Wyoming, and Oregon, and do serious harm to the industry, especially in Montana and Washington.

*Consulting Engineer, Seattle, Wash.

The imports of coal into the United States during 1907 were 2,1[illegible]3,711 tons of which British Columbia shipped in 651,076 tons or 30.9 per cent. of the total. San Francisco receives annually outside of that shipped in by British Columbia, 350,000 tons or 16.7 per cent. Boston received 545,652 tons or 25.9 per cent. while all other points received 551,983 tons or 26.5 per cent. From this it will be seen that 47.6 per cent. of the total imports of coal into the United States comes in competition with the coal mined in the above-named states but principally with the Washington production.

The class of labor employed in the Vancouver Island mines of British Columbia in 1907 was as follows:

Kind of Employment	*Number*	*Per Cent.*
Whites, supervision and clerical	117	3.1
Miners	1,160	30.8
Miners' helpers	440	11.7
Laborers	632	16.8
Mechanics and skilled labor	314	8.3
Boys	166	4.4
Japanese	174	4.6
Chinese	743	19.7
Indians and Hindus	23	.6
Total	3,769	100.0

There is no Asiatic labor employed in the Washington mines—and but few boys, hence 29.3 per cent. of the labor in the Vancouver Island mines receives about one-half that paid for like service in the Washington mines. This means that 29.3 per cent. of the labor of those mines is paid $1.35 to $1.75 per day as against $1.75 to $2.75 per day. To miners' helpers, laborers, and skilled labor, the Washington mines pay 10 to 15 per cent. more for like service than do the Vancouver mines.

In 1903 the average earnings of employes in the Washington mines was $2.46 per day, in 1907 it was $3.19 per day, the former pay being for 10 hours' work, the latter pay for 8 hours' work. Hence in 3 years' time, wages advanced 30 per cent. while hours decreased 20 per cent.

With the exception of the Northwestern Improvement mines in the Roslyn district, of Washington, the coal mines of the state of Washington are very costly and difficult to operate, due to the very faulted and contorted formations. For instance it is rare to have 2,500 feet of unbroken veins to extract coal from. Where the coal is found regularly and in unbroken beds, the folding of the measures has made the coal very brittle, or has squeezed the coal veins so that most of the commercial coal comes out about 20 per cent. lump, 10 per cent. nut and the balance pea or slack. All the coals have to be washed. In point of quality the Washington coals are very much lower in British thermal units than the British Columbia or Alberta coals and hence are of lower commercial rank.

The cost of mining coal in Washington from the commercial mines is from $1.70 to $2.40 per ton, while the cost in British Columbia and Alberta is from $1.10 to $1.60 per ton.

The large coal mines of Vancouver Island in British Columbia are located on tide water or, connected with it by short tracks while those of Washington are located inland and have a rate of from 50 cents to $1.25 per ton to tide water. The Vancouver Island mines ship to Puget Sound points at a rate of 75 cents per ton. The Crows Nest Pass district, of British Columbia and Alberta, have a freight rate into Spokane, Washington, of $2.50 to $3.15 per ton while the Washington mines pay from $2.50 to $3 per ton.

The investment required to produce coal in Washington is from two to five times greater than that needed in the country east of the Rockies.

The exports of coal from the United States to Canada in 1907 were about 8,000,000 tons, of which fully 95 per cent. went into Canada via the Great Lakes or water transportation, costing about 65 cents per ton from Ohio points on the lakes into Canada.

From Ottawa to Winnipeg there are no coal mines and the United States mined coal in that stretch of country has every advantage over the Canadian mined coal in point of distance from the markets and water transportation.

It is estimated by those who know, that the loss to the mine employes of the state of Washington will be more than $2,500,000 annually if the duty is removed, as it will be impossible to maintain the present scale of wages and compete with the foreign-mined article.

Alberta and British Columbia mine owners are the only ones shouting hard to have the duty removed. It has been shown that no benefits would accrue to the mines of the United States by reciprocity, as the Pittsburg district, furnishing most of the coals going into Canada, is protected by prohibitive distances. The coal mines of Canada lying on the extreme east and west of that country, hence cannot compete with the United States mines.

The removal of duty will not be of any benefit to any section of the country, and will work a serious injury to the industry in the states of Washington and Montana.

LICK BRANCH DISASTER

A Description of the Mine, and Reports of the Mining Inspectors and Others Who Investigated After the Two Explosions

Written for "Mines and Minerals," by H. H. Stoek

The Lick Branch Mine is located in McDowell County, West Virginia, on the main line of the Norfolk & Western Railway, near Switchback, 19 miles east of Welch, and 17 miles west of Bluefield, West Virginia, so that it is about in the center of what is known as the Pocahontas region. According to report of the Chief of the Department of Mines, the mine has a producing capacity of 3,000 tons per day, but owing to the business depression it was not working to more than one-third its capacity.

The Lick Branch colliery was opened about 1889 by Mr. Stuart M. Buck and Mr. E. S. Hutchinson, and is therefore one of the oldest colleries in the Pocahontas region.

The colliery now belongs to the Pocahontas Consolidated Collieries Co., Inc., and is one of the collieries formerly composing the Norfolk Coal & Coke Co., which company combined with the Shamokin, Caswell Creek, Sagamore, and Cherokee collieries in 1904, to form the Pocahontas Consolidated Co. In 1907 the Pocahontas Consolidated Co., owning the properties noted above and all located west of the Elkhorn tunnel, combined with the Pocahontas Collieries Co., which owned the old Pocahontas Mine, Pocahontas, Virginia, to form the Pocahontas Consolidated Collieries Co., Inc. The officers of this company are: President, Isaac T. Mann, Bramwell; Vice-President, Charles S. Thorne, New York; Second Vice-President, Jenkin Jones, Freeman, W. Va.; General Manager, James Ellwood Jones, Switchback. The company has two engineering offices, one located at Pocahontas for the collieries east of the mountain, under Mr. H. B. Wright, and another at Maybeury for the collieries west of the mountain, under Mr. A. H. Stow. George E. Atkinson was general inside superintendent and Cleve Bowers, mine boss, at the time of the explosion.

There are three drift openings to the mine, two, *A* and *C*, Fig. 1, being on branches of Elkhorn Creek and about half a mile apart, and another, *B*, on the Indian Grave branch of Tug River. *A* is connected with a tipple by a tramroad about half a mile long, and the opening *C* is also connected with the tipple by tramroad which switchbacks to the tipple about as shown in the plan Fig. 1. The tipple has a storage capacity of 500 tons of run-of-mine coal, and an adjoining bin has an equal capacity for slack coal which is used in the coke ovens, of which there are 192 at this plant, and all of which were in blast at the time of the accident.

The mine was developed by two main headings parallel to each other and about 2,000 feet apart. The drift *A* which was the original opening, had been extended through the mountain until it opened by the drift *B* upon Tug River. This is known as the Old Main, or Turkey Gap, entry and the workings tributary to this Old Main entry are known as the *Old Mine*. The Old Mine was worked double entry up to the Tug River opening and beyond that point three entries were used as shown by the map. The portion of the Old Mine near the entry mouth *A* had been worked out and the pillars drawn.

The drift *C* was opened in connection with the Old Mine, but about 4 years ago new workings were developed from it, and this portion is now known as the *New Mine*. The old and new mines are connected by occasional pairs of entries for purposes of ventilation only, and aside from this the two mines are operated independently. The connecting entries between the New Mine and the old goaves were closed by falls so that the only connection between the mines was toward the inside or Tug River end.

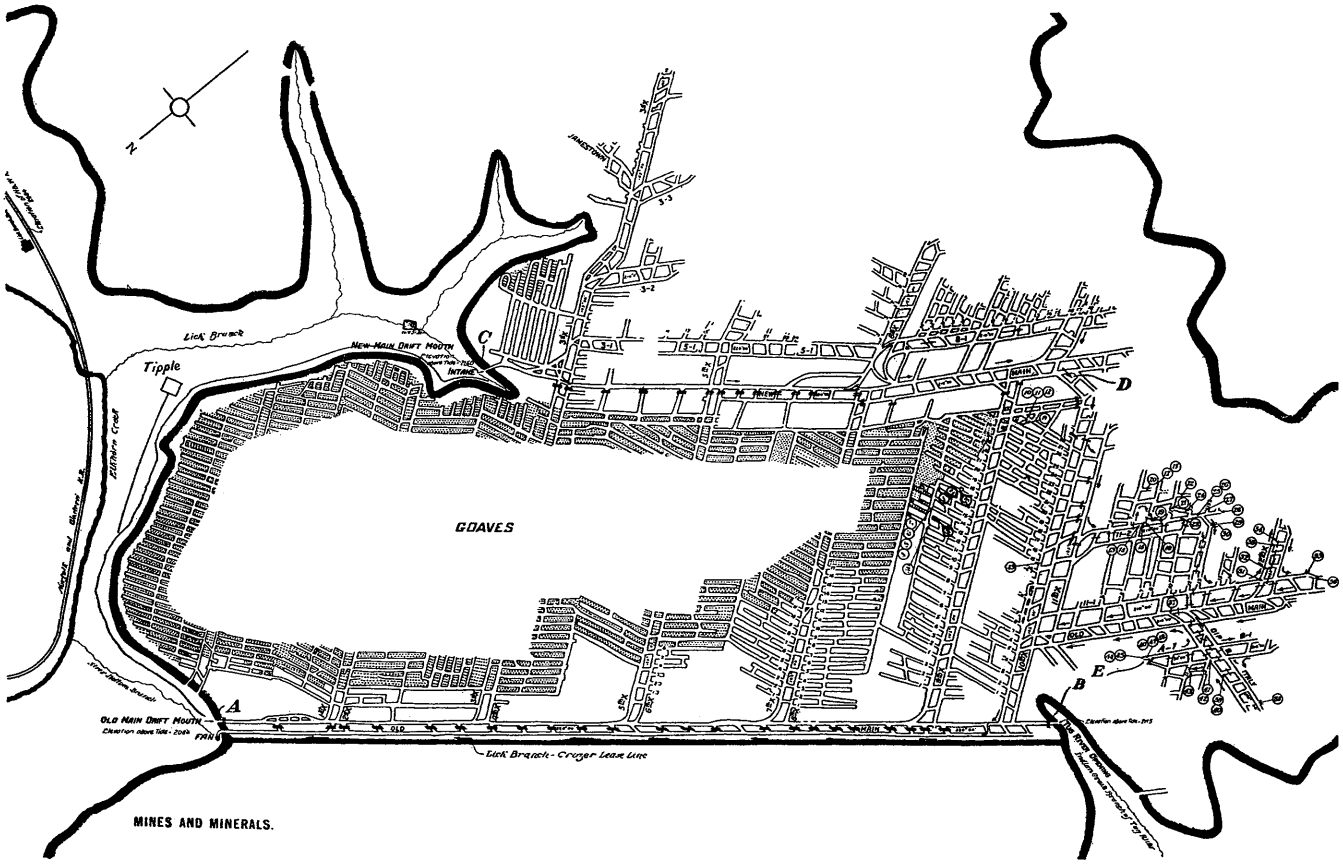


FIG. 1. MAP OF LICK BRANCH MINE, SHOWING LOCATION OF FIRST EXPLOSION

The general plan of work as shown in Figs. 1 and 2 consisted in driving pairs of cross-entries from the main entries, with rooms driven from these cross-entries. The general plan of work in the new sections contemplated driving the cross-entries to the limit and bringing back the coal retreating in panels, but owing to the necessity for getting an output to keep the mine running while developing the newer method, some of the panels had been started nearer the main entries than the general plan calls for and it will be some time before the full system of working retreating can be put into operation. The stoppings were rock-and-slate wall about 8 feet thick and laid in mortar of sand and cement on the entry side; some timber stoppings were also used.

The fan located at *A*, but not in line with the return airway, is 6 ft. × 18 ft. in size, of the Guibal type, and was made at the shops of the company. It is driven by a 100-horsepower, General Electric motor and gave a reading just inside of the drift mouth *C*, on Friday, December 25, several days before

the first explosion, of 101,000 cubic feet of air. The opening *B* and *C* are intakes. The air entering through *C* ventilates the New Mine and splits from it go through some of the old workings in the Old Mine. The main part of the current entering through *C*, however, traverses the workings nearest the intake of the New Mine and then goes to the face of the New Main entry and back to the third right and then passes by the No. 10 entries into the Old Mine and there joins the air coming through the drift *B*.

The air for the right-hand workings was taken in at the Tug River opening, and conducted up all of the right-hand workings of the Old Mine, distributed through the face and back through all of these workings, and then connected with a current from the New Main at the heading of No. 10 entry; both currents then flow back from that point to No. 9 and No. 8 entries, and return down the Old Main air-course to the fan.

The coal worked is the Pocahontas No. 3 seam, which was 8 feet 2 inches thick of clean coal without any binder or hard streaks to interfere with blasting. There is an excellent slate roof above the coal and very few props were needed. The bottom is a hard slate, so that mining has to be done in the coal.

The drill holes are put in with a bit auger varying from 2 to 2¼ inches in diameter; the holes being placed about as shown in Fig. 3.

According to Inspector Phillips 18 to 20 inches of powder was supposed to be put in the center hole and 14 inches in the rib holes, but these amounts were no doubt often exceeded. Coal slack was used for tamping. The miner was paid by the car and not by weight.

The mine was worked with open lights, and according to the reports of the mine inspector, as given in Bulletin 3, of the State Department of Mines, no gas had been found in the mine; in fact the entire region about Lick Branch has been reported and universally considered as non-gaseous. The mines are all above water level; many of them have the outcrop extending for a long way around the mountain and up the creek, and many, like the Lick Branch Mine, have the entries driven through the mountain from valley to valley, so that there is excellent opportunity for any gas that might be present to drain off.

Pumps were not required in the mine, but in low parts of it, even in the winter season, there was standing water.

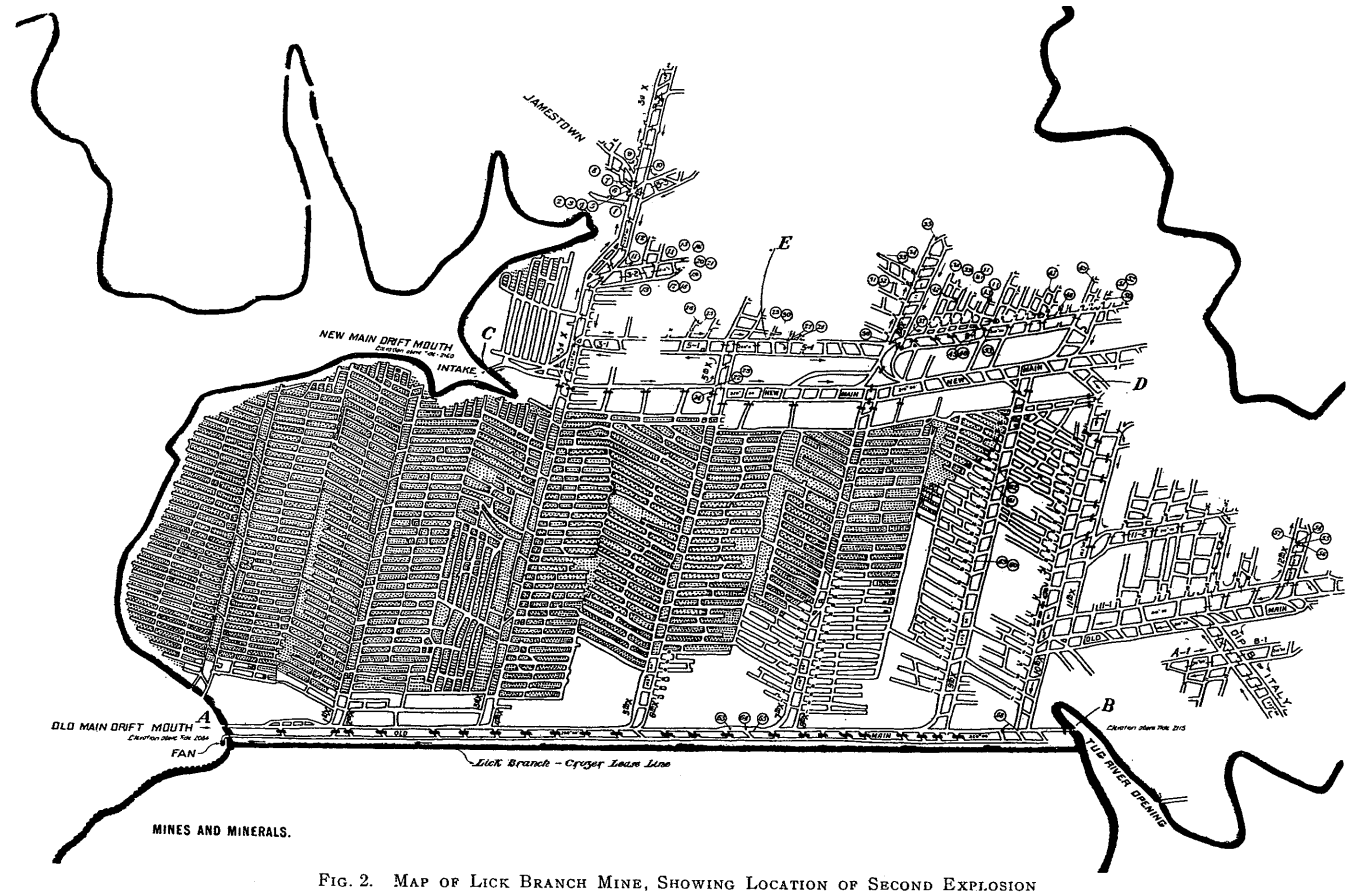


FIG. 2. MAP OF LICK BRANCH MINE, SHOWING LOCATION OF SECOND EXPLOSION

An analysis of coal from the Lick Branch colliery as given in Volume II-A of the West Virginia Geological Survey, is as follows:

Moisture	.0190
Volatile	17.1500
Fixed carbon	77.0000
Ash	5.6600
Sulphur	.5300
Phosphorus	.0035
British thermal units	14,984

Black powder was used throughout the mine, and the coal was mined both by hand and with five electric machines.

The general method of mining in the Pocahontas region was followed, that is, a 7-foot undercut 4 inches high, made with the machine, or a hand cut about 3 to 5 feet deep and a 20-inch snubbing. The same difficulty was experienced at the Lick Branch Mine as prevails in other sections of the Pocahontas region, that is, the tendency of the miner to blast off the solid with too little or no undercut and to use an excessive amount of powder so as to bring down the thick coal with as little drilling as possible. The mining companies are, however, making a determined effort to break up this practice, and a number of men have been arrested and fined for solid shooting.

Electric haulage was used on the main and cross-entries throughout the mine, and in the New Mine gathering locomotives took the coal from the faces. Mules were used in the rooms in the Old Mine.

The mine was last examined by District Inspector D. R. Phillips, August 25, 1908. At that time there were working in the mine 10 pick miners, 40 machine men, 35 day hands inside and 16 outside. The inspector reported the ventilation as good; the drainage, timbering, and machinery as O. K.; no gas; oil used O. K.; general safety O. K.; and no recommendations were made.

On Wednesday, December 29, about 3 o'clock in the afternoon, an explosion occurred in the Old Mine. There were about 70 men in the mine at the time, and of these 50 were killed. None of the men in the New Mine were killed, and a number working in the Old Mine also escaped. The effect of the explosion at the surface was very slight, and the interior of the mine was only slightly damaged. There were very few falls of roof, and aside from a disarrangement of stoppings, the occasional destruction of a car and a slight movement of short sections of track, the interior of the mine was not injured. The New Mine was not injured at all.

Relief parties were at once organized under the direction of Mr. J. E. Jones, General Manager, until the arrival, the same evening, of State Mine Inspectors Phillips, Grady, Warner, and Henry, who, in accordance with the practice in West Virginia in such cases, took charge of the relief work. As the fan was not injured in any way, it was possible to enter the mine very soon after the explosion. Mr. John Laing, Chief of the Department of Mines, was in New York when the explosion occurred, but he came at once to Lick Branch and took charge. By 7 P. M. of December 13, 49 bodies had been recovered and the remaining body was found the following day.

After the removal of the bodies an examination of the mine was made to determine the cause of the explosion (1) by the State Inspectors in the interest of the State Inspection Department, (2) by Mr. J. W. Paul, formerly Chief of the Department of Mines of West Virginia, but now connected with the testing station of the United States Geological Survey at Pittsburg, and (3) on behalf of the Pocahontas Consolidated Collieries Co., Inc.; by Messrs. Stuart M. Buck, H. B. Wright, Audley H. Stow, connected with the Pocahontas Consolidated Collieries Co., Inc.; W. T. Williams, Chief Mine Inspector of the Pocahontas Coal and Coke Co.; J. E. Stewart, Car Commissioner; Benjamin Lewis, Superintendent Houston Coal Co., and C. E. F. Burnley, General Superintendent of the Mill Creek Coal and Coke Co. No evidences of gas were found after the explosion, and the mine was found to be very little damaged. The bodies of most of the men killed were not badly mangled, showing that they had in most cases been suffocated by afterdamp.

To show that the effect of the first explosion did not extend to the New Mine, a door on one of the connecting entries near *D*, Fig. 1, was not blown down. The men at work in one section

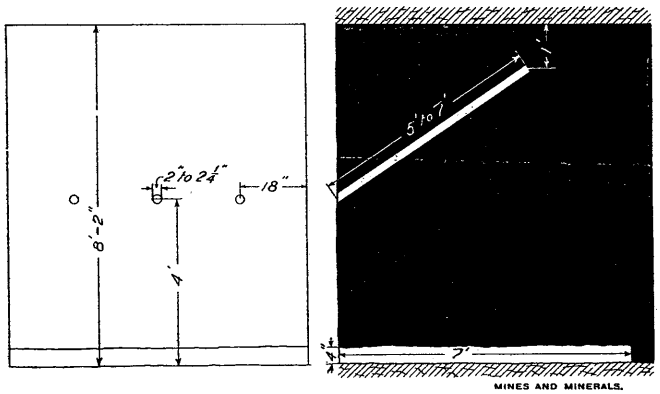


FIG. 3. METHOD OF PLACING HOLES

of the New Mine nearest the intake opening continued at work, one loading a car of coal and one firing a shot before coming out; and when they reached the surface they asked what was the cause of the excitement.

In connection with the cleaning up of the mine, a water car was taken throughout the mine and the road was being thoroughly sprinkled and the ribs washed down with water, when the second explosion occurred.

The coroner's verdict after the first explosion was that the men came to their death from causes unknown, and that no blame attached to the Pocahontas Consolidated Collieries Co., Inc.

Reports were made by Chief of the Department of Mines John Laing, and Deputy Inspectors Phillips, Grady, and Henry. These reports give considerable descriptive matter that has already been given above. There is also more or less duplication in the several reports. It will, therefore, be necessary only to give such parts as are not thus duplicated.

Mr. Laing says:

REPORT OF JOHN LAING, CHIEF OF THE DEPARTMENT OF MINES OF WEST VIRGINIA

"Any points of origin that may be named by myself or any of the deputies as the initial point will only be conjectural and must not be considered as final proof, for in my judgment there were so many places that could have been the point of origin, that I would not attempt to specify any particular place.

"The conditions as we found them were simply these: The miners seemed to be getting all the cars they could load, it being the holiday season and many of the men were not at work, and those who were in the mine were no doubt trying to get out as much coal as possible, and in their endeavor to do this, were taking advantage of the situation and using every possible means at their command to produce coal. As proof of this, in 75 per cent. of the working places in the mine, we found where both machine and pick miners had been shooting coal from the solid; although this was a strict violation of instructions from the District Mine Inspector, also of the regular mine rules posted at the mine. And it was proven at the coroner's inquest that the management had used every effort to stop this; but with a condition of this kind, when the height of coal is considered, and the number of tons that can be shot from the solid, particularly with experienced miners, I believe it is impossible to stop solid shooting; for some men rather than mine their coal, will drill their holes, charge them with powder, then wait for an opportunity when the officials are busy in another part of the mine to go in and shoot them; thereby keeping the air in the mine continually pregnant with an explosive mixture of gases. This mixture is always at such a temperature that a blown-out shot or a hole charged with too large a quantity of powder, would at once cause an explosion, especially in such a mine at this.

"After we, with a party of experts, had gone over the mine and failed to locate any particular point of origin I left Deputies D. R. Phillips and P. A. Grady at the mine and instructed them to go over it carefully and see if they could find or determine any supposed true origin of the cause of said explosion, and I attach herewith their reports.

"While I agree with them that room No. 7, off second right entry "*B*" (near the point marked *E*, Fig. 1) suggests itself very much as the point of origin, yet there were several other places that could have been the point of origin, and are just as suggestive. So long as men are permitted to do promiscuous shooting in this manner, we may always expect explosions of this kind. In my judgment such practice is courting such catastrophes.

"There is no doubt in my mind as to the principal cause of this explosion, which briefly is as follows: By careful inquiry I learned that a general practice in these mines, is for the miners to take a large quantity of dynamite in their powder flask under the pretence of it being powder, they also conceal fuse and dynamite caps on their persons; and it is impossible for any foreman, however strict, to keep in touch with practices of this kind, as these are the most dangerous explosives. It matters not how well a mine is ventilated, or how perfect the conditions are, so long as men are permitted to do their own shooting these catastrophes can be expected at any time, and at any season of the year in any mine. This explosion is only one of the many we will have throughout the state unless this Department be given absolute authority to demand that men thoroughly familiar with explosives be placed in all mines of a dangerous character, to be known as 'shot firers,' and that all shooting must be done at times between shifts, when all the workmen are out of the mine except the 'shot firers.'

"I mention this method of shooting to bring to your attention the utter disregard that both experienced and inexperienced miners have for the orders of this Department, and also for the rules as posted for the government and protection of all employes inside of a coal mine. The strength of a chain is its weakest link, so every man's life who enters a mine under the conditions referred to, is at the mercy of the most reckless miner. Many operators of this state are pursuing the policy today of using shot firers, both for the protection of life and property, and in addition they are getting in return a much better proportion of coal. There is nothing to be lost either to the operators or miners by a system of this kind, but everything to be gained by each.

"I have been asked by the Mine Investigating Committee to submit to that body what recommendations I could suggest to improve our mining conditions. There are many minor suggestions that I may take up, but the principal suggestions that I have to make are as follows:

"1. The employment of 'shot firers.'

"2. That all men in charge of the mines shall have a certificate of competency from the state before being permitted to hold such a position; by being drilled in the many dangers surrounding their calling, it will have much influence in carrying out the instructions of this Department. As it is now, nine-tenths of the mine foremen throughout the state seem to think they are being paid to deceive the mine inspector and will, if they hear of his presence (the mine inspector) in the district, work all night to remedy conditions in the mine to have the inspector report favorably. Then just as soon as the inspector leaves will pay no attention whatever to the safety of the mine, nor to any instructions the mine inspector may have given him, and at the same time will report to the manager that the mine is O. K. By forcing examinations of this kind referred too, the state will secure a much more intelligent class of foremen and will go far toward preventing mine accidents of all kinds.

"In conclusion with reference to the Lick Branch Mine and what is being done for its future safety, I will add, that this

company is installing a 4-inch water main throughout all of its principal headings, and leading from this will be a 2-inch pipe into all rooms and chambers. A large tank on the hill will supply the water to this pipe and give a 60-pound pressure. By this system all dust and dry places will be thoroughly wetted and dampened; which will add very much to the safety of the mine, but will by no means make it safe unless other precautions are taken in a like manner.

"It might be of interest to know that this explosion was of a local nature and was confined principally to that part of the mine known as 'Italy,' which is composed of Dip A-1 entry, Dip B-1 entry, Dip B entry, Old Main entry, 12 cross-entry, 11-2 entry, and No. 11 entry; all men who were in this part of the mine at the time of the explosion were killed; but the men in all other parts of the mine escaped practically unharmed after the explosion.

"A very fortunate part of this catastrophe was that the fan was equipped with four large relief doors, and when the explosion occurred these doors flew open thereby taking practically all force from the fan, consequently the fan never stopped running, and just as soon as a few brattices could be put up the air was at once put in motion around the mine and the work of rescue began."

REPORT OF DEPUTY INSPECTOR D. R. PHILLIPS

(The Lick Branch Mine is in Mr. Phillips' district.)

Hon. John Laing,

Chief of Department of Mines:

DEAR SIR:—A superficial examination of the mine, developed the fact that the explosion was confined to the 11-1, 11-2, No. 12, and the dip entries, the forces exhausting in the No. 9 entry pillars in one direction and through the Tug River opening and down the Old Main entries in the other.

At the junction of the dip B entry with the main, we found a heavy switch tie moved outwards about 4 feet at one end, and an examination of the sides showed that the forces had traveled outwards. This was more or less plain along this entry to the intersection of the dip A-1 entry. We continued down this entry to the face, in the last room of which (*E*, Fig. 1), we discovered such conditions as led us to the conclusion that this might have been the place in which the initial explosion had taken place. The method of driving the entry and air-course at this point, was entirely different to that employed elsewhere throughout the mine, and one which is certainly not to be commended in any mine. The rooms were turned to the left off the 1st entry, which should have been the air-course, according to general practice. The air-course was maintained by drilling a line of break-throughs from one room to the other, and in line with each other. This system necessitated the use of either doors or brattice cloth on each room. There are four rooms driven on 120-foot centers. The last room is driven several feet beyond the break-through or so-called air-course. The first cut was being made directly in front of the air-course, as if to continue the same toward the next room. A shot had been fired in the left side of this cut, the hole pointing directly into the air-course. The shot was on the solid and had simply cracked the coal from the hole downward, and was undoubtedly a windy shot, blowing out into the air-course. On the nearest corner opposite the hole, charred dust was deposited, and about 20 or 25 feet outward in the air-course the ribs from floor to roof were blistered and coked, as if subjected to such heat as might be generated by the explosion of a keg of powder. In no other part of the mine did we find any indication of great heat on ribs near floor. The room neck and entry showed indications of there having been considerable heat and force. Charred dust was deposited in the offsets, and the projections of the ribs were worn off on the inbye side. Traveling out along the entry and air-course, the evidence of the force having gone in that direction increases. At the intersection of the air-course with the dip B entry, against the rib, we found the remains of a dinner pail and powder keg. A careful examination of the torn sheet of the keg disclosed the fact of its being a new keg, and that it had been ruptured by an internal explosion. This was in the direct path of the force coming out of the air-course of dip A-1. Several kegs were found throughout the mine, some whole and some battered, but a careful examination of the latter, proved them to be old, and none were burst open by internal force.

A careful examination of each of the rooms on the dip A-1 entry, disclosed more or less heat extending toward but not quite reaching the faces. Following the main dip B entries to the face very little evidence of heat was visible, but a heavy deposit of soot covered every exposed part. In the last break-through there had been considerable heat, as indicated by the coked coal on the ribs.

The left of dip B-1 entries showed indications of heat in each break-through, and for some distance on either side. The force traveled out from these two entries to the Old Main entry. At the intersection with the main entry is a side track just inside of 37, an empty car had been standing at the mouth of the dip B air-course. The car was hurled by the force across the loaded track to the opposite rib. The force divided at this point, a portion going out through the Old Main entry to be exhausted in the Old Main workings, and out the Tug River openings, the other turning, going up toward the face of the main entry and derailing three empty cars in its progress, on the side track just mentioned, one of which had the side blown out. The force was greatly diminished from this point to the face. The soot deposit was very heavy in the right-hand air-course.

A considerable increase of force was noticeable in the lower end of No. 12 entry and air-course. This was due probably to the fact that these entries were dry and might have had a heavy deposit of fine dust on the ribs at the moment of the explosion. There was no indications of there having been any flame at the face of the No. 12 entry. On the bumper of a car at the face, there were found two 5-pound powder flasks full of powder, and a roll of cartridge paper. These had been placed there by the miner preparatory to making a cartridge.

Rooms No. 15 and No. 16 on 11-1 entry showed the effect of some heat on the ribs. At the foot of No. 13 room, which is the connection between 11-1 and 11-2 entries the projections are considerably worn on the inbye exposures, indicating that the force had increased here owing to the contracted area at this point. The force divided here, part going down 11-1 entry toward No. 9 and the Old Main entries, the other going up No. 13 room. At the head of No. 13 room the air-course of 11-2 entry had been headed through to No. 13 room and was driven about 60 feet with the entry. A car in this place had both ends torn out in opposite directions, showing that a

FIG. 4. OLD MAIN DRIFT MOUTH, LICK BRANCH MINE

reactionary force had operated here. In one or two other places, there were some indications of reactionary force, but this is perhaps the best example. The track was torn up for some distance here.

A heavy deposit of soot was deposited from 13 connection to the face of 11-3 entry. The rooms of this entry show more or less evidence of flame having passed through the break-throughs. The greatest force in this entry is in evidence near the junction of the entry with No. 11 entry, and from this point outward it diminishes, becoming spent in the pillar workings of No. 9 entry, where there is no indication of flame.

In our investigation of the mine, we found that in several instances, entries and rooms had been driven beyond the distance permitted by law between break-throughs, and while we do not believe that this has any bearing or effect upon the explosion it does show a disposition of neglect upon the part of the official upon whom this duty devolved. At the last visit of the District Mine Inspector no such violations of the law were noted or found. We also found that there had been shooting upon the solid in several places, either of the whole cut, or in part.

The greater portion of the coal in the affected area, was undercut by 7-foot electric machines, and in the majority of the places it was very evident, that there had been an attempt to shoot this cut down its full height, 8 feet, with two shots, one in each rib. We found that some of the miners had placed a center shot and two side shots. Many of the holes examined had been improperly placed and tamped with coal.

This mine was considered an especially safe one. No firedamp has ever been found, and, though not a wet mine, it was not a dusty one. Owing to the undercutting of the coal by machines, there was undoubtedly a deposit of fine impalpable dust wherever it could find lodgement, and in suspension,

throughout portions of the affected area, and this propagated the explosion, after the windy shot and exploded keg of powder, referred to heretofore, had supplied the required force and heat to put it in motion and distil its gases. The company seemed to have exercised vigilance and energy in prohibiting the miners from carrying kegs of powder into the mine, despite which, it would appear from our findings and the sworn testimony of one witness, one man did have a keg of powder in the mine in violation of the rules of the company, and the law of the state.

It is evident to us that this explosion was due to the excessive use of powder, and the improper placing of the hole, and the violation of the law. The miners employed in the mines in this district are chiefly negroes and ignorant unskilled foreigners, who have no conception of their own danger, or those about them, arising from careless handling of powder and the excessive charging of holes.

A repetition of this deplorable calamity is possible at any time in the best conducted mine, unless there are some changes in the method of blasting the coal. We therefore recommend for this and all other dry mines, that the blasting of coal shall be done by shot firers, who shall have the entire charge of the placing of holes, and the amount of powder to be used, and that the shooting be done after the employes have retired from the mine. That all holes shall be tamped with clay. That the ribs and top near the working faces of a machine mine be washed down with water at fixed intervals, and that the bug dust be loaded out before firing the shots, and for this particular mine, or any other where the coal exceeds 6 feet in height, that it shall be shot down in two benches.

In conclusion we beg to report that the haulage and ventilation equipment are thoroughly up to date. The fan produced 96,000 cubic feet at the last inspection of the district inspector. This air was divided into two currents, and was well distributed throughout the workings.

D. R. PHILLIPS,
District Inspector.

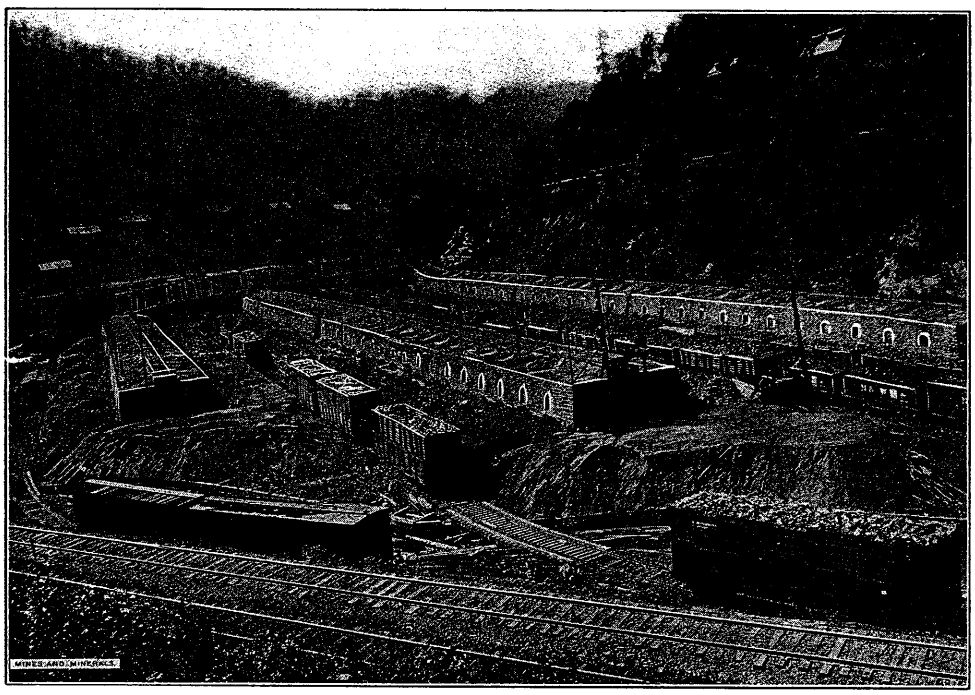


FIG. 5. COKE OVENS AT LICK BRANCH MINE

REPORT OF P. A. GRADY

Deputy Inspector P. A. Grady reported in part as follows:

"The explosive used was black powder and judging from the way a great number of holes were found drilled and the condition of the coal when shot down, it must have been used in very excessive quantities when considering it from any standpoint of safety.

"Where undermined, the coal is generally shot down by a row of single shots across the face. In the entries, three holes are drilled to do the work. These holes are started in about 5 feet 4 inches from the bottom and inclined upwards until the end of the hole is about 7 feet 8 inches from the bottom. The rib holes in a number of places I found inclined into the solid coal.

"From information gained in and out of the mine, I have learned that the amount of powder used in the middle or 'heaving' hole of an entry equals a cartridge 1¼ inches in diameter and 4 feet long.

"The holes drilled are from 6 to 7 feet long and the amount of tamping used, which is the coal slack of the mine, in one of these holes very often offers a less resistance to the powder in exploding than that which it has to exert in breaking through the 7 feet 8 inches which the end of the hole is from the bottom.

"At present the mine is being developed on the 2- and 3-entry system. Rooms are turned off these entries on 120-foot entries. Even though break-throughs would be driven as required by law and no brattice used to conduct the air, the faces of those break-throughs would go a considerable distance ahead of ventilation before cutting through such thick pillars. This system of working a mine with such thick pillars should be condemned as it allows the working faces to advance too far ahead of ventilation.

"In many places I found the faces advanced a considerable distance ahead of the last break-through through which the ventilation was conducted and in making the examination of the mine, I could not find any evidence that brattice had been used to conduct the air to these faces.

"The mine cannot be considered as a dry and dusty one, but, I do think that enough dust is held in suspension in the atmosphere of the mine, from the cutting of the coal and the promiscuous shooting that was being done, to help propagate an explosion once it was started.

"To prevent a recurrence of such a disaster I would recommend that the use of black powder and all high-flaming explosives be prohibited, that the coal be double shot or sheared in addition to having it undercut so as to reduce the excessive use of the explosive used, and have the air conducted to the working places to keep them well ventilated."

The report of Inspector Henry agrees with the conclusions given in the other reports. He recommends the use of safety explosives in all dry dusty mines, the prohibition of solid shooting, and where black powder is used the employment of shot firers to have charge of the placing and loading of the holes, as well as the firing after the men are out of the mine. Clay tamping is recommended and the watering of dusty sections of the mine.

The reports of the experts who examined the mine agreed in locating the explosion in the Old Mine and attributed it to a blown-out, overcharged shot in the section of the mine known as "Italy."

On January 5 permission was given by the State Mine Inspector in charge of the mine for the company to resume mining in the new part of the mine at the same time that the old part was being cleared up. The work being carried on in the old portion consisted of repairing and making permanent the temporary brattices, the washing down and loading out of the dust and repairing the tracks. It will be recalled that the New Mine was not injured by the first explosion. Open lights were used in the New Mine and the electric locomotive was used to haul the coal, in fact the locomotive was used almost immediately after the first explosion to bring the bodies out of the mine.

At 8:40 A. M., on Tuesday, January 12, another explosion took place, this time in the New Mine, and much more violent than the first, as the result of which 65 men were killed: this being all but one of those in the mine. Foreman Bowers was near the Tug River drift at the time of the explosion. He first felt a blast of cold air that knocked him down and the fall broke two of his ribs, then came a blast of hot air and afterdamp, but by crawling along the bottom he was able to reach the Tug River drift mouth. A man who was with him when he first fell seems to have been overcome by the gas very quickly and did not reach the drift mouth, but was found in the water standing in the ditch along the road.

The force of the second explosion was much greater than the first, and mine timbers were blown from drift *B* across the ravine to the mountainside 500 feet away. Smoke and flame also came out of the same drift mouth and blackened the opposite mountainside. The cars and road inside of the mine were badly wrecked, and a great deal of damage was done to the interior of the mine. As was the case in the first explosion, however, the fan was uninjured owing to its not being in the line of the airway and to the use of explosion doors.

According to Mr. Laing's report, see Fig. 2, "the ventilation of the mine at this time was conducted by one intake. The air entering at the New Main drift was conducted to the face of 3d X entry, and then back to 5th X entry, through 5-1 entry to the face of 8th X entry; then through 8-1 entry to its face; then to 11th X entry, through 11-2 to 12th X entry, and then back to the Old Main entry, to dip B or 'Italy,' to face of B-1, and then again back to Old Main entry and to 10th X entry, and from there through Old Main entry to the fan, Fig. 2." As the fan was not wrecked, rescue parties were able to very quickly enter the mine, at first under the direction of General Manager Jones, and as soon as they reached the mine, of Inspectors Phillips and Nicholson. Mr. Laing, Chief of the Department, reached the mine as soon as possible from Charleston and took charge of the work of rescue, assisted by Deputy Inspectors Phillips, Nicholson, Grady, and Henry. By 4:25 o'clock on Friday, January 15, all of the bodies had been removed, 65 in number. The bodies most mutilated were found on entries 8 and 8-1. Many of the bodies were badly mutilated in the New Mine, but in the Old Mine death was evidently due to afterdamp.

A systematic examination of the mine was immediately begun by the Chief and Deputy Inspectors, and Mr. Krebs, Mining Engineer for the State Department of Mines; by Mr. J. W. Paul, and Mr. J. W. Groves, from United States Geological Survey; and by Messrs. Wright, Connor, Stow, Burnley, Stewart, and Williams, for the Pocahontas Consolidated Collieries Co.

The coroner's inquest on the second explosion stated that the men came to their death from an explosion due to an overcharged shot of gunpowder in room 21 off 5-1 entry in what is known as the New Main entry, and the jury exonerated the company from all blame and responsibility for said explosion.

Reports have been made by Messrs. Laing, Phillips, Grady, and Henry as was the case after the first explosion, but as these reports include considerable descriptive matter already given, it will be necessary to give only the findings in regard to the second explosion.

REPORT OF CHIEF JOHN LAING

Mr. Laing says: "We found an overcharged hole in room No. 21, 5-1 entry, *E*, Fig. 2, which in our judgment was, in all probability the initial point of the explosion. This hole was bored on the left rib of the room, and was evidently tamped with slack coal. The coal was blown back from the face and across the room showing that considerable force was produced by the powder loaded in the hole. The dust adhering to the coal on the ribs, was charred and coked. Also the slack on the floor of the room was coked to a depth varying from ½-inch to 1-inch thick near the face of the room.

"There is a break-through started on the right of this room, at about 50 feet from the face of the room. In this break-through were found the bodies of two men (Nos. 29 and 30 on Fig. 2). These bodies were badly burned, their clothing having been burned off and their flesh seemed also to be burned. It would seem as if these men had gone into this break-through to seek refuge while firing the shot.

"The single line of force shown in this room and the direction taken from here, determined in our mind that this was the initial point of the explosion. The condition of 5-1 entry by its charred ribs and coked coal gave additional proof of the blown-out shot.

"The explosion passing down the room, began to distribute itself throughout various directions in the entry. One part of the force going down 5th X entry to 3d X entry. Another force going through 5-1 entry to 8th X entry and from there to 8-1 entry, and these forces going through the New Main entry to 11th X entry, and from there to the Old Main entry. Then along this entry to the Tug River opening and also to the fan entrance. Three bodies (Nos. 63, 64, and 65, see Fig. 2) were found in Old Main entry. One body (No. 58 see map) was found within 350 feet from Tug River opening.

"In studying the layout of the Lick Branch Mine we find that the method of working same was along practical lines, and evidently no expense was spared to bring the property to its greatest efficiency, both as to ventilation and the safety of its employes.

"It is an evident fact, that in mining this seam of coal, other means than pick mining must be employed that the blasting of the coal can be accomplished with a minimum amount of danger. In order to accomplish this I think that it is necessary to employ shot firers, who shall have charge and be responsible, not only for the firing of the shots, but for the quantity and quality of explosive used. Also that all holes should be tamped with clay. That in gaseous mines some safety explosive other than black powder be used. That the blasting as far as it is possible should be done between shifts, when the men other than the shot firers are out of the mine. Also that the dust from the machine cuttings should be first loaded out before firing the holes. There is no doubt that at present one of the most dangerous conditions in a mine is occasioned by the accumulation of coal dust."

The following analyses were made in the laboratory of the United States Coal and Coke Co., at Gary, W. Va., from samples taken from the Lick Branch Mine, January 22, 1909:

	Dust and Coal	Moisture	Volatile Combustible	Fixed Carbon	Ash
1.	Dust, face of dip 1 entry	1.13	16.35	62.64	19.88
2.	Dust, face 12 entry, Old Mine	.62	19.66	73.98	5.74
3.	Dust, head of 8-1 entry	.78	14.44	51.32	33.46
4.	Dust, roadway of straight 8	1.32	16.54	68.00	14.14
5.	Dust, head No. 11-2 entry	.30	17.10	60.70	21.90
6.	Charred coal, neck room 20, 8-1 entry	.62	17.12	76.40	5.86
7.	Charred coal, head of 11-2	.54	18.60	77.48	3.38
8.	Charred dust, from 1st cross-cut dip, B-1 entry	.56	16.66	75.98	6.80
9.	Charred coal, from head 12 entry	.46	16.22	76.90	6.42

GAS ANALYSIS

Sample	Location	CO_2	O	CO	CH_4	N and Moisture
1	8-1 entry		20.8			79.2
2	Face straight 8	.1	20.1			79.8
3	Head 11-2 entry	.6	19.9			79.5
4	Head 12 entry	.2	20.2			79.6
5	Dip 5-1 entry		20.0			80.0
6	25-room, 9 entry, Old Main	.3	19.9			79.8

CORRESPONDENCE

This Department is intended for the use of those who wish to express their views, or ask or answer questions on any subject relating to mining. Correspondents need not hesitate to write for supposed want of ability. If the ideas are expressed, we will cheerfully make any correction in composition that may be required. Communications should not be too lengthy, and personal reflections should be carefully avoided.

All communications should be accompanied with the proper name and address of the writer—not necessarily for publication, but as a guarantee of good faith.

The Editor is not responsible for views expressed by correspondents in this Department.

☞ *Correspondence should be in as simple language, and as free from technical terms and formulas as possible, consistent with clear solution.*

Questions on subjects not directly connected with mining will not be published.

Mine Fire—Endless Rope

Editor Mines and Minerals:

SIR:—In answer to mine-fire problem from Oklahoma, in MINES AND MINERALS for January, I would reverse the fan which would cause the smoke-laden air to ascend up the fiery shaft. If the fan is not reversible stop it, as the air heated from the fire will ascend up the shaft and away from the men, then get the men out through the escape shaft. When the men are out turn a large water spray down the shaft and such other things as conditions would suggest to a practical miner.

With regard to endless rope getting out of goose-neck grip on uneven grades, take a piece of three-quarter round iron, flatten one end and put two holes in it, leaving the other part round and bent over at the top like the sketch herewith. It will require some one to free it on the landing. Bolt it on the front end of the car if the grip is on the back end.

Pratt City, Ala. JAMES MEAGER, SR.

Value of Coal Land

Editor Mines and Minerals:

SIR:—Referring to the above letter the system spoken of is one of the many adaptations of the Pohle air-lift pump.

Owing to the fact that the air lift is so simple, the pump proper consisting of nothing more than an eduction pipe for the water and an air pipe, it is particularly adapted to handling water destructive to ordinary mine pumps, and in addition will handle muddy or gritty water without injury to wearing parts, as there is nothing in the way of moving parts connected with the apparatus outside of the air compressor.

The principal requirement is to have a proper ratio of submergence to lift, by which is meant that, given a lift of say 150 feet, the submergence, or depth, of bore hole below the pumping level should be 185 feet, and with the air nozzle or foot-piece submerged 175 feet, it would require .0062 cubic feet free per air minute at 80 pounds pressure for each foot-gallon of water pumped.

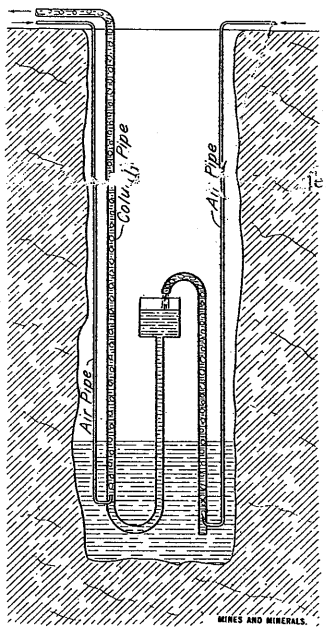
The Keystone Coal and Coke Co., Greensburg, Pa.,* have been using the air lift, on a large scale and under conditions so closely approximating those mentioned by your correspondent that we are inclined to believe that the Greensburg case is the one he has heard of. Their bore holes are 16 inches in diameter.

This method of pumping was also lately used to help unwater the Ellison shaft of the Homestake Mine, an account of it being given in the *Engineering News* early in the year 1908.

H. T. ABRAMS, Manager,
Pump Dept. Ingersoll-Rand Co.

Editor Mines and Minerals:

SIR:—I believe that the pumping system referred to above is simply an application of the usual Ingersoll air lift. I do not know of the Pennsylvania shaft in question, but have seen a similar scheme successfully worked elsewhere. A certain shaft was flooded recently when it was 260 feet deep. As far as is known a pocket of water was drilled into; at any rate the shaft filled rapidly until the water stood 40 feet from the top. In order to avoid the usual laborious method of lowering sinking pumps a lift at a time, it was decided to pump out as much water as was possible with an air lift. Accordingly a line of 8-inch spiral riveted pipe and a line of 2-inch common pipe were clamped to a wire rope and lowered into the hole. At the bottom the 2-inch pipe was put through the side of the large pipe and an elbow turned up inside it. When air was turned on the flow from the 8-inch pipe amounted to 1,500 gallons a minute, and rapidly lowered the water. The amount of air taken is not known; but was very much less than the 2-inch pipe would carry at 100 pounds pressure. As the water fell in the shaft the flow decreased, but the water was nevertheless pumped down until only 40 feet remained in the bottom, the steady flow amounting to 400 or 500 gallons a minute. They are now putting in pumps to take the rest of the water. I believe to help raise the water additional jets of air were turned into the column pipe. They were also talking about using two stages as shown in the accompanying sketch.



TWO-STAGE AIR LIFT

The water supply of the city of Salem, Ohio, is pumped from wells by the air-lift system. F.

Sealing Off a Fire

Editor Mines and Minerals:

SIR:—In answering the communication from an Oklahoma Reader in regard to sealing off a mine fire, I will say that I have had several experiences with mine fires in sealing them up, but I always sealed up the intake first, because it is impossible to seal up the outlet although the textbooks recommend it that way. These fires were all in very gaseous mines, but we never had any trouble.

Sesser, Ill. NELS JOHNSON

*An account of this plant will appear in MINES AND MINERALS in the near future.—EDITOR.

Newspaper Accounts

Dated

12/29/1908 - 01/17/1909

Many Men Trapped In Coal Mine

Score or More Believed to Be in Burning Shaft in West Virginia.

FOUR FOUND DEAD AND EIGHTEEN ALIVE

[By Associated Press to Gazette Times.]

BLUEFIELD, W. VA., Dec. 29.—Four men are known to be dead and probably 25 more were entombed as the result of an explosion which occurred in the Lick Branch colliery, owned by the Pocahontas Consolidated Coal Company, the largest coal mining concern in Southern West Virginia, this afternoon about 3 o'clock. It is not known exactly how many men were in the mine at the time.

The men leave the mine after what is known as the "run" and many of the 52 at work today were not in the mine when the explosion occurred.

At 11 o'clock tonight 18 of the entombed men had been taken out of the colliery alive. They had been stifled by the smoke and were not injured seriously enough to make their removal to a nospital necessary. State Mine Inspectors Philips, Henry, Werner and Grady who were in the Tug River field, came to the scene of the explosion and took charge of the work of exploring the mine.

The management of this property, it is claimed, had provided every device known to mining experience and science to insure safety, and it is thought that the trouble originated in an abandoned but connected working in the western division of the mine.

The little town of Switchback, in which all of the miners who work in the colliery live, was wild with excitement when the news spread that an explosion had taken place, and from all of the neighboring collieries men hurried to the scene to aid in the work of rescue.

A special train bearing the officials of the company was sent from Pocahontas to the scene.

VICTIMS

Of Mine Disaster

May Number Fifty Before Debris Is Cleared.

Twenty-Seven Dead Are Taken From Ruins,

And Eight Crews Are Still Making Explorations.

Heartrending Scene in West Virginia Village, Where Women and Children Crowd About Morgue.

SPECIAL DISPATCH TO THE ENQUIRER.

Bluefield, W. Va., December 30.—The scenes about the little village of Switchback, which has its being on account of the location of the Lick branch mines, were pitiful in the extreme as wailing women and weeping children crowded about the improvised morgue to which the bodies of the explosion victims were taken for identification and preparation for burial.

As each body was brought out the crowd would gather about it and sorrowfully identify the victim. Up to this hour 27 bodies have been recovered, and it is believed that the total list of the victims of yesterday's frightful explosion will reach half a hundred.

The work of recovery to-day resulted in 15 bodies being brought out, 12 having been recovered last night. There are eight crews of men engaged in the work of exploring and recovery, and these are ach ld by xperienced men in the mining business. There is a peculiar absence of the after gases that are usually found in mines wrecked by explosions, and the rescuing parties are usually put to serious inconvenience by them, but this mine is practically clear of such gases and the explorers can penetrate great distances ahead of the bratticing.

J. H. Hairston and Joe Estes, both colored, who were rescued alive, have died of their injuries. Sam Bateman, Jim Roane, John Hicks and Reed Mitchell are known to be dead, but their bodies have not as yet been recovered.

Ohio State Journal
December 30, 1908

12 MINERS DEAD, 25 YET ENTOMBED

Explosion Occurs in the Lick Branch Colliery, Near Bluefield, W. Va.

Eighteen Men Who Had Been Stifled by Smoke Are Taken Out Alive.

[By Associated Press to State Journal.]

BLUEFIELD, W. Va., Dec. 29.—12 men are known to be dead and probably 25 more are entombed as the result of an explosion which occurred in the Lick Branch colliery, owned by the Pocahontas Consolidated Coal company, the largest coal mining concern in southern West Virginia, this afternoon.

The men leave the mine after what is known as the "run," and but few of the 52 at work today were in the mine when the explosion occurred.

The Known Dead.

JAMES SMITH, colored.
CHARLES LITTLE, white.
UNIDENTIFIED RUSSIAN.

Late tonight 18 of the entombed men had been taken from the colliery alive. They had been stifled by the smoke and were not seriously injured.

State Mine Inspectors Phillips, Henry, Wernes and Grady have taken charge of the work of exploring the mine.

The management of this property, it is said, had provided every device known to mining experience and science to insure safety, and it is thought that the trouble originated in an abandoned but connected working in the western division of the mine.

The little town of Switchback, in which all of the miners who work in the colliery live, was wild with excitement when the news spread that an explosion had taken place, and from all of the neighboring collieries men hurried to the scene to aid in the work of rescue.

Dec 31 08

50 MEN KILLED IN EXPLOSION AT LICK BRANCH MINE

Twelve Bodies Taken Out by the Rescuers in the West Virginia Horror.

ENNIS, W. VA., DEC. 30.—The fatalities in the Lick branch mine as the result of the explosion yesterday afternoon, will probably reach 50. Up to nine o'clock today, 12 bodies had been taken out.

WINTHROP ASSISTANT SECRETARY OF STATE

President Selects Him to Succeed Robert Bacon.

Another Mine Fatality.

Another coal mine disaster, involving heavy loss of life, is recorded in today's news reports from Roanoke, Va. Twelve miners are known to be dead and fifty men are believed to be imprisoned in the mine. As usual, the cause of the accident is enveloped in mystery. This occurrence lends fresh emphasis to the need of more effectual supervision and of better protective methods which was brought out at the recent session of the American Mining Congress and in recognition of which the federal government is now arranging to establish stations for the instruction of mine operators and operatives. Such measures cannot be put into execution too soon. Under present conditions, the dangers besetting the American miner are, to all appearances, at a maximum and it is vital that remedies should be found and applied.

HUNDRED MEN IN FATED MINE

Twelve Dead Recovered From Colliery in Southern West Virginia.

Maybury, Ky., December 30.—More than 100 miners are now believed to be hopelessly imprisoned in the local mine of the Lick Branch Collieries Co. as a result of a terrific explosion which took place at 3 o'clock Tuesday afternoon.

While the company refuses to give out any figures on the number of men who were in the mine and will permit no one to approach the collieries save rescuers, it is said that no less than 200 men were in the mine at the time of the disaster. Up until a late hour last night only 17 of these had been removed, 12 of whom were dead.

The little town of Switchback, in southern West Virginia, in which all of the miners who work in the colliery live, was wild with excitement when the news spread that an explosion had taken place, and from all of the neighboring collieries men hurried to the scene to aid in the work of rescue.

DEATH-LIST TOTALS EVEN HALF HUNDRED

(Continued From Page 1.)

Never once from the time the air currents were changed until yesterday afternoon at 5 o'clock did the company and the many volunteers desist in the work of pushing ahead with the brattices so that the dead could be recovered. The company at all times did everything in its power to assist everyone who had suffered in any way and the orderly conditions which existed both in the town and at the mine during the three trying days speak well for the confidence which the people of the mining town placed in the ability of Mr. Jones, the general manager, who knows nearly every one of the men personally.

Mr. Paul, who came down from Pittsburg with four other experts employed by the geological department of the United States, had evidently formed the opinion that the conditions in the mine were worse than they really are or have been. They judged from reports which appeared in the Pennsylvania papers and which originated in Roanoke that gas would be found in the mine and they brought specially prepared helmets so that they could go in the mine in spite of any gas which might be present. On their arrival they found that never at any time either before or after the explosion had there been any traces of gas such as would require the specially prepared helmets which Mr. Paul used so successfully in the Marianna mine. On this account Mr. Paul did not go into the mine yesterday afternoon, but investigated reports on the outside and remained the greater part of the day at the driftmouth where he watched the work of recovering bodies and the preparations for sending in relay brattice crews. He would say nothing concerning the mine, as he was not here at the time of the explosion and has not been officially connected with the West Virginia mining department for some time.

Shortly after the men who were in the brattice crews had worked their way out to the Tug River side and a complete air circuit had been secured through the mine the inspectors advised that every precaution be taken to get out every man who could be found in the mine. This was done and in a few minutes it was decided that there could be no

ninety-six and 120 hours so that the fires may be kept burning. This is a sure indication that the company expects to be ready for operation in a short time, otherwise the coke would not be kept burning so long a time or preparations would be made for shipping in slack from some other operation.

The company will be able to secure plenty of men to operate the mine as soon as it is ready for work, as hundreds of men who have visited the operation during the past few days say that it has the best ventilation and equipment of any mine that they have ever visited. One of the miners from Pocahontas who worked all Wednesday night in a rescue crew told a Daily Telegraph representative yesterday morning that the mine had the best top he had ever seen in a mine. This comes from a colored man who has been mining in this field for years and who said he knew nearly all of the mines. Yesterday a number of the men who had worked in the mine at and before the time of the explosion said they were only waiting for work to commence to go back.

The common impression that exists among the general public that mines are unsafe is without foundation. The unitiated yesterday in Bluefield said that they would not go into a mine for fear of being hurt. This is a fallacy which would be exploded in most cases by one visit to a mine. In Lick Branch mine the air is as good as it is outside and it is a well known fact that men who follow mining all their lives and do not abuse themselves more than the ordinary man who has never seen a mine will live longer than the ordinary man. This is because a miner is practically his own boss. He works when he pleases and lays off when he pleases. He makes very good money and will make much more daily year in and out than millions of men who have far more educational advantages than the miner has. It is the highest paid vocation in the world for the amount of intelligence required, but still thousands of miners have as good educations as men employed in other vocations and perhaps the percentage is even higher than it is in the large cities

Bluefield Daily Telegraph

BLUEFIELD, W. VA., SATURDAY MORNING, JANUARY 2, 1909.

LICK BRANCH MINE HORROR NOW HISTORY

Last Body Was Brought Out Yesterday and Death List Stands at Fifty.

TOWN SETTLES DOWN TO ACCUSTOMED QUIET

Chief and Former Chief of State Department, Together with Deputy Inspectors, Make Complete Exploration of Workings.

REACH NO DECISION AS TO THE CAUSE OF THE DISASTER

The Lick Branch explosion is now a matter of history. Yesterday the last body was taken from the mine and the total number of dead is fifty. The body of the last man was discovered yesterday morning and was taken into the morgue which has seen so many direful sights during the past four days.

The little town of Switchback has now settled down to its accustomed quiet and the men and women are trying to tell how it happened. This is the real question which will perhaps never be answered. Yesterday the chief mine inspector, James Laing, and Messrs. Phillips, Werner, Grady and Henry, deputy inspectors, together with James W. Paul, former chief state inspector but now with the United States geological survey, and four assistants went through the mine and in the middle of the afternoon had explored the mine through to the Tug River side on which they

CHIEF INSPECTOR REPORTS 49 DEAD

Charleston, W. Va., Jan. 1.—Chief Mine Inspector John Laing, investigating the explosion at the Lick Branch mine, in McDowell county today wired Governor Dawson as follows: "Last body taken from mines. Forty-nine in all. Will make final inspection and report by 'phone to you tonight."

what the findings of the chief inspector were. A message from Charleston was received at 2 o'clock this morning stating that Mr. Laing did not telephone the governor last night and the only message received by the governor was the telegram stating that the investigation had been completed and that the last of the forty-nine bodies had been taken from the mine. It is possible that owing to the lateness of the hour the chief mine inspector was not able to reach Charleston over the long distance phone. The message from the chief mine inspector to the governor, however, sets at rest all reports which state that more bodies are in the mine. The Daily Telegraph has official information which says that 50 bodies have been taken out. The fiftieth man taken from the mine was a colored man who was known as Jeff Estes.

Chronicle Telegraph
January 12, 1909

SCORES OF MINERS ARE ENTOMBED

Second Explosion at Lick Branch Colliery Within Two Weeks Buries From 50 to 100 Employes in Its Ruins

Bluefield, W. Va., January 12.—As the result of another explosion at the Lick Branch mine, at Switchback, about 20 miles from here, this morning between 50 and 100 miners were killed. The number may be largely increased, as from 280 to 300 miners were at work at the time and it had not been ascertained, shortly before noon, how many had survived.

On December 28, last, an expolsion occurred in this mine, which, up to that time, had been regarded as a model mine. On that occasion the cause was not ascertained and the death list reached 50. The last body, in connection with that explosion, was brought to the surface only last Friday, after which the state mine inspectors declared that the mine was again safe and that work could be resumed.

The majority of the miners who were engaged to resume work at the mine were Americans, with a few foreigners, and some colored workers as laborers. It was stated that the mine was examined early this morning, before the new shift went to work, and that it was reported to be perfectly safe.

In spite of this, however, soon after work was begun, the explosion occurred, with a death list that will probably far exceed that of the December explosion.

At 1 o'clock this afternoon a rescue party had not been able to enter the mine on account of the intense heat, and it is now believed that, following the explosion, the mine caught fire, although but little smoke is finding its way to the exterior.

Mine officials refuse to give an estimate of the number that may have met death, but at the mine mouth it is now believed that over 100 have perished. Fresh air is being forced into the mine by way of the fan, which was not damaged.

While the officials refuse to suggest a cause for the explosion, miners place the blame on some one of the foreign miners who may have entered early this morning with an open lamp. It was known that there was a small quantity of gas in the mine last night, and it is considered probable that this may have suddenly increased, after the miners began to work, and that it was ignited by the open lamp, the explosion following.

BELIEVE 150 MEN DEAD IN SHAFT

P & P Press. January 12-09

By United Press.

Welch, W. Va., January 12.—One hundred and fifty miners were caught today in a second mine explosion at the Lick Branch colliery. Hardly had the crepe been taken from the doors of many an humble little home on the banks of the Elkhorn, near the Lick Branch colliery, than an explosion which now promises to be more direful than the one of two weeks ago, in which half a hundred lives were lost, occurred and has brought additional sorrow.

Fathers and brothers of some of those killed in the last explosion are known to have been in the ill-fated mine at 8:30 this morning, when the second explosion occurred.

The explosion occurred just an hour after the full quota of men for the day shift had gone to work. It is known that 250 miners were on duty at the time.

State Mine Inspector John A. Laing, of New River, and four of his leading assistants, had just made an inspection of the Lick Branch colliery prior to the first explosion, and it was pronounced one of the safest and best ventilated mines in the Flat Top field. Another inspection was made just after the explosion and no cause could be assigned for the catastrophe.

Switchback, the scene of the explosion, is a small village in McDowell county, in the center of the great Flat Top coal fields.

Pittsburg Press
January 13, 1909

105 MINERS DEAD; SCORES STILL ALIVE IN THE SHAFT

Rescuers Desperately at Work in Effort to Save Men Entombed Behind Wall of Fire

HAMPERED BY FLAMES AND DEADLY FUMES

By the Hearst News Service.

Bluefield, W. Va., January 13.—A hundred rescuers are working desperately to force their way into the "Model" Lick Branch mine, which exploded yesterday for the second time and in the blazing ruins of which at least 105 miners were killed and 100 or more are entombed alive.

The rescue party is headed by Chief Mine Inspector John Laing, aided by half a dozen deputies. They have fought their way through over a mile of the debris-choked, smoke-filled main entry, and are now confronted by the heroic work of breaking through hundreds of tons of burning coal and red hot slate. Behind this wall are at least 100 men still alive, for they are not in the part of the mine affected by the explosion.

The Lick Branch is a colliery of the Pocahontas Consolidated Coal Co., at Switchback. It was here that 50 men lost their lives in a similar explosion just two weeks ago. The mine was inspected three days ago and pronounced in perfect order. The legislature, which went into sesion today, is expected to order an immediate investigation. None of the bodies has been recovered. It is xpected that a part of the mine in which eight men were at work will be reached shortly.

One rescue party came in sight of six bodies, but was forced back. The fire in the mine and the deadly gases, to say nothing of the awful force of the explosion, precludes any chance of rescuing any of the men in that part alive.

The main entry of the mine is four miles long, running from one side of the mountain to the other. Debris was blown from both entries, which gives some idea of the great force of the explosion. It is reasonably certain that not all of the bodies will ever be recovered. Some of them were blown to pieces and others incineratd.

Th explosion was the most terrific that has ever occurred in this region. In 1884, at the Southwest Virginia Improvement Co. mine 360 were killed in an explosion.

TWENTY-SIX DEAD TAKEN FROM MINE

Total Number of Victims of Lick Branch Disaster Still Unknown.

Bluefield, W. Va., January 13.—There is no change up to the present in the estimated number of dead in the Lick Branch mine, the number ranging from 85 to 100. Twenty-six bodies have been recovered from the workings.

Identification proceeded slowly throughout the night as but few were present at the morgue on account of the cold. At 10 o'clock rescue crews had brought out 10 bodies. This number was added to at 3 o'clock by 11 more. Early this morning another procession wended its way from the mine to a new driftmouth with five bodies, making the number of dead recovered at 8 o'clock 26. It is not likely that more will be brought out before late this afternoon, although brattice and rescue crews will work all day and into the night, relaying every few hours with fresh forces of men who have volunteered from all over the coal field.

The company has ordered 80 caskets and robes.

Chief State Mine Inspector John Laing arrived last night and word has been sent James W. Paul, of the geological survey. Mr. Paul and six assistants were at the mine at the time of the explosion on December 28.

The escape of "Cleve" Bowers, mine foreman, who crawled on his hands from the mine while fire, smoke and deadly gases belched forth over him is a most remarkable feature of the explosion. Bowers was the only man who escaped alive, and although he lies with two ribs broken and other injuries, it is confidently asserted this morning that he will recover.

Yet Be I Already

While Death List Is 100 Persons.

HUNTINGTON, W. VA., Jan. 13.—A hundred rescuers are working desperately to force their way into the "model" Lick branch mine, which exploded yesterday for the socond time, and in the blazing ruins of which at least 105 miners were killed and a hundred or more are entombed alive.

Fighting to Save Entombed Men.

The rescue party is headed by Chief Mine Inspector John Laing, aided by half a dozen deputies. They have fought their way over a mile of the debris-choked, smoke-filled main entry, and are now confronted by the heroic work of breaking through hundreds of tons of burning coal and red-hot slate. Behind this wall are at least 100 men still alive, for they were not in the part of the mine affected by the explosion.

Mine Pronounced Safe.

The Lick branch is a colliery of the Pocahontas Consolidated Coal company at Switchback. It was here that 50 men lost their lives in a similar explosion just two weeks ago. The mine was inspected three days ago and pronounced in perfect order. The legislature, which went into session today, is expected to order an immediate investigation.

None of the bodies has been recovered. It is expected that a part of the mine in which eight men were at work will be reached shortly.

One rescue party came in sight of six bodies, but was forced back. The fire in the mine and the deadly gases, to say nothing of the awful force of the explosion, precludes any chance of rescuing any of the men in that part alive.

Explosion Was Terrific.

The main entry of the mine is four miles long, running from one side of the mountain to the other. Debris was blown from both entries, which gives some idea of the tremendous force of the explosion.

It is reasonably certain that not all of the bodies will ever be recovered.

(Continued on Page Two.)

SEARCH FOR MINERS

(Continued from Page One.)

Some of them were blown to pieces and others incinerated.

The explosion was the most terrific that has ever occurred in this region. In 1884, at the Southwest Virginia Improvement company's mine, 360 were killed in an explosion.

Fears $7000 Damage.

Sister Superior M. Stanislaus, representing the House of the Good Shepherd at Broad and Sandusky streets, sent a communication to council Tuesday evening to the effect that she had received a notice that the city intends improving the sidewalks on both sides of Sandusky street; that the house would be involved for a distance of 600 feet, and that if the city insisted on the building of the walk it would be an encroachment on the property of the house, which would be damaged to the extent of $7000. The communication was placed on file.

Ship Coffins For Victims

Among the many stockhelders of the Pocahontas Consolidated Collieries company is Dr. D. H. Thomas of 1250 East Broad street of this city. It was said that he was much disturbed Tuesday to hear of the disaster, because it followed so closely the one of two weeks ago. It was claimed that 100 coffins were shipped out of Columbus Tuesday evening to West Virginia for the victims of Tuesday's explosion.

MINE PRESENTS A GHASTLY SIGHT

Forty-Seven Bodies Taken from Lick Branch Colliery, All Horribly Mutilated.

Rapid Changes in Weather Believed Responsible in Part for Explosions in Mines.

1909

[By Associated Press to State Journal.]

BLUEFIELD, W. Va., Jan. 13.—Forty-seven bodies have been taken from the ill-fated mine at Lick Branch.

An official statement issued late tonight by the company estimates the total number of dead at 57 and says the number will not exceed 59.

Three rescue crews of 40 men each, led by State Mine Inspectors Grady, Nicholson and Warner, are at work. The men in these crews report the most ghastly sights within the torn and fire swept corridors and workings of the mine, where bodies are found mangled and mutilated beyond identification.

It is difficult, they declare, to distinguish between white and black because they are so frightfully burned. Some bodies taken from the mines resemble charred masses of flesh more than human beings. From some bodies the legs are gone, from others the arms.

Known Dead.

Everett Philips, George Peters, A. R. Miller, Joseph Jones, Charles Philipps, David Surratt, Riley Surratt, Ed. Collins. James Ayers, Robert Wyeth, Daniel Arrington and Henry Bowles, all white.

Luther Bouldin, John Hunter, J. H. Cobbs, George Enseey, Frank Harston, Henry Lee, Ernest Terry, Elk Clark, Brown Lee, Anthony Johnson, Lemuel Dean, a man known as Tattoo, all colored.

Nine unidentified dead and two others brought out have not yet been placed in the morgue. Experienced mine men are authority for the statement that this is the first case on record where two explosions took place in the same mine in such a short space of time, and are unable to explain its cause. Some of them point to the fact that the mercury fell 19 degrees within several hours on the morning of the catastrophe and hold that such rapid changes in the weather have considerable influence on the causes of mine disasters.

There is a remarkable lack of excitement at the mines, no weeping women or frantic old men and children, scenes such as usually accompany such catastrophes. The inhabitants of the little village in which the miners lived, and which saw 50 funerals less than two weeks ago, had become somewhat inured to the sight of death in the mines.

Charleston Daily Mail
January 16, 1909

65 IS THE TOTAL DEATH ROLL; ALL ARE RECOVERED

With the eight bodies removed Friday from the Lick Branch mine, every body had been removed from the mine, making a total of 65 in all, who were killed in the second explosion occurring in the mine.

The coroner's inquest will probably be held Saturday and it is expected that it will be conducted more with a view of ascertaining the causes of the explosion than the former inquest over the victims of the first explosion, which absolved the company from blame, acknowledged it did not know the cause and held nobody responsible.

There will be an effort to have a joint committee of the House and Senate conduct an investigation into the two explosions at Lick Branch to ascertain if possible the exact conditions of the mine and to what extent the mining laws of the State were being violated.

SIXTY FIVE BODIES ARE RECOVERED

PROBILITIES ARE THAT THERE ARE EIGHT MORE IN THE MINE THE NUMBER MAY REACH A DOZEN—METOD OF REMOVAL MAKES THE WORK VERY SLOW BUT IT IS EXPECTED THAT ALL, WILL BE RECOVERED.

TOTAL LIST SIXTY NINE

OR THE NUMBER MAY ULTIMATELY REACH EVEN A GREATER TOTAL — LATEST REPORTS STATED THAT NO MORE BODIES HAD BEEN RECOVERED — RESCUE WORK IS PROCEEDING VERY RAPIDLY.

BLUEFIELD, W. VA., JAN. 15.—STATE MINE INSPECTOR PHILLIPS CAME OUT OF THE ILL-FATED LICK BRANCH MINE AFTER THOROUGH EXPLORATION LATE TODDAY AND ANNOUNCED THAT THE BODIES OF THE VICTIMS WERE ALL OUT. EIGHT WERE TAKEN OUT TODAY, MAKING A TOTAL OF 65 DEAD. MINES OFFICALS CLAIM THAT EVERY MAN HAS BEEN ACCOUNTED FOR.

IDENTIFIEDD DEAD IN THE LICK BRANCH DISASTER.

Up to last night forty-two victims of the Lick Branch disaster had been identified as follows:

WHITE.

EVERETT PHILLIPS.
CHARLES PHILLIPS.
DAVID SURRATT.
RILEY SURRATT.
GEORGE PETERS.
A. R. MILLER.
JOE JONES.
ED. COLLINS.
JAMES AYERS.
ROBERT WYATT.
DAN ARRINGTON.
HENRY BOWLES.
JOHN MAHONEY.
ALBERT ABLE.
R. D. MILLER.
J. H. BOLEN.
MIKE ROBINSKY.
H. A. LEONARD.
S. B. CLARK.

COLORED.

LUTHER BOULDIN.
JOHN HUNTER.
J. H. COBB.
GEORGE ENSLEY.
FRANK HAIRSTON.
HENRY LEE.
ERNEST TERRY.
ELKNER CLARK.
BROWN LEE.
ANTHONY JOHNSON.
LEMUEL DEAN.
ARTHUR GILES.
A. R. Jones.
ED. ROSE.
TAYLOR STAPLES.
PETER HIPPENSTATE.
C. J. HAIRSTON.
MELL HUNTER.
JOHN MITCHELL.
HENRY WALKER.
WALTER MARTIN.
JIM MARTIN.
BRUCE MANNS.

Although it was confidentialy expected early in the vening that the rescue crews would be able to get all of the bodies from the Lick Branch mine last night, a telephone message received in this city at 1 o'clock said that but four bodies had been added to the list of those recovered. Connection with Switchback was again secured by telephone at 2:45 but the company had no more information at hand, as no additional bodies had been brought out up to that time. At 3:20 a message was received which stated that no more bodies had been recovered. The revised list of bodies recovered nod places the number at fifty-seven with the probality that there are eight more bodies in the mine, althought a man who should be in a position to know stats that the final death list will reach sixty-nine. It is possible that a number of bodies will have been recovered by

more men in the mine with the exception of the one who is knokn to have been in the mine but a short time before the explosion. He may have escaped, however, and left the town safely.

By 5 o'clock all the men with the exception of the brattice crews had left the mine. These crews consist of a few men who will watch the brattices which have been put up. The inspectors on finding that the fan had been operating at its best all the time since the explosion asked that it be allowed to run free during the night so that the currents can carry themselves through the mine and make their own courses which will perhaps facilitate the work of inspection.

Early this morning the state inspectors and the Pittsburg men, including Mr. Paul, and a number of operators and men who are acquainted with the mine will go in and commence the investigation which will last a day or perhaps two. Last night Mr. Paul spent at Hotel Ennis, but it is expected that he will visit Bluefield before his return to Pittsburg. All night Wednesday night, Thursday and Friday men dotted the hills about the mine openings watching the work of recovering the bodies and large fires were built on the outside for the convenience of these men, who in spite of the cold stood or sat near the mine the greater part of the day and only left to be succeeded by another crowd. Most of these men were visitors and knew little or nothing about the mine at the present time. They were from every part of the field and came in merely out of curiosity.

It had been reported that J. H. Hairston, colored, was dead and yesterday a telegram reached Switchback addressed to J. H. Hairston which said: "Reported you are dead. Is it true?" Hairston said it was not. This message merely gives an idea of the many stories which have gotten abroad. A young man named Will Rushbrook was over to the mine from Bluefield on Wednesday night looking for his brother, O. C. Rushbrook, whom he said he was sure was in the mine. Investigation proved that no such man worked for the company and it is possible that he is working at Pocahontas or some other town. The women who were crazed with grief, now that the bodies have all been recovered have quieted down and many of them have gone on to their former homes where they have carried their dead. Eight coffins passed through this city yesterday afternoon on their way to Virginia points and it was said in this city last night that twelve coffins are ready at Switchback for shipment today. These are without a doubt the last of the victims.

Pittsburg
January 17, 1909

CAUSE OF EXPLOSION IS NOT DETERMINED

Hon. James W. Paul, former chief of the department of mines, arrived in the city yesterday from Switchback, where he was sent by the United States government immediately after the second explosion there. Mr. Paul is connected with the government testing plant at Pittsburg and it is one of his duties to go to all mines in which explosions have occurred and learn if possible the cause.

The second explosion at Switchback, Mr. Paul said, occurred in a different part of the mine than th two weeks before. It had been i sible to determine the cause be no one has been able to go int part of the mine where the explo occurred. All the dead have b taken out.

Mr. Paul will go back to Switchback the first of the week and will enter the mine and learn, if possible, the cause of the explosion.

A sceneryless play was given at the Berkeley Theatre on Sunday evening. It was called "Votes for Women," and was writen by a woman. And there was no orchestra. And not a man in it. What's the use? Suffrage is here.

More in the Mine.

It is believed that there are from 20 to 8[illegible] men men still in the mines and all hope that any of them are alive has been abandoned, and when the mine has been thoroughly explor[illegible] is feared that the worst will be realized. In one of the humble homes of the village watchers sit by the coffins of three men, the Lockharts. In another, that of the Little's, there are two coffins. At the home of the Webbers there are two.

There is, however, an absence of the excitement usually found in mining communities on occasions of this kind, the stricken families bearing their grief in silence. Occasionally, however, the stillness is broken by the loud wailing of a woman and the fatherless little ones that hang about her. The force of the explosion was terrific, and men who escaped say that they felt the concussion in all parts of the immense mine.

Those in close proximity to the entrance in which the center of the trouble occurred were thrown to the ground, and many of them crawled through the darkness to the nearest exit and to safety. Simultaneously with the flash great masses of slate and earth were shaken loose and fell from the roof of the mine, crushing to death the poor fellows who had been thrown down by the force of the concussion.

Several have been dug from the bottom of such heaps, and a boy is said to be pinioned down by tons of slate which it will take many hours to remove. The poor father of this unfortunate youth has stood for hours waiting until his boy would be brought out, neither leaving for rest or refreshments.

Several hundred people from the near by mining towns visited the scene of the explosion to-day and are doing what they can to aid in the work of recovery and restoration. The damage to the mine is unknown, nor can it be estimated at this time, but it is thought that it will not be great, as there was no fire resulting from the explosion.

Dust Caused Explosion.

This aids the argument that it was a dust explosion caused by the ignition of disturbed dust that had been settling on the mine walls for years and which was thrown into the air by the concussion from what is known as a blow-out shot, or, in other words, a blast that, taking the course of least resistance, shoots out of the hole instead of splitting down the coal as it is expected to do.

The four State Mine Inspectors who are on the ground, and who going over every detail connected with the disaster, will give no expression of their opinion, and say that their findings as to the cause of the explosion will not be made public until their report has been made to the Department of Mines.

The force of the explosion shattered mine cars into masses of splinters and killed the mules that drew them. Debris was thrown from the entrances of the mine a half mile from the point at which the explosion occurred and masses of dust gushed from the mine openings.

The most peculiar thing about the whole affair is that the mine was the best in the field and one of the best in the country.

It was equipped with every device invented to insure safety, and the system of ventilation was as near perfect as it was possible to make it. The most experienced and thoroughly trained men were in charge, and there was no condition existing there that would lead to the belief that it was dangerous.

To-night it is freely said that not a miner in the field would be afraid to trust himself in this colliery. It was as safe as modern invention and science and the conscientious efforts of progressive management could make it. This raises a question seriously as to whether there is any method by which such occurrences can be avoided.

TO REDUCE NUMBER OF EXPLOSION FATALITIES

United States Geological Survey About to Establish Rescue Stations in Principal Coal Fields.

Carrying out its efforts to reduce the number of fatalities in coal mines, the United States geological survey is about to establish rescue stations in the principal coal fields in the country in addition to the experiment station now located at Pittsburg. The new stations will be at or near the greatest centers of accidents and it will be the purpose of the mine experts to teach the miners and mine bosses how to use the most approved apparatus of mine rescue work.

DUST GETS BLAME FOR MINE EXPLOSION

IGNITED BY A BLOWN OUT SHOT IT GENERATED GAS IN THE LICK BRANCH MINE.—IT IS PROBABLE THAT THE CHIEF MINE INSPECTOR WILL APPOINT A COMMISSION OF THREE EXPERTS TO ASSIST HIM.

At the ill-fated Lick Branch mine yesterday the deputy inspectors assisted by the rescue and brattice crews continued their work and as a result of their day's efforts excellent progress was made not only in the matter of locating bodies but also in exploring the mine. Up to yesterday morning 53 bodies had been recovered and although reports were circulated in this city that 64 bodies had been taken from the mine the number remained at 53 all day.

The work of rescue was under the direction of Deputies Phillips and Grady and progressed rapidly. Commencing at No. 8 entry the crews worked into 8-1 where a number of bodies were found. One of the bodies was torn into nine pieces which were scattered about the mine, and to show the freakish results of the explosion it might be state that along side the trunk of the body which was discovered in pieces was a man who did not have a mark of violence on his body. Not even his hands or face were bruised, but death came to him quietly, while his neighbor at work met death in a most horrible manner.

A number of bodies were found in 8 and 8-1 entries and the force of the explosion was so strong in this part of the mine that it is wost likely that it was the scene of the initial explosion caused by dust as a result of a blown-out shot. From 8-1 the rescue and brattice crews passed 9 entry going fro mthere to 10 entry which was likewise bratticed and passed. From there the men went down 11 and up 11-2 where they completed their work for the day and retired to the mouth of the mine on the new side and were relieved by the night crews in charge of Deputies Henry and Nicholson who took the men from 11-2 up the old main hetry into the workings known as Italy, where the explosion of December 28 occurred. From this point the work of rescue is comparatively easy, as the air can return to the fan, thereby doing away with the necessity of bratticing, which makes the work of recovering bodies very slow.

There was hardly any reason why the crews of last night under the direction of Deputies Henry and Nicholson should not have been successful in getting out all the bodies. After they have worked their way along the main entry, where it is thought that they will find about eight bodies of men who were cleaning up the mine, they will return to entries 9 and 10 and other parts of the workings in which it is thought that there were not any men and which on this account were passed by the rescue crews after they were bratticed so that ventilation might be carried towards the old main entry.

The ordinary layman hardly knows the dangers of exploring the mine in the search of dead bodies. The rescue crews are at all times kept behind the mine inspectors, who where it is possible work in twos, so as to prevent any such occurance as a panic among the men should at any time dangerous gases generated by the explosion be found. Frequent use of the anameter keeps the men in touch with the action of the fan and the air currents and prevents them from going to far into gases which are dangerous. Safety lamps are used entirel yin the mines during the work of rescue and even then should a lamp break so that the flame should come in touch with the generated gases there would be an explosion which would perhaps kill all of the rescue party.

It is really difficult to assign a cause for the present explosion, but it is thought that atmospheric conditions had some part is the magnitude of the catastrophe. The disaster will practically be attributed to dust which was ignited by a blown-out shot thereby generating the deadly gas which was carried all over the mine bringing with it general destruction both to the men and in the mine and the workings themselves. The present explosion occurred in the working where the men were mining coal.

West Virginia Mine Horrors

Location.	Lives Lost.
Red Ask, March 6, 1900.....	100
Rush Run, March I8, 1905...	24
Bluefield, Coal Dale mine, Jan. 4, 1906	22
Paint Creek, Detroit mine, Jan. 18, 1906	18
Fayette county, Pa. 1 mine, Feb. 8, 1906.....	22
Phillipi, Century mine, March 25, 1906.....	26
Fayette count,y Stuart mine, Jan. 29, 1907.....	82
Fayette county Stuart mine, May 1, 1907	21
Monongalia, W. Va., Consolidated mines, Dec. 6, 1907.	500
Maybury, W. Va., Dec. 6, 1907	50
Lick Branch mine, Switchback, W. Va., Jan. 12, 1909..	100

SEARCH FOR ENTOMBED MINERS FAR DOWN IN A FIERY PIT

Government mining engineers thoroughly trained in the use of rescue apparatus will be assigned to these stations and they will be ready at a moment's notice to go to any district. The experts will be equipped with oxygen helmets, which will enable them to enter a mine at once, even though it is filled with gas or smoke. These stations also will be headquarters of the engineers for the study of waste of coal in mining, one of the important problems before the geological survey.

It is the intention to have every station fitted up with an air tight room where gas can be generated. The coal mining companies are to be invited to send picked men to these stations where they will be trained by the government experts in the use of the oxygen helmets.

One of the rescue stations will be at Urbana, Inn., in connection with the University of Illinois. This station will take care of Illinois, Indiana, Michigan, Iowa, Northern Missouri and western Kentucky.

A second station will be located probably at Raton, N. M., to take care of New Mexico, Colorado, Utah, Montana and Wyoming. The largest coal output in New Mexico and Colorado comes from the Trinidad field which is immediately accessible to Raton.

ALL BUT TWO WERE EASILY IDENTIFIED

Former Chief Inspector Paul, Now in Government Service, Arrives on Scene and Will Lead Party of Exployers Through Mine.

OFFICIALS UNTIRING IN THEIR EFFORT TO RELIEVE SUFFERING

J. C. Turley, who has been at the mine all the time since the explosion, arrived in this city last night on train No. 16 and went to his home for a much needed rest. Before retiring he furnished the Daily Telegraph with an official list of the dead men who have been taken from the mine.

Mr. Jones, the general manager and Mr. Turley were active in bringing the work of exploration and rescue to completion and were ready to meet any emergency which arose during the three trying days which have passed since the explosion of Tuesday which had such dire results. Mr. Jones when spoken to at 10 o'clock was preparing to retire after the trying work which he has been doing with but short intervals of sleep since Tuesday. Before going to bed he said he did not think that there would be over one more body recovered. He asked the Daily Telegraph to convey his thanks and those of the companyy to the many people rom all over the field, both operaors an[illegible]ratives, who so willingly one was glad when the brattices could be taken from the entrance on the Tug River side and word sent out that the mine had been explored from end to end.

None of the men were badly cut and very few received burns which would be serious enough of themselves to cause death. In many cases reath resulted from the shock and the Daily Telegraph representative, who personally saw the greater part of the bodies, some when they were taken out of the mine and others at the morgue, could see no reason why the men could not be identified easily by one who knew them when alive. As proof of this statement the men were all easily identified and the only unidentified ones were two Italians and a few Russians.

A gentleman associated with the management of the mine said yesterday afternoon to a Daily Telegraph representative that up to the present forty-nine bodies have been taken from the mine. It is not thought that there is more than one more body in the mine and this body may be recovered in entry No. 8. While there may possibly be two or three more men in the mine the company has no way of accounting for them, as they were undoubtedly men who had gone into the mine merely as visitors or were doing some contract work.

The official list of dead, as given out by Mr. Turley follows:

CHAS. LITTLE.
WYLIE LITTLE.
SAMUEL BEATTY.
PLEAS KENNEDY.
CLEVE ALEXANDER.
KEMP SAUNDERS, colored.
JAS. ROAN, colored.
JAS. SMITH, colored.
JOHN W. MILLER, colored.
JAS. LOCKART, colored.
RICHARD LOCKART, colored.
JOE LOCKART, colored.
TOBE WEBBER, colored.
MATTHEW WEBBER, colored.
J. E. (YOUNG) JOHNSON.
SCOTT PAGE, colored.
DAVID BOLIN, colored.
TONY PALAMARA, Italian.
PETER ROLES, Italian.
GEO. MEAKET, Italian.
PINUS BUSCKUKE, Russian.
REED ANDERSON, colored.
DOMINIC ROSE, Italian.
TOM BLEVINS.
ELSIE BLEVINS.
THOMAS HOWELL.
J. W. EDMUNDSON.
JNO. BROWN.
JAS. CALLOWAY, (also known as Holland) colored.
JOHN Hicks, colored.
JOHN A. HOLLAND, colored.
A. C. HOLLAND, colored.
GREEN DAVIS, colored.
JOE NIZUK, Hungarian.
JOE EDMUNDS, colored.
MIKE BUSCHUKE, Russian.
BOB WILLIAMS, colored.
GREGOR CONSEVAS, Russian.
BUCK WILLIAMS, colored.
LUCAS NAMUK, Russian.
MIKE, PARRACHUK, Russian.
GEO. PARVOLIC, (formerly reported as Dick George) Russian.
OXEN PARVOLIC, Russian.
TROCEINE SHURMAN, Russian.
TOM SWAN, colored.
JOHN DARTIN.
WALTER REYNOLDS, colored.
TWO UNIDENTIFIED MEN.

—

James W. Paul, formerly chief mine inspector for West Virginia, and four men connected with the experimental mine located near Pittsburg, which was recently purchased by the United States geological survey department for a test mine, have arrived at Switchback and today will take full charge of the work of inspection at the Lick Branch mine.

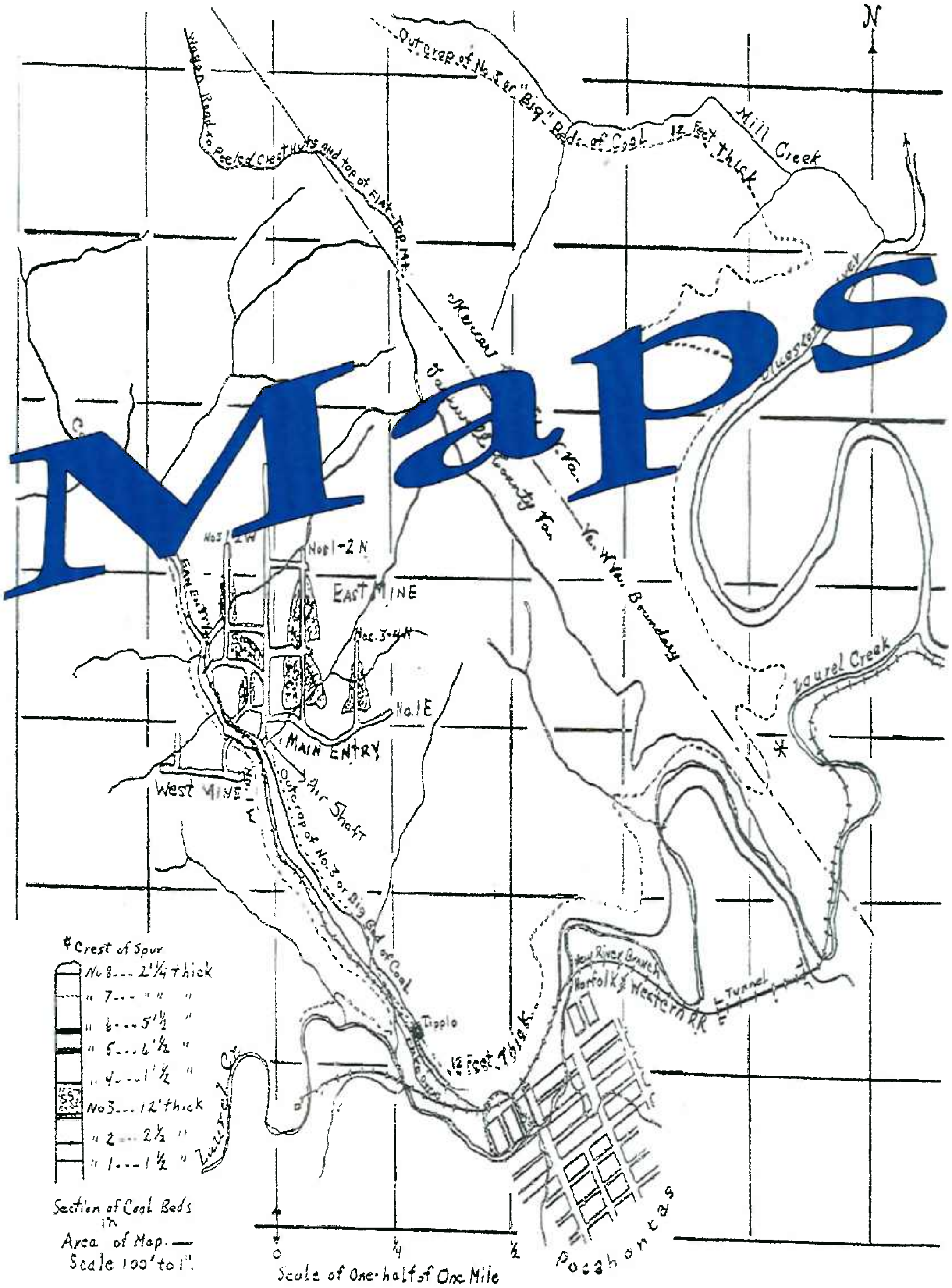
The general manager of the mines said last night to the Daily Telegraph that air circuits are established all the way through the mine and out the Tug River side of the mountain. It was on this side that the explosion which has caused the deaths of fifty men probably occurred.

The inspection force has been relieved and all of the men who were in the rescuing crews have been laid off. The only men who were in the mine last night were a number of brattice men who patrolled the mine to see that none of the brattices which had been placed in position were knocked down by the wind from the fans or from other causes. They will also rebrace the brattices where rebracing is needed but will have no searching to do as the people are satisfied that all are out with the possible exception of one.

A complete air circuit is the result of yesterday's work which was under the personal direction of the state inspectors, and the foremen and inspectors assisted by a number of the coal operato and foremen from other mines the field.

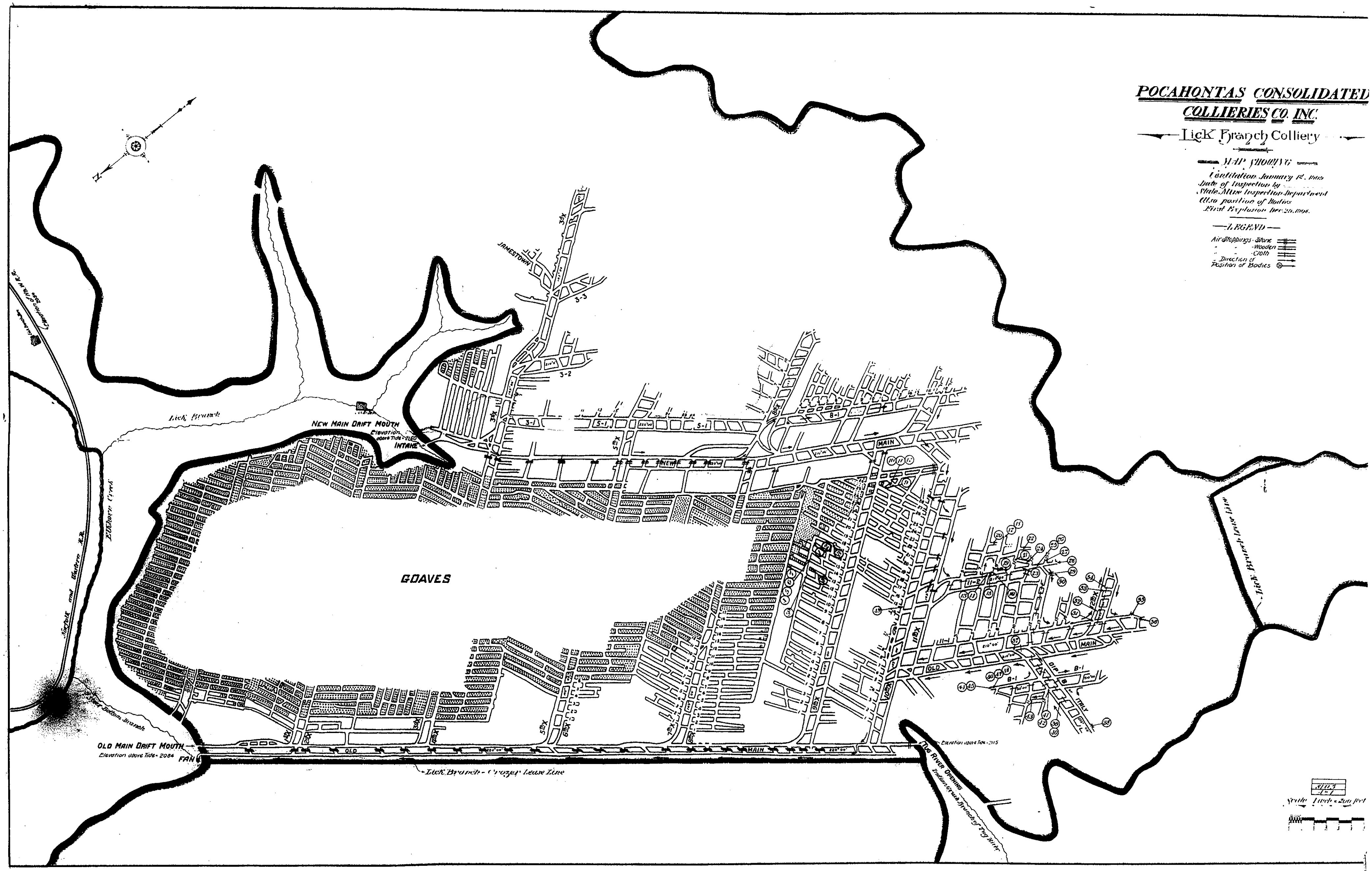
The fan was kept running all last night and was given free play so that the air courses would be fully established and thus facilitate the work of the inspectors. The inspection will commence this morning and in addition to J. E. Jones, the general manager of the Pocahontas Consolidated Collieries Company, Mr. Thorne, of New York city, who is an officer in the company, is also present and will accompany the inspectors. Mr. Thorne passed through this city yesterday afternoon on train No. 1, going direct from New York to the mine, where he assisted as far as possible in the work of recovering bodies and completing the air circuit.

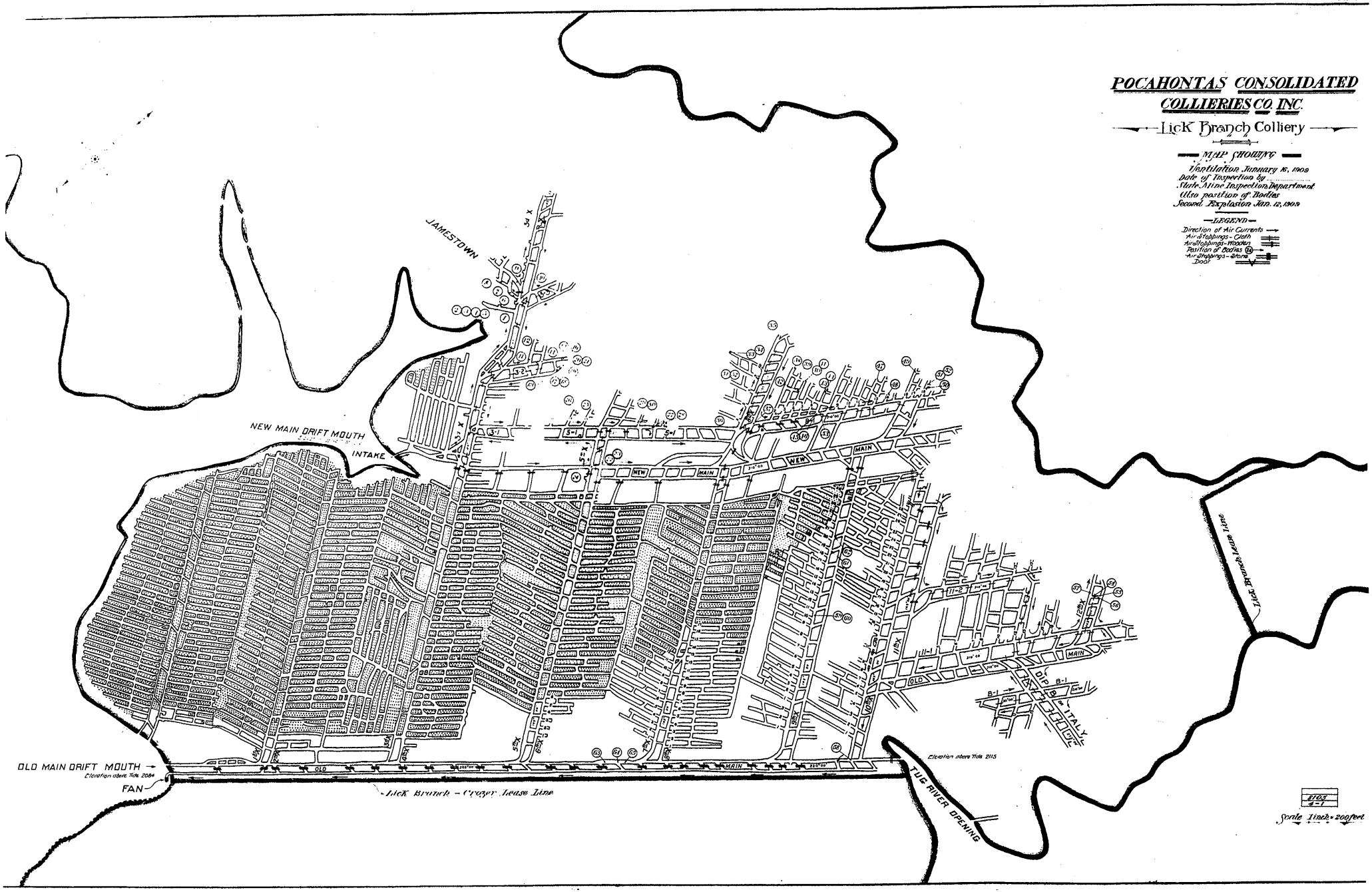
Maps



N
Outcrop of No. 3 or "Big" Beds of Coal 12 Feet thick
Mill Creek
Wagon Road to Peeled Chestnuts and top of Flat Top Mt.
Mercer County, W. Va.
Tazewell County, Va.
Va. W. Va. Boundary
Bluestone
Laurel Creek
No.3 1-2 W
No.1-2 N
East Mine
Nos. 3-4 N
No. 1 E
Main Entry
West Mine
Air Shaft
Outcrop of No. 3 or Big Bed of Coal
New River Branch
Norfolk & Western RR
Tunnel
Tipple
12 Feet Thick
Pocahontas
Crest of Spur
No 8 --- 2 1/4 thick
" 7 --- " "
" 6 --- 5 1/2 "
" 5 --- 6 1/2 "
" 4 --- 1 1/2 "
No 3 --- 12' thick
" 2 --- 2 1/2 "
" 1 --- 1 1/2 "
Section of Coal Beds in Area of Map. Scale 100' to 1".
0
1/4
1/2
Scale of One-half of One Mile

Map


POCAHONTAS CONSOLIDATED
COLLIERIES CO. INC.
Lick Branch Colliery
MAP SHOWING
Ventilation January 1st, 1909
Date of Inspection by
State Mine Inspection Department
Also position of Bodies
First Explosion Dec. 29, 1908.
LEGEND
Air Stoppings - Stone
" " - Wooden
" " - Cloth
Direction of
Position of Bodies
GOAVES
NEW MAIN DRIFT MOUTH
INTAKE
OLD MAIN DRIFT MOUTH
Elevation above Tide - 2084
FAN
Lick Branch
Elkhorn Creek
Norfolk and Western R.R.
JAMESTOWN
Lick Branch - Crozer Lease Line
Lick Branch Lease Line
TUG RIVER OPENING
OLD
MAIN
Scale 1 inch = 200 feet


POCAHONTAS CONSOLIDATED
COLLIERIES CO. INC.
Lick Branch Colliery
MAP SHOWING
Ventilation January 15, 1909
Date of Inspection by
State Mine Inspection Department
Also position of Bodies
Second Explosion Jan. 12, 1909
LEGEND
Direction of Air Currents
Air-Stoppings - Cloth
Air-Stoppings - Wooden
Position of Bodies
Air-Stoppings - Stone
Door
JAMESTOWN
NEW MAIN DRIFT MOUTH
INTAKE
NEW MAIN
MAIN
OLD MAIN DRIFT MOUTH
Elevation above Tide 2084
FAN
OLD
MAIN
Lick Branch - Crozer Lease Line
Elevation above Tide 2115
TUG RIVER OPENING
TUG RIVER LEASE LINE
DIP
TALLY
Scale 1 inch = 200 feet