

Parrish Mine Disaster Documents

Parrish Mine

Parrish Coal Company

Plymouth, PA

Accident date: January 9, 1912

Time range of materials: 1/9/1912-12/13/1912

Number of items: 16 correspondence, 2 maps, 2 reports, 1 newspaper clipping

Material types: letters, maps, reports, newspaper

Important persons mentioned: Elmer Jones, Henry Miles, August Garvlin, Paul Rechofski, John Humphreys, Anthony Gohalis, Anthony Lukavitch, Edward Beynan

Historical note: An explosion in the Parrish Mine killed 6 men and injured two others. It was proposed in the report that a gas explosion was to blame, though this assumption was never fully validated.

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Correspondence

Date	To/from	Subject	Size
Jan 11-12	George Rice/mining engineer	Clipping is authentic and accepted as preliminary report	1 page
1/11/1912	George Rice/mining engineer	Gas samples sent and preliminary report on the way	2 pages
1/23/1912	George Rice/Mining engineer	List of samples	1 page
1/26/1912	George Rice/mining engineer	Forwarding samples collected by manager WG Thomas	1 page
2/5/1912	Chas Enzian/ chief mining engineer	In reply to memo, and regarding debris	1 page
3/5/1912	JJ Rutledge/Walter Snelling	States that the samples submitted can in no way settle the question of the occurrence of an explosion	1 page

4/25/1912	Chas.ENZIAN/ chief mining engineer	Criticism of the final accident report	2 pages (3 copies)
8/20/1912	George Rice/mining engineer	Corrections to the final report	2 pages
8/20/1912	George Rice/mining engineer	Please attach reports	1 page
11/6/1912	WR Ingalls/Thomas R. Evans	Opinion as to cause of death and explosion	1 page
11/12/1912	Van Manning/ Chief mining engineer	Regarding Mr. Ingalls, and Rice's second report	1 page
11/14/1912	WR Ingalls/ Assistant to the director	In reply to an inquiry about explosion	1 page
11/20/1912	Chief mining engineer/Manning	Letter accompanying files relative to Mr. Ingalls request	1 page
12/5/1912	Director/chief mining engineer	Letter accompanying report of accident	1 page
12/5/1912	Director/chief mining engineer	Second letter submitting ENZIAN's revised report	1 page
12/13/1912	Director/chief mining engineer	Desire to forward revised report and comments to Mr. Ingalls	1 page

#### Maps

Map number	Subject
1	Parrish coal co. scene of accident in #2 west counter 5 foot seam Jan. 9, 1912
2	Map Showing Explosion Zone the Parrish Colliery (2 copies)

### Newspaper Clippings

Date	Newspaper	Author	Subject
1/10/1912	Wilkes-Barre Record	n/a	Explosion Kills Six at Parrish Colliery

### Reports

Date	Type	Filed by	Subject	Size
4/18/1912	Lab report	Bureau of mines	Mine air samples	6 pages
1/9/1912	Final report	Chas.ENZIAN	Final report on the accident	17 pages (2 copies)

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

IN ANSWERING REFER TO  
No.

Wilkes-Barre., Pa. Jan 11-1

Mr. George S. Rice,  
Chief Mining Engineer,  
Bureau Mines,  
Pittsburg, Pa.

Subject; PARRISH COAL CO. EXPLOSION, JAN. 9-12

My dear Mr. Rice:-

Pending the detailed investigation after ventilation is re-  
stored, about Saturday, I think the clipping is fairly authentic and may be  
accepted as a preliminary report.

The gas part of the explosion had not been given credence, but all  
phases are being carefully considered.

Respectfully,

*Chas. Lenzi*  
Mining Engineer

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

IN ANSWERING REFER TO

No.

Wilkes-Barre, Pa.,  
Jan. 11, 1911.

Mr. George S. Rice,  
Chief Mining Engineer,  
Bureau Mines,  
Pittsburg, Pa.

Subject: PARRISH COAL CO., EXPLOSION, Jan 9-12

My dear Mr. Rice:-

Last evening I mailed you gas samples, #426, 427, 428, taken respectively at the presumed origin of explosion in the return of the mine section and about one hundred feet on the outside of the point of origin ~~respectively~~. I am preparing a preliminary report, which will be forwarded later in the day, on this accident. I should appreciate it very much if you could arrange to forward me the results of analyses, and your comments on same at the earliest possible convenience. At the present time I am of the opinion that it was a dynamite explosion. The officials, Colliery and State, are of the same opinion. The surviving miners, however, think it was a gas explosion. It is possible that by Saturday or Sunday we will be able to make a more detailed examination, and it is hoped we will be able to determine the cause and character of explosion.

As a matter of immediate importance, I wish to state that from statements of Colliery employees, it seems that timbermen Jones and Miles had in their possession some fifteen sticks of dynamite. During our preliminary examination yesterday we found several coats and vests, <sup>in</sup> ~~one side~~ of which the left sleeve and left pocket were torn to shreds. The longitudinal half of the coat sleeve was missing, and the shreds about the pocket seemed to be very slightly scorched. About

twenty feet from the presumed point of origin, we also found one-half stick of dynamite. The victims appear to have been blown a considerable distance, judging from the scraped and scratched appearance of both hands and face. The heads and bodies were badly bruised. It is a question in my mind whether a gas explosion could develop a force that is evidenced in this instance. In two props still standing, the sides facing the origin are peppered with small pieces of coal and rock, and pieces of a cross cut saw are driven into the props to such a depth that it is impossible to extract them by hand. There is no physical evidence nor odor to these props, which would indicate a flame, although it is the opinion of the investigating <sup>party</sup> ~~body~~ that the odor of dynamite fumes prevail.

Very truly yours,

  
Mining Engineer

Graphical Sketch enclosed.

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

Wilkes-Barre, Pa. Jun. 23" 1912

IN ANSWERING REFER TO

No.

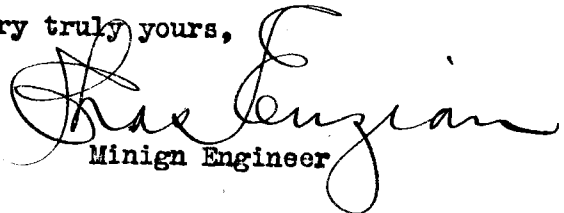
Mr. Geo. S. Rice,  
Chief Mining Engineer,  
Pittsburgh, Pa.,

Dear Mr. Rice; Under separate cover I am forwarding samples of matreial collected at the Parrish Colliery in connection with the explosion of the 9" inst. as follows:-

- A. Sample of debris on the gangway lower rib between chambers 48&49.
- B. Sample of blasting paper collected at the pointed pillar on the gangway.
- C. Sample of of blasting paper collected in the cross-cut between chambers 47 & 48
- D. Sample of coal collected off(inside)<sup>2</sup> rib at cross-cut between chambers 47 &48.
- E. Sample of bark off a leg of set of timber on gangway between chambers 56&57. (Set of timber standing after the explosion)
- F. Sample of residue of burnt dynamite.

Kindly examine the above to ascertain whether they have been in contact with gases given off by explosives explosion or with flame generated by explosion of fire-damp.

Very truly yours,

  
Minign Engineer

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

IN ANSWERING REFER TO

Wilkes-Barre, Pa., January 26, 1912.

No.

Mr. Geo. S. Rice,  
Chief Mining Engineer,  
Bureau of Mines,  
Pittsburg,  
Pa.,

Subject:- Parrish Colliery Mine Air Samples.

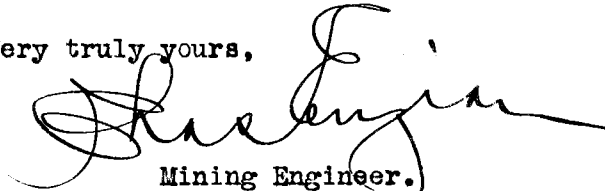
My dear Mr. Rice:-

Am forwarding to-day under separate cover <sup>3</sup> samples (in duplicate) of mine air collected in the # 10 Tunnel, Hillman vein, workings in the Parrish Colliery of the Parrish Coal Co., Plymouth, Pa.

Kindly analyze the same and furnish me with copy of analyses in duplicate.

The samples were collected by Manager W.G. Thomas.

Very truly yours,

  
Mining Engineer.



February 5, 1912.

Parrish Coal Co. explosion

Mr. Chas. Enzian,

Wilkes Barre, Pa.


My dear Mr. Enzian:

In reply to your memo. of February 2, Mr. Burrell advises that owing to pressure of other work it is going to take several weeks before he can make report, but I will see if I can get him to set this analytical work ahead since it may be important to have the information early.

Regarding the debris, this is in a somewhat similar state. We will round it up as early as we can.

As the information is perhaps important or vital to your report, I think you had better hold your report until we can submit these sub-reports. Meantime, I suggest that you fill in so far as you can while the matter is fresh in mind.

Yours very truly,

  
Chief Mining Engineer

# DEPARTMENT OF THE INTERIOR

## BUREAU OF MINES

EXPERIMENT STATION, PITTSBURGH, PA.

IN ANSWERING REFER TO

March 5, 1912.

No.

Dr. J. J. Rutledge:

Mr. Storm and I have gone over the data which you submitted in regard to the explosion at the Parrish Colliery, and have considered same very carefully in connection with the possibilities of chemical examination to determine whether or not gas had exploded.

In this case it is known that considerable quantities of dynamite were present in the mine, and quantities of dynamite estimated at 75 to 100 pounds are known to have participated in the explosion. In such a case as this it is most difficult to determine whether or not there was also an explosion of gas, since the common grades of permissible explosives, and also ordinary dynamite, have among their products of combustion all of the gases which are produced in a gas explosion. If a considerable volume of the atmosphere of the mine had been obtained immediately after the explosion it is possible that its analysis would have furnished a certain answer as to whether the explosion of dynamite had taken place alone, or whether a gas explosion also occurred. It is only in cases where a gas sample can be obtained, however, that an answer can be given to this problem, and there is no manner in which we could work with the occluded gases collected from the samples of wood bark, debris, etc., which would throw light upon the problem.

The examination of solid residues left by an explosion is quite a different matter, for in a case of this sort it is possible by chemical analysis to determine whether or not a charge of explosive has been fired, and even approximately the composition or nature of such explosive. Also, in the case of a dust explosion there are chemical evidences which may be used to reinforce the conclusions based on charred dust, etc., but in the case of a gas explosion none of these positive evidences are available when it is also known that dynamite has exploded.

I regret that there is no chemical assistance that we can give you in this case, but it is the opinion of both Mr. Storm and myself, after going carefully over the evidence, that there is no way in which the analysis of the samples submitted can in any way settle the question of the occurrence of a gas explosion.

Yours very truly,

Walter O. Snelling.  
Chemist in Charge,  
Explosives Research.

April 25, 1912.

Mr. Chas. Bazian,

Wilkes Barre, Pa.

Dear Sir:-

I have read your report carefully on Parrish colliery explosion, and feeling some question about your conclusions, had a conference with Messrs. Rittledge, Fay and Smith. In the main they appeared to have similar views to my own. At all events, we all agreed that it would be well to bring the whole matter to your attention so that you might either change or reinforce your argument.

The first question is: Are you justified in your conclusion that it was an explosive which caused the general explosion, rather than gas? You state "the possibility of a gas explosion was limited by the fact that the air courses were open at the time, and the investigators passed through the openings in the affected section of the mine after the explosion." If there was a gas explosion it is presumable that the methane that might have existed immediately before the explosion would be consumed, and that there had not been a sufficient time for an accumulation of another supply when the investigators first went around. Subsequently there were large quantities found as shown by the samples submitted; the fact that there were large quantities is certainly a strong indication of the possibilities immediately prior to the explosion. The center of the explosive force appears to be, as you indicate, in chamber 48. I was particularly struck with the fact that there were particles of slate and dust driven into the timbers on the inbye side in these rooms. It is inconceivable that this could have been done if a gas explosion had not occurred in these rooms. Either as a cause or as a result explosives (from their position) could not have accomplished this feature.

You state "if it had been a gas explosion it would have been impossible for the six survivors to have lived with the oxygen deficiency in the return air through which they travelled for a distance of about 600 feet after the accident." This would appear to me not to be conclusive either way. It could not be claimed that there was a large amount of explosive gas involved and immediately following its explosion there would be a rush inwards to fill the vacuum; then the doors and curtains being destroyed the movement outward of the afterdamp from the seat of the explosion would be very slow. We observed this at the Experimental mine, as you will recall, after the first blast the smoke retreats and does not again issue until the brattices have been erected and the current established. My conjecture is that the air in No. 2 Counter

when the men came out, was better than subsequently. As far as the small goes, there is no doubt dynamite fumes might be more lingering than in a fire damp explosion.

Now as to the cause of ignition: it appears to me that the following hypothesis would fit the facts as I understand them from your description, quite as well, if not better than the conclusions you reach:

(1) That although the men were told by the fireboss not to go to work on account of a bad roof, he may have told this to the men purposely to conceal the fact that there was gas. (this feature is not essential to the hypothesis.)

(2) That these men waited a considerable period, presumably after falls had taken place that might have liberated a body of gas or else pushed it out on the gangway;

(3) That when they started in and one of them passed through the door between rooms 43 and 44 he ignited gas with his open lamp. The gas would not be an explosive mixture but a layer next to the roof. This gas would then flash back towards the source, possibly in room 48 when it would be detonated. It is a well known fact that it requires a vibratory motion to be set up in firedamp before there is detonation; in the meantime there is merely combustion when ignited in an open space, and this is much more true when the gas is stratified. One has an example of this when a small pocket of gas, or thin layer is set on fire; it does not explode but burns along the roof.

I investigated an explosion a couple of years ago at Herrin Ill. where the foreman with an open light, with a party of surveyors, ignited gas when about two crosscuts from the face on the return. There was no violence in the immediate vicinity of the men; the explosion then travelled through the last crosscut and outward on the aircourse for several hundred feet before it became violent. It then burst back into the entry on which the party was located, and from there outward became quite violent.

Granting the detonation of firedamp in room 48 and 49, all the rest of the facts are easily accounted for, i.e. the ignition of the black powder, and by the concussion the ignition of the dynamite. On this theory I assume that the man or men who had reached the doorway between 43 and 44, having ignited the gas would instinctively run, and perhaps travel considerable distance before being overtaken by the blast. This blast would throw them to the point where found. That these men were affected by the violence seems particularly likely since it seems that Garvin carried some 40 per cent dynamite caps and fuse. This dynamite must have been torn from him before it exploded (that is if it did explode) as otherwise he would undoubtedly have been disemboweled. Mr. Clarence Hall concurs in the latter statement.

I will be pleased if you will go over your report carefully and look at the situation in the light of my suggestions. If you do not feel that it warrants you in changing your conclusions it might then be advisable to write a supplemental report answering my comments.

Yours very truly,

Chief Mining Engineer.

April 25, 1912.

Mr. Chas. Enzian,

Wilkes Barre, Pa.

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I investigated an explosion a couple of years ago at Herrin Ill. where the foreman with an open light, with a party of surveyors, ignited gas when about two crosscuts from the face on the return. There was no violence in the immediate vicinity of the men; the explosion then travelled through the last crosscut and outward on the aircourse for several hundred feet before it became violent. It then burst back into the entry on which the party was located, and from there outward became quite violent.

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I will be pleased if you will go over your report carefully and look at the situation in the light of my suggestions. If you do not feel that it warrants you in changing your conclusions it might then be advisable to write a supplemental report answering my comments.

Yours very truly,

Chief Mining Engineer.

COPY.

April 25, 1912.

Mr. Chas. Szian,

Wilkes-Barre, Pa.

Dear Sir:

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Now as to the cause of ignition: it appears to me that the following hypothesis would fit the facts as I understand them from your description, quite as well, if not better than the conclusion you reach:

(1) That although the men were told by the fireboss not to go to work on account of a bad roof, he may have told this to the men purposely to conceal the fact that there was gas. (this feature is not essential to the hypothesis)

(2) That these men waited a considerable period, presumably after falls had taken place that might have liberated a body of gas or else pushed it out on the gangway:

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I investigated an explosion a couple of years ago at Herrin, Ill. where the foreman with an open light, with a party of surveyors, ignited gas when about two crosscuts from the face on the return. There was no violence in the immediate vicinity of the men; the explosion then traveled through the last crosscut and outward on the aircourse for several hundred feet before it became violent. It then burst back into the entry on which the party was located, and from there outward became quite violent.

Granting the detonation of fire-damp in rooms 48 and 49, all the rest of the facts are easily accounted for, i.e. the ignition of black powder, and by the concussion the ignition of the dynamite. On this theory, I assume that the man or men who had reached the doorway between 43 and 44, having ignited the gas would instinctively run, and perhaps travel considerable distance before being overtaken by the blast. This blast would throw them to the point where found. That these men were affected by the violence seems particularly likely since it seems that Garvlin carried some 40 per cent dynamite caps and fuse. This dynamite must have been torn from him before it exploded (that is if it did explode) as otherwise he would undoubtedly have been disemboweled. Mr. Clarence Hall concurs in the latter statement.

I will be pleased if you will go over your report carefully and look at the situation in the light of my suggestions. If you do not feel that it warrants you in changing your conclusions it might then be advisable to write a supplemental report answering my comments.

Yours very truly,

Chief Mining Engineer.



DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

IN ANSWERING REFER TO

No.

Wilkes-Barre, Pa. August, 20, 1912.

Subject; Parrish Explosion.

Mr. Geo. S. Rice,  
Chief mining engineer,  
Pittsburgh, Pa.

My Dear Mr. Rice:-

In further reference to the Parrish Explosion Jan. 9, 1912, -and  
answering your letters concerning the same:

I am now convinced that my first conclusions regarding the cause  
of the explosion no longer conform to facts brought out since the explosion  
and therefore request to submit the enclosed modified report which, I think,  
will cover all the points you raised.

I do not think that you understood the point I was making in the  
statement that "----the investigators passed through the openings in the  
affected section after the explosion." I had in mind that if gas had  
exploded, the accumulation should have been caused by caves that would block  
the air current and thus cause explosible accumulations; evidence of such  
caves were not observed.

To my mind, it is highly probable that the driver-boy, Buscavage,  
passed through the door at "A" and did not exercise sufficient caution to  
close the same, thus allowing the gas to accumulate. The ignition may have  
occurred as outlined in paragraph (1) page nine or by a feeder left burn-  
ing in the face of chamber #43. At all events I feel quite certain that  
it was not a very large quantity of gas that exploded. The fact that a  
large quantity existed after the explosion was due to the breaking of

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

IN ANSWERING REFER TO

No.

the double stopping in the opening indicated to the left of the letter "H" on attached print, and that the door at "H" had been destroyed as was the stopping indicated immediatly above the letter "H" , thus causing a short circuit of the current going into #10 tunnel, and the rapidly accumulating gas in the Hillman vein, then extended out and joined with the intake just inside the door at "H".

Your hypotheses are based on the assumption that a gas explosion occurred and therefore naturally suit the facts; consequently the results are easily accounted for. There is in my mind however some doubt as to the manner of ignition in paragraph (3) of your letter. I think ,the gas must have been *ig*nited before any of the men reached the *door* between chambers 43 and 44. A man igniting firedamp at such a location would be easily be too bewildered to run any distance before detonation occurs.

Am glad that you brought out the several points and that I consequently gave the matter further thought and study so as to develop a report consistent with subsequently established facts.

The personnel of the colliery management has changed, and I have been able to get some very confidential notes on the whole situation, all of which are embodied in the new report.

The State Inspector substantially agrees with the conclusions in my report.

Very truly yours

*John C. Englem*  
MINING ENGINEER

COPY.

Wilkes-Barre, Pa., August 20, 1912.

Subject: Parrish Explosion.

Mr. Geo. S. Rice,  
Chief mining engineer,  
Pittsburgh, Pa.

My dear Mr. Rice:

In further reference to the Parrish Explosion Jan. 9, 1912, and answering your letters concerning the same:

I am now convinced that my first conclusions regarding the cause of the explosion no longer conform to facts brought out since the explosion and therefore request to submit the enclosed modified report which, I think, will cover all the points you raised.

I do not think that you understood the point I was making in the statement that ".....the investigators passed through the openings in the affected section after the explosion." I had in mind that if gas had exploded, the accumulation should have been caused by caves that would block the air current and thus cause explosible accumulations; evidence of such caves were not observed.

To my mind, it is highly probable that the driver-boy, Buscavage, passed through the door at "A" and did not exercise sufficient caution to close the same, thus allowing the gas to accumulate. The ignition may have occurred as outlined in paragraph (1) page nine or by a feeder left burning in the face of chamber #48. At all events I feel quite certain that it was not a very large quantity of gas that exploded. The fact that a large quantity existed after the explosion was due to the breaking of the double stopping in the opening indicated to the left of the letter "H" on attached print, and that the door at "H" had been destroyed as was the stopping indicated immediately above the letter "H", thus causing a short circuit of the current going into #10 tunnel, and the rapidly accumulating gas in the Hillman vein, then extended out and joined with the intake just inside the door at "H".

Your hypotheses are based on the assumption that a gas explosion occurred and therefore naturally suit the facts; consequently the results are easily accounted for. There is in my mind, however, some doubt as to the manner of ignition in paragraph (3) of your letter. I think the gas must have been ignited before any of the men reached the door between chambers 43 and 44. A man igniting firedamp at such a location would probably be too bewildered to run any distance before detonation occurs.

Am glad that you brought out the several points and that I consequently gave the matter further thought and study so as to develop a report consistent with subsequently established facts.

The personnel of the colliery management has changed, and I have been able to get some very confidential notes on the whole situation, all of which are embodied in the new report.

Geo. S. Rice. #2.

The State Inspector substantially agrees with the conclusions in my report.

Very truly yours,

(Sgd.) Chas. Enzian.

MINING ENGINEER.

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

IN ANSWERING REFER TO

No.

Wilkes-Barre, Pa. August, 20, 1912.

Subject; Parrish Explosion.

Mr. Geo. S. Rice,  
Chief mining engineer,  
Pittsburgh, Pa.

My Dear Mr. Rice:-

In further reference to the Parrish explosion will you have the gas analyses, fan chart and print of map now attached to first reports attached to the enclosed copies of Parrish Explosion Report ---

Very truly yours

*Shax Ferguson*  
MINING ENGINEER,

COPY

PARRISH COAL COMPANY

Plymouth, Pa., November 6, 1912.

Mr. W. R. Ingalls,

Consulting Engineer, Bureau of Mines.

Dear Sir:

Your letter of the 1st instnat received, and contents noted. In regard of the explosion of dynamite that took place at the Parrish Colliery Jan. 9th, 1912, my opinion is, that the men were killed by the explosion of dynamite powder that they carried with them on their way to work that night, caused as I believed, by the concussion of an explosion of dynamite about 400 feet inside of where they were killed. Mr. Enzian, of the Bureau of Mines, made an examination of the accident at that time.

Yours respectfully,

(Sgd.) Thomas R. Evans,

Superintendent.

November 12, 1912.

Mr. Van H<sup>2</sup><sub>1</sub> Manning.

Assistant to the Director.

In reference to the attached correspondence with Mr. Ingalls, Mr. Wilson suggests that Mr. Ingalls' relations are such that it would be advisable to offer to allow him to see Mr. Enzian's report on the Parrish disaster. If so it will be necessary to revise the last paragraph of the letter I have prepared.

In that connection, I have never sent in Mr. Enzian's <sup>first</sup> report as I had not agreed with his findings. He prepared a second report, but I <sup>shall</sup> do not feel in accord with his conclusions; nevertheless I will send it in at an early date.

Very truly yours,

*E. C. Mearns*  
Chief Mining Engineer.

November 14, 1912.

Mr. W. R. Ingalls,  
505 Pearl Street,  
New York City.

Dear Sir: -

Replying to your letter of November 7, in reference to an explosion of dynamite stated to have occurred at the Parrish colliery, Plymouth, Penna. on January 9, 1912, in the absence of the Director this letter was referred to the Chief Mining Engineer.

He states that there was an explosion at the Parrish colliery on January 9, 1912, about which there was much conflicting evidence. It is known that a can of black powder containing probably 25 pounds, had exploded; also that dynamite in other boxes had exploded; and in addition 12 to 16 sticks which was carried by some men in the general vicinity. To complicate the situation, after the explosion considerable explosive gas was found. The investigators generally agreed that there had been an explosion of gas in addition to that of the explosives; the clothing of two of the victims was scorched. Six were killed and two injured.

The Coroner's jury decided that the deaths occurred "from an explosion of gas and that the gas was ignited by one of the men killed; we further find that the said Parrish Coal Company and its officials were negligent in sending men in the said gangway, knowing that the roof was working and was generating gas without first sending in the fireboss to ascertain that this was in a safe condition."

It is understood that the contention of the operating company was that the disaster was due to explosives.

It will not be consistent with the policy of the bureau to give out the report of the mining engineers of the bureau who made the investigation, but it can be stated that the matter was very complex. If there are any further specific questions which can be answered confidentially, no doubt the Director will be pleased to answer same.

Very respectfully,

Assistant to the Director.

c.c. Chas. Enzian.



**ANSWERS DEPARTMENT OF THE INTERIOR**

DEC 4 1912

BUREAU OF MINES

**G. S. RICE**

WASHINGTON

IN ANSWERING REFER TO  
442.11  
No.

November 20, 1912.

Chief Mining Engineer:

I am inclosing you herewith the complete files relative to the request of Mr. W. R. Ingalls for information concerning Mr. Enzian's report on the Parrish disaster. You will please note paragraph 4 of my letter of November 15 to Mr. Ingalls, in which I offered to send to him, as consulting engineer of the Bureau of Mines, a copy of Mr. Enzian's report for his confidential information as soon as it had been finally passed upon by you.

You doubtless know that Messrs. Ingalls, Hammond, Finley, Channing and Douglas, as consulting engineers of the bureau, are preparing a "Proposed Code of Rules Governing Practices in Metal Mines."

Please note the comment made by Mr. Ingalls that he can see no reason why the names of the mines and localities should be omitted. Please send a copy of Mr. Enzian's report on the Parrish disaster to this office in order that it may be transmitted to Mr. Ingalls.

Very truly yours,

*W. H. Manning*  
Assistant to the Director.

December 5, 1912.

PARRISH COLLIERY EXPLOSION REPORT.

Director: -

The attached report is the one desired in your letter of November 20, relative to request of Mr. W.R. Ingalls, for information concerning the Parrish disaster. I am sending by accompanying mail two copies of the report with certain comments by me. If you do not need the duplicate report I will be pleased to have it returned, although I have one copy in my files.

Very respectfully,

  
Chief Mining Engineer.

December 5, 1912.

PARRISH COLLIERY EXPLOSION.


Director:-

I submit herewith Mr. Chas. Enzian's revised report on the explosion at Parrish Colliery, Plymouth, Pa. January 9, 1912.

I call to your attention a letter which I wrote to Mr. Enzian on April 25, on receipt of his first report, in which I raised some question as to the correctness of his conclusions. I also call attention to his reply of August 20, from which you will note that he says the State Inspector substantially agrees with the conclusions in his report. These two letters are attached to the back of the report sent to you.

After again reviewing the evidence, together with Mr. H.I. Smith, I still feel that there is much question about Mr. Enzian's modified conclusions in this revised report. In other words, it appears to me and to Mr. Smith that the evidences of its having been primarily a gas explosion are greater, with the explosives producing secondary effects, than that the explosives were the important factor in the explosion.

Very respectfully,

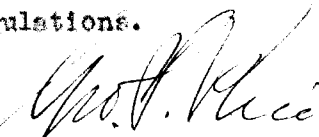
  
Chief Mining Engineer.

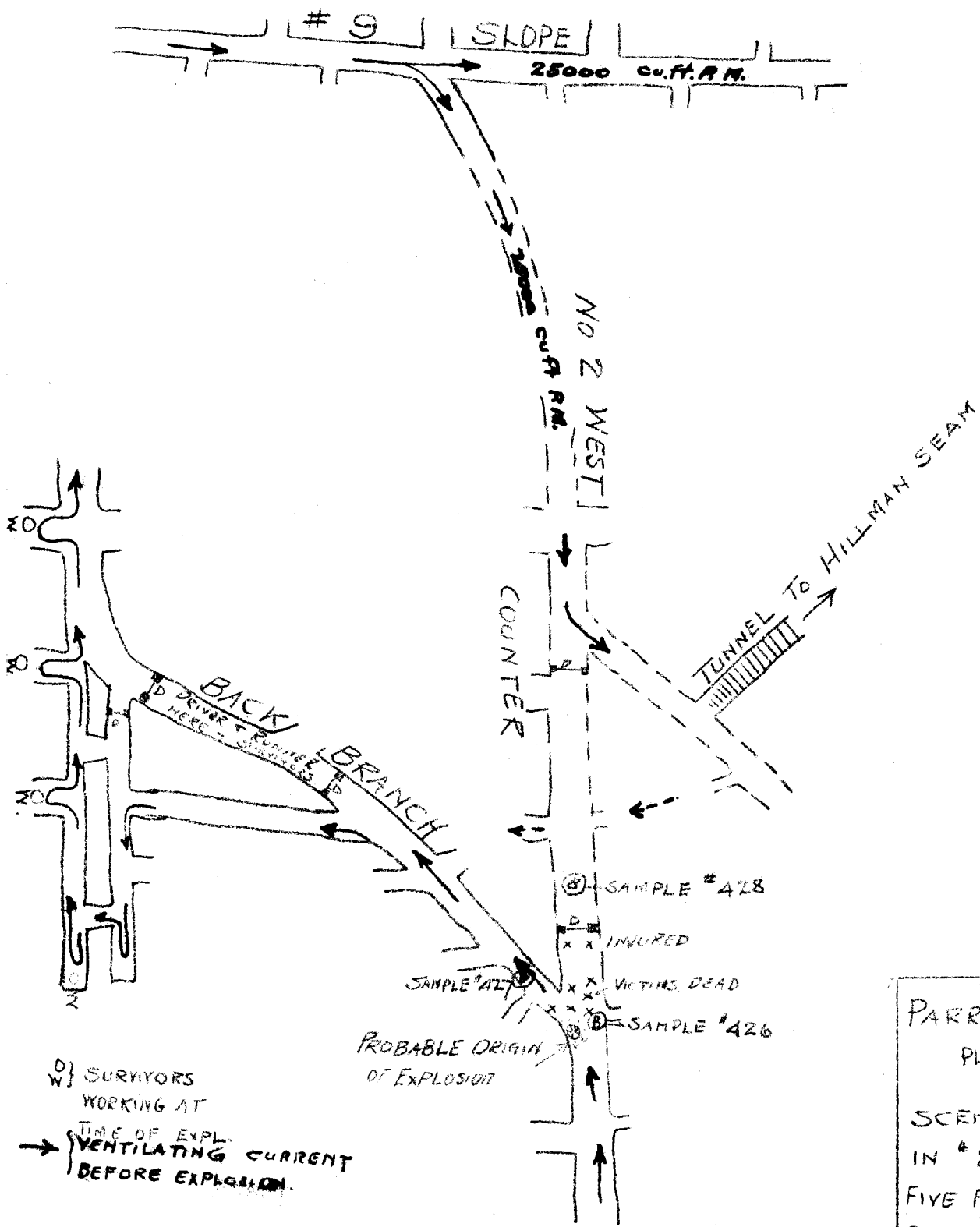
December 13, 1912.

PARRISH EXPLOSION REPORT.

Director:-

I beg to remind you that I think it would be advisable to transmit confidentially a copy of the Parrish mine explosion report by Mr. Enzian, to Mr. Ingalls, with the attached comments by myself. As you are aware, Mr. Ingalls desires to make use of the report in connection with his proposed bulletin on metal mine rules and regulations.

  
Chief Mining Engineer.

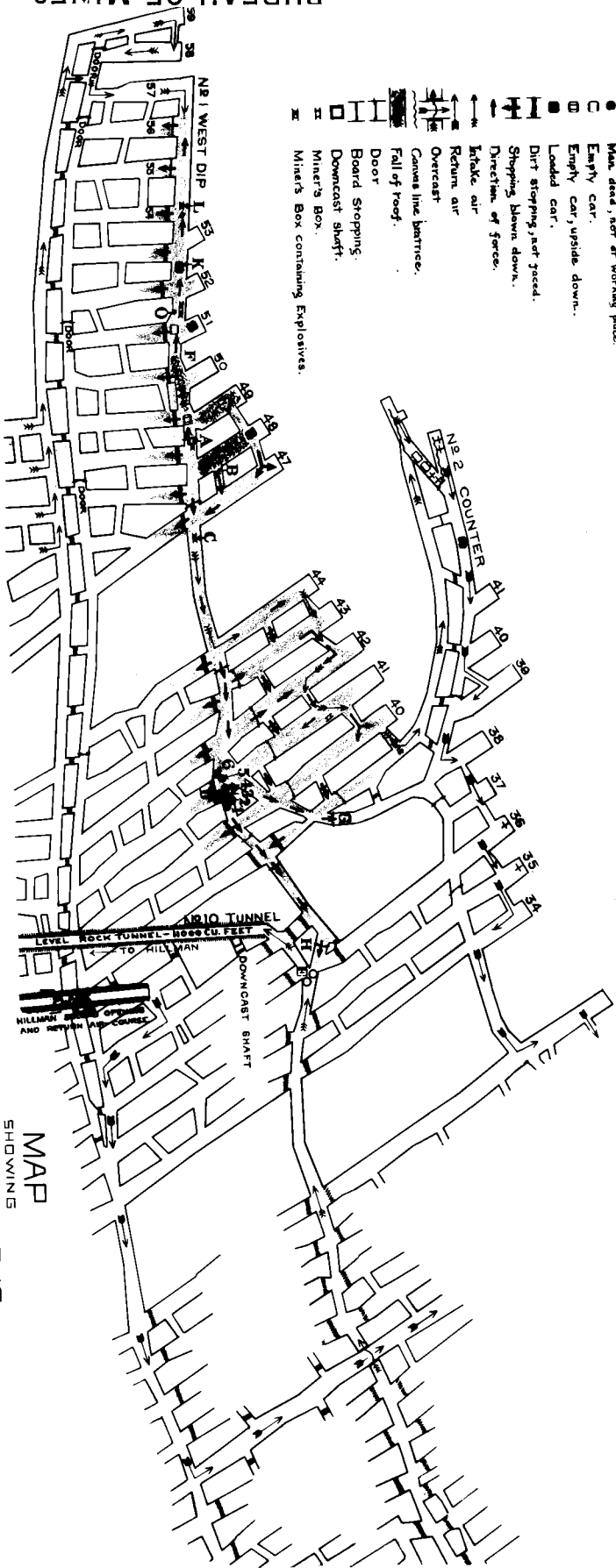


PARRISH COAL CO  
 PLYMOUTH, PA  
 SCENE OF ACCIDENT  
 IN # 2 WEST COUNTER  
 FIVE FOOT SEAM JAN.  
 9, 1912, 4:50 PM.  
 C.E.

# SYMBOLS USED.

- + ——— MAN'S SUPPOSED WORKING PLACE.
- Man alive, not at working place.
- Man dead, not at working place.
- Empty car.
- ◻ Empty car, upside down.
- ◼ Loaded car.
- Dirt stopping, not faced.
- ← Dirt stopping, blown down.
- ⇄ Direction of force.
- ↻ Intake air.
- ↺ Return air.
- ↻ Overcast.
- ↻ Canvas line battens.
- ↻ Fall of roof.
- ↻ Door.
- ↻ Board Stopping.
- ↻ Downcast shaft.
- ↻ Miner's Box.
- ↻ Miner's Box containing Explosives.

## BUREAU OF MINES



A,B,C,D,E,F,G,H,K,L,O  
ARE DEFINED IN REPORT.

MAP  
SHOWING  
EXPLOSION ZONE  
AT THE PARRISH COLLIERY  
5 FOOT WORKINGS OF  
THE PARRISH COAL CO.  
PLYMOUTH, PENNA., JAN 9, 1912.



## DEPARTMENT OF THE INTERIOR

## BUREAU OF MINES

## CHEMICAL LABORATORY REPORT

## MINE AIR SAMPLE

Received, 1/23/12 (Laboratory Record) \_\_\_\_\_

Bottle No. 426 Laboratory No. 2028

Mine, Parrish Colliery Operator, Parrish Coal Co.

State, Pennsylvania County, Luzerne

Township, \_\_\_\_\_ Sec. \_\_\_\_\_ T. \_\_\_\_\_ R. \_\_\_\_\_

Town (Distance and direction from) in Plymouth Borough

Name of coal bed, Five Foot 4 ft. 6 in.

Room, \_\_\_\_\_ Entry, \_\_\_\_\_

Location in same, where sample is taken, presumed origin of explosion

Are there gas feeders near where sample is taken? \_\_\_\_\_ Strong or weak? \_\_\_\_\_

Are gas feeders from roof, coal, or floor? \_\_\_\_\_

Method of sampling, air displacement

Velocity, \_\_\_\_\_ Area, \_\_\_\_\_ Quantity, \_\_\_\_\_

Barometer: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Corrected to sea level: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Bulbs: Wet, \_\_\_\_\_ Dry, \_\_\_\_\_ Humidity, \_\_\_\_\_ %

Collector, Daniel D. Davis. Mailed, 1/10/12

Remarks (Note whether sample represents average mine air in locality or localized body of gas): \_\_\_\_\_

**Gas extending from roof 30". There is more than 2% methane due to ventilation appliances (wall, brattices and doors) being destroyed.**

CO <sub>2</sub>	<u>.17</u>	H <sub>2</sub>	_____
O <sub>2</sub>	<u>20.32</u>	H <sub>2</sub> S	_____
CO	<u>.00</u>	C <sub>2</sub> H <sub>4</sub>	_____
CH <sub>4</sub>	<u>2.34</u>		_____
N	<u>77.17</u>		_____
Total	<u>100.00</u>		

Date, 4/18/12 (Signed) Geo. A. Burrell.

## DEPARTMENT OF THE INTERIOR

## BUREAU OF MINES

## CHEMICAL LABORATORY REPORT

## MINE AIR SAMPLE

Received, 1/23/12 (Laboratory Record) \_\_\_\_\_

Bottle No. 427 Laboratory No. 2029

Mine, Parrish Colliery Operator, Parrish Coal Co

State, Pennsylvania County, Luzerne

Township, \_\_\_\_\_ Sec. \_\_\_\_\_ T. \_\_\_\_\_ R. \_\_\_\_\_

Town (Distance and direction from) in Plymouth Borough

Name of coal bed, Five -Foot 4 ft. 6 in.

Room, \_\_\_\_\_ Entry, \_\_\_\_\_

Location in same, where sample is taken part return of mine section

Are there gas feeders near where sample is taken? \_\_\_\_\_ Strong or weak? \_\_\_\_\_

Are gas feeders from roof, coal, or floor? \_\_\_\_\_

Method of sampling, air displacement

Velocity, \_\_\_\_\_ Area, \_\_\_\_\_ Quantity, ~~15000~~

Barometer: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Corrected to sea level: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Bulbs: Wet, \_\_\_\_\_ Dry, \_\_\_\_\_ Humidity, \_\_\_\_\_ %

Collector, Daniel D. Davis. Mailed, 1/10/12

Remarks (Note whether sample represents average mine air in locality or localized body of gas):  
Gas extending from roof 18". There is more than 2% methane due to  
ventilation appliances(walls, brattices and doors) being destroyed.

CO <sub>2</sub>	<u>.11</u>	H <sub>2</sub>	_____
O <sub>2</sub>	<u>20.41</u>	H <sub>2</sub> S	_____
CO	<u>.00</u>	C <sub>2</sub> H <sub>4</sub>	_____
CH <sub>4</sub>	<u>2.60</u>		_____
N	<u>76.88</u>		_____
Total	<u>100.00</u>		_____

Date, 4/18/12 (Signed) Geo. A. Burrell.



## DEPARTMENT OF THE INTERIOR

## BUREAU OF MINES

## CHEMICAL LABORATORY REPORT

## MINE AIR SAMPLE

Received, 1/23/12 (Laboratory Record) \_\_\_\_\_Bottle No. 428 Laboratory No. 2030Mine, Parrish Colliery Operator, Parrish Coal Co.State, Pennsylvania County, Luzerne

Township, \_\_\_\_\_ Sec. \_\_\_\_\_ T. \_\_\_\_\_ R. \_\_\_\_\_

Town (Distance and direction from) in Plymouth BoroughName of coal bed, Five-Foot 4 ft. 6 in.

Room, \_\_\_\_\_ Entry, \_\_\_\_\_

Location in same, where sample is taken, 100' outside of origin

Are there gas feeders near where sample is taken? \_\_\_\_\_ Strong or weak? \_\_\_\_\_

Are gas feeders from roof, coal, or floor? \_\_\_\_\_

Method of sampling, air displacementVelocity, \_\_\_\_\_ Area, \_\_\_\_\_ Quantity, 15000

Barometer: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Corrected to sea level: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Bulbs: Wet, \_\_\_\_\_ Dry, \_\_\_\_\_ Humidity, \_\_\_\_\_ %

Collector, Daniel D. Davis. Mailed, 1/10/12

Remarks (Note whether sample represents average mine air in locality or localized body of gas): \_\_\_\_\_

Gas extending 30" from roof. There is more than 2% methane due to ventilation appliances (walls, brattices and doors) being destroyed.CO<sub>2</sub> .16 H<sub>2</sub> \_\_\_\_\_O<sub>2</sub> 19.13 H<sub>2</sub>S \_\_\_\_\_CO .00 C<sub>2</sub>H<sub>4</sub> \_\_\_\_\_CH<sub>4</sub> 7.41N 73.30Total 100.00Date, 4/18/12 (Signed) Geo. A. Burrell.

Chemist.

## DEPARTMENT OF THE INTERIOR

## BUREAU OF MINES

## CHEMICAL LABORATORY REPORT

## MINE AIR SAMPLE

Received, 1/23/12 (Laboratory Record) \_\_\_\_\_

Bottle No. 426 Laboratory No. 2028

Mine, Parrish Colliery Operator, Parrish Coal Co.

State, Pennsylvania County, Luzerne

Township, \_\_\_\_\_ Sec. \_\_\_\_\_ T. \_\_\_\_\_ R. \_\_\_\_\_

Town (Distance and direction from) in Plymouth Borough

Name of coal bed, Five-Foot 4 ft. 6 in.

Room, \_\_\_\_\_ Entry, \_\_\_\_\_

Location in same, where sample is taken, presumed origin of explosion

Are there gas feeders near where sample is taken? \_\_\_\_\_ Strong or weak? \_\_\_\_\_

Are gas feeders from roof, coal, or floor? \_\_\_\_\_

Method of sampling, air displacement

Velocity, \_\_\_\_\_ Area, \_\_\_\_\_ Quantity, \_\_\_\_\_

Barometer: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Corrected to sea level: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Bulbs: Wet, \_\_\_\_\_ Dry, \_\_\_\_\_ Humidity, \_\_\_\_\_ %

Collector, Daniel D. Davis. Mailed, 1/10/12

Remarks (Note whether sample represents average mine air in locality or localized body of gas): \_\_\_\_\_

Gas extending from roof 30". There is more than 2% methane due to  
ventilation appliances(walls, brattices and doors) being destroyed.

CO <sub>2</sub>	<u>.17</u>	H <sub>2</sub>	_____
O <sub>2</sub>	<u>20.32</u>	H <sub>2</sub> S	_____
CO	<u>.00</u>	C <sub>2</sub> H <sub>4</sub>	_____
CH <sub>4</sub>	<u>2.34</u>		_____
N	<u>77.17</u>		_____
<b>Total</b>	<b>100.00</b>		

Date, 4/18/12 (Signed) Geo. A. Burrell.

DEPARTMENT OF THE INTERIOR  
BUREAU OF MINES

CHEMICAL LABORATORY REPORT

MINE AIR SAMPLE

Received, 1/23/12 (Laboratory Record) \_\_\_\_\_

Bottle No. 427 Laboratory No. 2029

Mine, Parrish Colliery Operator, Parrish Coal Co.

State, Pennsylvania County, Luzerne

Township, \_\_\_\_\_ Sec. \_\_\_\_\_ T. \_\_\_\_\_ R. \_\_\_\_\_

Town (Distance and direction from) in Plymouth Borough

Name of coal bed, Five -Foot 4 ft. 6 in.

Room, \_\_\_\_\_ Entry, \_\_\_\_\_

Location in same, where sample is taken, part return of mine section

Are there gas feeders near where sample is taken? \_\_\_\_\_ Strong or weak? \_\_\_\_\_

Are gas feeders from roof, coal, or floor? \_\_\_\_\_

Method of sampling, air displacement

Velocity, \_\_\_\_\_ Area, \_\_\_\_\_ Quantity, ~~15000~~

Barometer: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Corrected to sea level: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Bulbs: Wet, \_\_\_\_\_ Dry, \_\_\_\_\_ Humidity, \_\_\_\_\_ %

Collector, Daniel D. Davis. Mailed, 1/16/12

Remarks (Note whether sample represents average mine air in locality or localized body of gas): \_\_\_\_\_

Gas extending from roof 18". There is more than 2% methane due to  
ventilation appliances (walls, brattices and doors) being destroyed.

CO <sub>2</sub>	<u>.33</u>	<u>.11</u>	H <sub>2</sub>	_____
O <sub>2</sub>	<u>20.41</u>		H <sub>2</sub> S	_____
CO	<u>.00</u>		C <sub>2</sub> H <sub>4</sub>	_____
CH <sub>4</sub>	<u>2.60</u>			_____
N	<u>76.88</u>			_____
Total	<u>100.00</u>			_____

Date, 4/16/12

(Signed) Geo. A. Burrell.

## DEPARTMENT OF THE INTERIOR

## BUREAU OF MINES

## CHEMICAL LABORATORY REPORT

## MINE AIR SAMPLE

Received, 1/23/12 (Laboratory Record)Bottle No. 428 Laboratory No. 2030Mine, Parrish Colliery Operator, Parrish Coal Co.State, Pennsylvania County, Luaine

Township, \_\_\_\_\_ Sec. \_\_\_\_\_ T. \_\_\_\_\_ R. \_\_\_\_\_

Town (Distance and direction from) in Plymouth BoroughName of coal bed, Five-Foot 4 ft. 6 in.

Room, \_\_\_\_\_ Entry, \_\_\_\_\_

Location in same, where sample is taken, 100' outside of origin

Are there gas feeders near where sample is taken? \_\_\_\_\_ Strong or weak? \_\_\_\_\_

Are gas feeders from roof, coal, or floor? \_\_\_\_\_

Method of sampling, air displacementVelocity, \_\_\_\_\_ Area, \_\_\_\_\_ Quantity, 15000

Barometer: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Corrected to sea level: Inside, \_\_\_\_\_ Outside, \_\_\_\_\_

Bulbs: Wet, \_\_\_\_\_ Dry, \_\_\_\_\_ Humidity, \_\_\_\_\_ %

Collector, Daniel D. Davis. Mailed, 1/19/12

Remarks (Note whether sample represents average mine air in locality or localized body of gas): \_\_\_\_\_

Gas extending 30" from roof. There is more than 2% methane due to ventilation appliances(walls, brattices and doors) being destroyed.CO<sub>2</sub> .16 H<sub>2</sub> \_\_\_\_\_O<sub>2</sub> 19.13 H<sub>2</sub>S \_\_\_\_\_CO .00 C<sub>2</sub>H<sub>4</sub> \_\_\_\_\_CH<sub>4</sub> 7.41 \_\_\_\_\_N 73.30 \_\_\_\_\_Total 100.00Date, 4/19/12 (Signed) Geo. A. Burrell.

Chemist.

# EXPLOSION KILLS SIX AT PARRISH COLLIERY

## Dynamite Almost Wipes Out Gang of Workmen

### ONLY TWO ESCAPE INSTANT DEATH

And They Are Badly Injured—Officials of the Parrish Coal Company At a Loss to Explain Cause of Tragedy Which is the Worst in the History of This Plymouth Mine—Only Eight At Work Where Accident Occurred and All Are Caught—One of the Injured Men Gives Story of Disaster—More Than a Score Made Orphans.

### CORONER MARLEY WILL INVESTIGATE

Six men were killed and two injured in No. 9 slope of the Parrish colliery at Plymouth yesterday afternoon shortly after 5 o'clock by an explosion of dynamite. The night workmen were placing timbers when the accident occurred. The officials are at a loss to explain the cause of the explosion.

- THE DEAD**
- ELMER JONES, timberman, aged 33, single, boarded with Mark Lewis, Ackley street.
  - PAUL RESHOFSKI, miner, aged about 35, Coal street, Plymouth, survived by wife and two children.
  - AUGUST GARLIN, timberman, aged 47, Coal street, Plymouth, survived by wife and six children.
  - HENRY MILES, timberman, aged 46, Orchard street, Plymouth, survived by wife and eight children.
  - JOHN HUMPRHEYS, mining engineer, aged about 36, Ackley street, Plymouth, survived by wife and four children.
  - ANTHONY GOHALIS, laborer, aged 30, single, boarded with Reshofski, one of the dead men.

- THE INJURED**
- ANTHONY LUKAWITZ, aged 32, Curry Hill, Plymouth Township, taken to Mercy Hospital, burned about the face and hands. Will recover.
  - EDWARD BEYNON, timberman, aged about 40, married, removed to his home on Lee street, Plymouth. Will recover.

The scene of the accident was in No.

9 slope where the gang of workmen was timbering a part of the mine known as No. 9 West five-foot vein. According to statements made by Mine Foreman Evan T. Thomas and the company officials the death of the men was due to the accidental explosion of dynamite, the amount of which they could not determine until after a thorough investigation. They admit that powerful explosives had been used in connection with timbering that portion of the slope. From a casual investigation made last night after the injured and dead had been removed from the mine it was learned that the workings were not damaged to any great extent. If this is correct the quantity of dynamite was not nearly as great as believed.

The bodies of the six men were found heaped together but a short distance from the spot in the slope where the dynamite is supposed to have exploded. That there was an explosion of gas following the first explosion is evidenced by the condition of the bodies of the dead men and the two that were injured. The men injured are suffering from burns.

According to a statement made to the Record by Anthony Lukawitz, the injured man removed to the Mercy Hospital, there was an explosion of gas. He was painfully burned about the face and hands, while his elbows were lacerated as the result of being blown several feet by the explosion.

**LUKEWITZ'S STATEMENT**

Lukawitz's statement follows: "I was working with the others in the slope putting in timbers when there was an awful explosion. When I saw the fire coming I covered my face and dropped. A few seconds later I saw the six other men falling in front of me and heard them groaning. I crawled over their bodies and made my way on my hands and knees to the foot of the slope and gave the alarm."

When questioned about the dynamite Lukawitz said he had been working on the job only a short time before the accident occurred and had not seen any dynamite. It seems that Lukawitz was a laborer for Paul Reshofski, one of the dead, and the two men had been called to assist the timberman. Lukawitz has been in this country for some time and speaks good English. He will recover.

The scene around the mouth of the slope following the report that a dozen men had been killed and many others entombed was one of great excitement for a time, hundreds of people assembling and anxiously waiting in the cold to hear the news from the inside.

Shortly after being notified of the accident Foreman T. Thomas, secretary of the company, and others formed a party and started the work of removing the dead. Edward Beynon, one of the injured men, was found about five feet from the bodies in a condition of the six dead men. He was removed to the surface in an unconscious state. Later he and given first aid treatment. He recovered sufficiently to be removed to his home on Lee street.

and it is expected that he will recover.

**REMOVING THE DEAD.**

Waiting at the mouth of the slope were ambulances of the Lehigh & Wilkes-Barre Coal Co., the Buttonwood colliery and the Parrish colliery. The work of removing the bodies was hampered by the icy condition of the slope and it was not until after 9 o'clock that the last body was taken from the mine.

John Humphreys, one of the men killed, was a mining engineer and recently returned from the west. It was his second day to work for the Parrish Coal Co. and it was his intention to quit the mines and devote his efforts to outside engineering. Mr. Humphreys before going west was employed as inside foreman at the Gaylord colliery of the Kingston Coal Co.

H. H. Ashley, president of the Parrish Coal Co., when asked for a statement last night as to the cause of the accident, was unprepared to say anything until after an investigation. Together with the other officials he declared that the men's deaths were due to an accidental explosion of dynamite.

Owing to the accident being unusual Coroner James F. Marley stated last night that it is being thoroughly investigated by him.

According to an official of the Parrish Coal Co. last night the accident is the worst in the history of the company. The largest number of men killed previous to yesterday's tragedy was three.

### City Mission

The regular monthly meeting of the City Mission was held Tuesday afternoon in the chapel of the First Presbyterian Church. Mrs. L. S. Langdon, president. The devotional exercises were conducted by Mrs. Stone. She gave an interesting report of the prison work, one young man showing true repentance and living again exemplary life, has, by the warden, been appointed teacher in the school there and also librarian which is a great help to the chaplain through the generosity of friends the usual Christmas treat was sent to the inmates of the prison and was very much enjoyed by the inmates. The regular religious services were conducted twice during the month.

In Mrs. Stone's report she said the first month has been one of the busiest and most successful of the year's work. In addition to the regular spiritual part of one week, special efforts were made to search out families who were in need; and who never would apply for help. Through tickets furnished by the Salvation Army and other twenty-seven families were furnished Christmas dinners, reaching 130 individuals. A number of garments were given out, eighteen books, sixty cards and the day before Christmas a prisoner was given a scriptural treat. Many pitiful and interesting cases of good which have been accomplished.

### Wise Street Commissioners

Due to the thaw on Monday evening followed by a sudden change of weather the sidewalks in the city are covered with ice, making them extremely dangerous to walk on. Street Commissioner orders that ashes be sprinkled on a

EXPLOSION AT FAIRBANKS COLLIERY

OF THE

FAIRBANKS COAL COMPANY, PLYMOUTH, LUZERNE CO. PENNA.

JANUARY 9, 1912.

REPORT BY C. S. EMILIAN.

EXPLOSION AT PARRISH COLLIERY

OF THE

PARRISH COAL COMPANY, PLYMOUTH, LUZERNE CO. PENNA.

JANUARY 9, 1912.

REPORT BY CHAS. ENZIAN.

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EXPLOSION AT PARRISH COLLIERY  
OF THE  
PARRISH COAL COMPANY, PLYMOUTH, LUZERNE CO. PENNA.

JANUARY 9, 1912.

REPORT BY CHAS. ENZIAN.

---

INTRODUCTION.

The explosions occurred in what is known as the No. 5 Tunnel West Dip Road off No. 9 slope; also locally known as No. 1, West Five-Foot Seam, of the Parrish Colliery, on January 9, 1912, between 4 and 5 o'clock p.m. The fatalities were six, as follows: Elmer Jones, timberman; Henry Miles, timberman; August Garvlin, timberman; Paul Rechofski, miner; John Humphreys, timberman helper, and Anthony Gohalis, miner's helper; the two injured are Anthony Lukavich, timberman helper, and Edward Beynan, timberman.

As the six men (who were at the working faces) came out, they passed the dying men. On account of dust and smoke, and under the stress of excitement the six escaping men did not stop to assist the six men, who were subsequently found dead. The latter were badly bruised about the hands and back of the head. A singular fact is that only two of the victim's faces and clothing were badly scorched. The injured were attended by the First-Aid Corps; one was sent to the hospital, and the other to his home.

The explosion described in the preliminary report submitted January 11, now develops to have been a triple explosion. The initial explosion in all probability occurred in the miners' box on gangway marked "O" on attached print, caused by the ignition of a 25 pound can of black powder. Detailed evidence and notes collected on January 10, 12 and 22, seem to indicate that this point was

the origin of what is termed by the miners, "the first explosion." The concussion of this explosion undoubtedly unloosened the roof and caused the fall indicated at "F" on attached print; thus causing either by gas coming in contact with burning dynamite in a box at "O" or by percussion the explosion of dynamite in boxes at points indicated by "A" "B" and "C". The explosion of gas and concussion of the dynamite killed the six men, and carried their bodies from 10 to 30 feet along the gangway from the point "D" where the 8 men had been resting or eating their lunch. It is known that one of the timberman, August Garvlin, carried a quantity of 40 percent Atlas dynamite and some caps and fuse. Only  $\frac{1}{2}$  stick of dynamite and several feet of fuse could be found after the explosion. Presumably the concussion of the interior explosion threw Garvlin and his companions with sufficient force to cause the injuries. This theory is borne out by the statements of the miners who survive. They claim that the "second explosion" was more violent and terrific than the first.

#### GENERAL INFORMATION.

The Parrish Colliery of the Parrish Coal Company, is situated in Luzerne County, Plymouth Borough, the Ninth Anthracite Inspection District of Pennsylvania, indicated as Mine No. 171 on the general map of the Anthracite Fields of Pennsylvania; it is on the Delaware, Lackawanna and Western Railroad, Bloomsburg Division. The mine is owned by the Parrish Coal Company operating a small corporation/two collieries, the Parrish and Buttonwood. It is adjoined on the east by the Lance colliery of the Lehigh and Wilkes-Barre Coal Company, and coal lands of the Delaware, Lackawanna and Western Railroad, and on the west by the Nottingham colliery of the Lehigh and Wilkes-Barre Coal Company.

The company mines and controls the Bennett, Cooper, Five-Foot and Hillman seams from the Susquehanna River north to the outcrops.

The personnel of the company organization is as follows: H.H. Ashley, president; George Lindsey, secretary and treasurer; Thomas R. Evans, superintendent; Evan Thomas, mine foreman, and Charles E. Rowe, colliery surveyor.

#### GEOLOGY AND CHARACTER OF COAL.

The Parrish mine is a slope opening, the inclination of which is 15 to, 18 degrees. No. 1, or "outside" slope was driven in the Bennett seam from the outcrop, for a distance of about 1800 feet to a fault. The average dip of the coal south of No. 1 slope is about 10 degrees.

The Five-Foot seam is between 4 and 5 feet thick, of which about 4 feet is clean coal. The impurities in the seam are mostly along the top, from 4 to 12 inches thick, which is an impure coal, generally called "Ta-Ha." The coal is very hard and of a rectangular fracture, and analyses approximately as follows:

Fixed Carbon,-----	80.00
Volatile-----	3.50
Moisture-----	1.50
Ash-----	15.00

The bottom of this seam is fairly hard sandstone, and the roof is a rather soft slate, generally good except where water occurs in the overlying strata. The coal and roof are usually dry. The coal gives off considerable marsh gas.

#### SYSTEM OF MINING AND METHOD OF OPERATION.

The mine is, as previously stated, a slope mine, worked on the room and pillar system, 22 and 28 feet wide respectively. The rooms are all road places, that is, cars are hauled to the face of the working place; the daily output is about 650 tons. All the coal is shot off the solid.

\* Successor to Wm. G. Thomas and Geo. O. Thomas, manager and supt. until April '12

The coal is loaded into cars with shovels by the miner's laborer.

Drainage: The drainage of the mine is by pumping from the lower lifts to higher, in forms of relays to the surface.

Haulage: The transportation is by mule, single rope and tail-rope haulage. The wooden end dump cars with top-hinge swinging solid doors are used. These cars contain, with 6 inch topping, about 3 tons. Low pressure compressed air is used to operate the inside tail-rope engines and pumps. All outside machinery is steam driven.

Ventilation: The ventilation is by means of two Guibal steam driven fans; one 24 feet, and one 20 feet in diameter, circulating about 185,000 cubic feet of air per minute, at about 2.1 inch water gauge. No depression in the vacuum record is noted during the interval of explosion. Mine air analyses are noted in the appendix.

The mine employs about 300 men. It is considered a gaseous mine, but is known as an open light mine. The ordinary miners' lamps are used, and in addition each miner carries a safety lamp, either a Davy or a Glanney type, to examine for gas after each blast is fired in his working place.

Explosives: The explosives used are FFF Blasting Powder, Monobel, No. 4 and Atlas 40 percent. The miner is allowed 25 pounds of each explosive, as required. This is stored in his mining box, which is securely locked and placed at a safe distance from the working face. The general method of firing is by fuse or squib.

Fire Service: An adequate 2 inch fire protection water line connected to the colliery service main runs to the face of the working gangways. No special fire-fighting crews or special devices are employed here. Ample

pipe and connections are kept on hand for emergency purposes.

Escapeways: The mine is provided with ample escapeways to be used in case of emergency, and additional travelling ways are under construction.

#### STORY OF THE EXPLOSION.

Local conditions: In the forenoon of January 9, the barometric pressure was lower than usual, and in several mines neighboring the Parrish some apprehension was felt as to dangers from gas; considerable relief due to a rising barometer was experienced during the afternoon of that day.

The mine was working, and the unfortunate men had just entered for night shift duty. The fans were running at usual speed (see gage record photograph attached.) The fire-boss had been through that section of the mine just a short time before the explosion took place, and no evidence of gas accumulation was noted, but the roof at the point "F" was in bad condition and he therefore instructed miners in chambers 49 to 53 inclusive and in gangway, to go out. Miles, Jones Humpareys, Garvlin and Lukavich were detailed to do some timbering or take down the loose rock on the gangway at "F" where some small slabs had fallen during the early afternoon, and other signs of weakness had occurred. The gangway face had been working double shift, but on account of the small fall and the bad condition of the roof, the miner, Reshofski, and his laborer, Gohalis, were instructed to assist the timberman to secure the gangway.

Apparently they had congregated at "E", the branch of the Hillman seam either to take a rest, "talk it over" or eat the customary lunch before starting to work. Beynon, who was employed as a timberman in the Hillman

seam, joined the party at this point and asked for a lamp full of oil just as the party was starting in. Lukavich had apparently stopped to grant Beynon's request, while the others proceeded and met the concussion a very short distance inside of "D".

The explosion: Undoubtedly the initial explosion occurred, as previously stated, on the inside. As near as it is possible to trace the flame and force of the explosion it was caused by the ignition of the black powder in the miner's box on the gangway at "O", this ignited the dynamite in the same box and the accumulating gas tailed back until it came in contact with the burning dynamite. The explosion of the gas undoubtedly caused the explosion of the dynamite stored in the boxes at "A" "B" and "C" either by a fall of roof, ignition, or detonation by percussion. The concussion from this series of explosions struck the men with sufficient force to cause their injuries. The dynamite (probably 12 or 16 sticks) which they were carrying could not be found. We were informed that Garvlin, at the time of the explosion, carried a bundle of dynamite tied by means of a lamp cotton and suspended from his belt. The attending physician stated that Garvlin's clothing was torn off and that a large part of his abdomen was perfectly clean, while the remainder of his body was covered with dirt and grime.

In addition to the 8 victims there were working on No. 2 counter gangway the following: Jacob Wet, miner in chamber No. 35; Frank Sawatskie miner in chamber No. 36; Frank Stroke, miner, and his laborer in No. 2 counter; Anthony Butsavage, driver, and a door-boy on the "cut-off" between the gangway and the airway.

Rescue work: The men from No. 2 counter passed by the bodies of the victims, and later, in company with the superintendent, foreman and

assistant foreman, returned to assist in recovering the bodies. Fortunately the scene of the accident was reached before firedamp had accumulated in dangerous quantities. If assistance had not been available at once rescue apparatus would have been of great importance.

Alleged causes: The current theories of this explosion are:

- (1) That it was a gas explosion. (See appendix for analysis of mine air)
- (2) That it was a series of powder and dynamite explosions. Both theories could be substantiated by evidence on the ground. The first theory seems most plausible.

Coroner's Verdict: The Coroner's verdict is as follows:

"We find that Elmer Jones, Paul Reshofski, August Garvin, Henry Miles, John Humphreys and Anthony Gehalis came to their deaths in No. 1 West gangway of the Five-Foot vein of the Parrish mine, of the Parrish Coal Co. at Plymouth, on the afternoon of Tuesday, January 9, by an explosion of gas occurring in said gangway, and that said gas was ignited by August Garvin, one of the men killed.

We further find that the said Parrish Coal Co. and its officials were negligent in sending men into said gangway, knowing that the roof was working and likely to generate gas, without first sending in a fireboss to ascertain that it was in a safe condition."

NOTES OF EVIDENCE OBTAINED BY THE BUREAU OF MINES.

A short while after the explosion, George O. Thomas, superintendent, and Evan Thomas, foreman, with several assistants entered the affected section of the mine and rescued the victims. It was found by that time that firedamp was accumulating very rapidly. An examination beyond point "D" was impossible. Further examination was deferred until the forenoon of January 10.

Personnel: The first investigation was made by colliery, State and Federal officials as follows: Messrs. W. G. Thomas, manager; George O. Thomas, superintendent; Evan Thomas, foreman; David Davis, assistant foreman, D. T.

Davis, State Mine Inspector; and the writer; Daniel D. Davis, foreman Mine Safety Car No. 1 collected the gas samples. The time occupied for this investigation consumed the greater part of the day. On account of dangerous accumulation of gases it was impossible to penetrate more than 100 feet inside of, and along the return from point D.

The second investigation was made January 12, by the following: W. G. Thomas, manager; George O Thomas, superintendent; Evan Thomas, foreman, David Davis, assistant foreman, John Broderick, assistant foreman; Anthony Batt, miner; Patrick Egan, miner; Mr. Maxwell, ex mine foreman; Samuel T. Morgan, superintendent, D. H. Co.; D. T. Davis mine inspector, and the writer. The time consumed was the greater part of that day.

The third investigation was made on January 22, by the following:- W. G. Thomas, G. O. Thomas, Evan Thomas, John Broderick, D. T. Davis, Chas. E. Rowe, colliery surveyor, J. J. Rutledge, mining engineer and writer. The time consumed was the greater part of the day.

Extent and course of explosion: On January 10, the ventilation had been partially restored, and nearly all of the gas had been removed. No evidence of fire was discovered with the exception at the roof and props in the vicinity of the miner's box at "O" where the flames had extended about 8 feet toward the face and about 30 feet toward the outside from the box, and at "B" where scorched blasting paper was found. The explosion in the miner's box at "O" was probably due to one of the following causes:

It may be that someone while looking for oil or powder, opened the box, and sparks from a naked light dropped upon and ignited the burlap bag, such as is used to carry dynamite into the mines, which eventually ignited



grains of black powder and which in turn caused the explosion of the powder in the keg.

(2) A miner may have dropped a spark on this burlap bag while putting away his tools and appliances, after being told to retire from the working place.

The cause of explosion in boxes located at points indicated "A" "B" and "C" may have been due to one of the three following causes:

(1) The explosion of black powder in the box at "O" may have disarranged the ventilating appliances in the lower lift and especially the door between chambers 48 and 49 so as to allow gas accumulating in chamber 49 to be pushed into and out from this chamber by a fall of roof until it came in contact with the burning dynamite in the box at "O".

(2) As enumerated above, probably due to the concussion of the explosion of the keg of black powder at "O" causing a fall of rock upon the box at "A" containing dynamite;

(3) It is barely probable that the miner in No. 49 did not extinguish his safety lamp when looking same in the box at "B". Being told to go home may have excited him, and the lamp was left burning, and by upsetting might have caused ignition of the powder, which, in turn might have caused an explosion of the possibly accumulated gas.

The section of mine traversed by the explosion is outlined in red shading on attached sketch, and the direction of the explosion force in heavy arrows. The normal ventilation is indicated in light arrows.

In making the investigation all the chambers, the back branch and the gangway between chamber No. 40 and the face of the gangway were carefully examined for the following characteristics:

(1) The violence of the explosion which is indicated in the chambers and gangway by broken stoppings, falls of roof and debris blown into the roof and props.

(2) For evidence of heat or flame. As previously stated, no evidence of flame could be detected anywhere in the affected section with the exception of points "O" and "B" where the explosion of black powder and dynamite occurred.

(3) There was gas in the cresscut near the face between chambers #39 and #40, also on the inside of door on the back branch at "G"; however, this was gradually disappearing and an examination, if it had been absolutely necessary, could have been made in that section during the afternoon of January 12.

(4) The location of the bodies is indicated at "D". On account of the uncertainty as to the interval between the time they were injured and when they died, the position in which the bodies were found may not be indicative of the action of the explosion. The two men, Nos. 1 and 2, were found lying on their backs, face upward, and their heads toward the outside; Nos. 3 and 4 were lying transverse to the road, face down; and Nos. 5 and 6 were found doubled up as though in terrible pain, their faces pointing toward the outside. The men had much of their clothing torn off and were bruised badly about the hands and heads. One man in particular had his face peppered with small particles of coal and rock, and indications of blisters all over his face.

The following evidence collected in connection with the explosion is used as a basis for conclusions and lessons drawn from this accident.

(1) The door marked "H" was slightly injured by the explosion, thus marking the outside terminal of the explosion force on that gangway. The board from the top of this door was blown down, and the bottom left hand corner of the door was slightly broken.

(2) At "D" the indication of greatest violence was noted in two props near the pointed pillar at the back branch. Pieces of a crosscut saw were driven into the props; one horizontally with the teeth entering, and the other vertically with the teeth also entering. These pieces of steel were driven to such a depth that they could not be easily moved by hand. The tops of the saw-steel were slightly scorched, but not sufficient to draw the temper of the steel.

(3) On the back branch side of the pointed pillar, pieces of fuse and a roll of miner's blasting powder paper were found.

(4) The tools used by the miners were found practically intact along the left hand side of the track about 30 feet inside of "D".

(5) Along the rib of the pillar directly opposite the pointed pillar on the upper side of the gangway, the ballast and other refuse was cleared away, forming a crater-like opening about 2 feet in diameter. There had been no occasion for doing this by hand, and it may be possible that the dynamite formerly in Garvin's possession, exploded at this particular point.

(6) Travelling through the chambers starting with chamber No. 42 to the face of the gangway, we proceeded in the opposite direction of the explosion force, as indicated by splinters of boards and particles of coal driven into the roof and props. At the entrance to chamber No. 48 the force diverged in both directions, in and out the gangway. Chambers No. 49 and No. 48 were caved from about 20 feet inside the entrances to the faces. The chamber side, or inside face of the props seemed to be peppered with fine particles of coal and slate. A piece of slate was extracted which had been driven about

three-fourths of an inch into a prop at the right hand side entering the chamber. A mine car which presumably had been standing on the branch of chamber "49, was blown a short distance into the gangway, and was left turned upside down along the lower rib of the gangway. Only the truck frame and wheels remained; practically all of the upper part of the car was gone. There was a strong odor of dynamite fumes about this car, but no evidence of smoke or flame.

(7) At "O" two miners' boxes were found. The outside box contained a partly burnt burlap bag, an exploded black powder keg, and a charred dynamite box. The outside end of the box was torn out, and the top blown off; the sides of the box extend outward fan shaped. About 5 feet inside of this point another miner's box was found, securely locked. One board from the back was torn off; the box contained a box of No. 8 exploding caps, about three-fourths of a keg of black powder and one open box of 40% Atlas dynamite. The roof and caps of props for about 8 feet inside and about 20 feet outside of the first box bore indications of flame.

(8) At "K" a mine car was standing on the tracks uninjured. Splinters of wood were driven between the body of the car and the outside diagonal brace. The position of the car and splinters indicated that the force was in the direction of the working face.

(9) At "L" two miners boxes were found. The outside box had been struck by a piece of wooden rail, and the end of the box pushed in. The box was partly turned transverse to the road. The inside box, however, remained uninjured.

(10) Throughout the entire section the odor of dynamite predominated.

(11) John Tartellas was about to start to work in chamber No. 50. His working tools had been sent into the mine. He did not receive powder from the supply house; previous to receiving the contract for this chamber Tartellas had been employed as a laborer by a contractor engaged in driving a rock tunnel; in driving this tunnel 50 percent dynamite was used. The contractor had reported that dynamite had been stolen from him and suspicion naturally centers upon Tartellas, as he had previously stated that instead of using forty percent dynamite to mine the coal in this chamber(\$50) 60 per cent dynamite was really necessary to do the work.

(12) The miners in chambers No. 48 and No. 47 received from the supply house a 25 pound box of dynamite on January 9 and January 4 respectively. No trace could be found of these boxes which had been at "B" and "C". The miner in chamber No. 49 did not receive dynamite since December. His box had been at "A".

(13) Miners, Jacob Wet and Frank Stroke testified that there ~~was~~ were two distinct explosions, the first one causing some concussion, but did not extinguish their naked lights; the second explosion extinguished ~~extinguished~~ their naked lights, and only due to the fact of having the safety lamps hung on the inner side of the props the latter were not extinguished.

(14) The two injured men, and also the other surviving miners from that section of the mine claim that a man, now dead, piteously begged for water, and that <sup>were</sup> others groaning and ~~complaining~~ that it was very hot. The survivors fearing that the explosion was bringing gas upon them were afraid to light their naked lamps and groped their way out with only one safety lamp. They did not

stop to assist the injured men.

(16) Within a very short time Superintendent Thomas, Foreman Thomas, and several assistants went into the affected section and recovered all the bodies, they also testifying that only dynamite fumes were present in the gangway, and in their opinion no afterdamp or other products of a gas explosion were present.

(17) The concussion of this explosion disarranged the ventilating appliances to such an extent that the entire section of the mine filled with an explosive mixture of methane in a very short time after the explosion. Most of the quantity came from the Hillman #10 Tunnel workings.

(18) The driver of this section is said to have been in the face of the gangway to inspect the car distribution. It may be possible that he, in taking oil, which he denies, from the box at "O" ignited the burlap bag which eventually ignited the black powder.

(19) It has been said that at times miners leave their safety lamps burning to heat the boxes, so as to thaw or avoid the freezing of dynamite.

(20) Due to shallowness of the seam, dynamite was used to blast about 18 inches or two feet of top rock.

(21) Miners Jacob Wet, Frank Sawatski, Frank Stroke and three others travelled 600 feet in the return air after the explosion.

#### CONCLUSIONS. (Confidential)

From the evidence collected during the investigation we are led to the following conclusions:

(1) That the accident was the result of a series of explosions;

The initial explosion being black powder, while the final was dynamite.

The intermediary explosions were in all probability gas and dynamite explosions.

(2) The driver for this section was apparently the last person in the face of the gangway. It is customary for drivers to receive a large part of their oil supply from the miner. The majority of them have keys to locks on miner's boxes, so that they can obtain oil whenever they want it. In so helping himself undoubtedly sparks fell from his lamp upon the burlap bag at "O" thus causing the initial explosion.

(3) The contractor's missing dynamite supposed to have been stolen by Tartellas, who was to work chamber No. 50, points to the suspicion that the miner in chamber No. 49 had in his possession the explosives for himself and Tartellas, as is frequently the custom, especially during cold weather where one miner has facilities for thawing dynamite for other miners.

(4) The intermediary explosions were due to either percussion or ignition; percussion caused by the concussion of the initial explosion causing a fall of roof; ignition due to either a spark or the overheating of a safety lamp allowed to remain burning in the miner's box or accumulating gas tailing back or being forced back by the action of a fall of roof at "P" until it came in contact with the burning dynamite at "O".

(5) The possibility of a gas explosion is enhanced by the fact that the greatest force seemed to have emerged from chamber #48, in which no explosive boxes existed, as evidenced by the violence ~~and the evidence~~ of the explosion force. The miner however, who was working with naked light, claiming positively that no feeders were burning when he left his working place less than an hour before the explosion admits that gas had been previously encountered, although no evidence of flame could be detected.

L E S S O N S. (Confidential)

The lessons to be drawn from this explosion are as follows;

- (1) There should be more restriction as to the quantity and quality of explosives allowed to be taken into the mines.
- (2) In each working section of the mine there should be some safe and approved dynamite thawing apparatus.
- (3) The system of firing blasts by electricity should be inaugurated in this section of the mine, and if possible made general throughout the colliery.
- (4) Separate miner's boxes should be provided for the miner's tools and explosives, and it should be made unlawful for a miner to have oil or other miscellaneous supplies in the same box containing explosives, or blasting supplies.
- (5) Only permissible explosives should be used in this, or similarly gaseous sections of the mine. In sections of mines generating explosive gases and where bad roof occurs, a system of closer inspection should be inaugurated, of the general adoption of the interchanging system in vogue at several of the larger collieries, that is, the fire boss or assistant foreman making the early morning examination in section "A" of a mine makes the second inspection that morning in section "B". The man making the early examination in section "B" makes his second inspection in section "A". These men are interchanged periodically so that in a comparatively short time the firebosses or assistant foreman become thoroughly acquainted with the entire mine.
- (6) The excellent discipline throughout the mine organization is to be highly commended.
- (7) The investigators were accorded every facility for the conduct



of their work, and at all times were extended unstinted courtesy by the officials of the company. Their action in this matter illustrates a type of co-operation which it is hoped the bureau will receive from other companies in the future.

#### ACKNOWLEDGMENT.

The writer desires to express grateful acknowledgment for the assistance and advice of A. H. Fay, Mining Engineer, in the arrangement and editing of this report, also for the co-operation of G. A. Burrell who assisted in the preparation of mine air analysis, and J. J. Rutledge for his helpful co-operation in making a final investigation.

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H.M. Jones comments

Parrish Colliery on D. L. & W., Bloomsburg Division.

Parrish Coal Co., Luzerne County, Plymouth Borough, Pa.

Jan. 9, 1912 - an explosion occurred between 4 and 5 P.M.

Six persons killed

Elmer Jones, timberman.  
Henry Miles, "  
August Garvlin "  
Paul Rechofski miner  
John Humphreys timberman helper.  
Anthony Gohalis miners helper.

Injured:

Anthony Lukavitch timberman helper.  
Edward Beynan timberman.

Above men killed by an explosion. Primary cause probably  
ignition of gas, followed by explosion of powder and dynamite.

Also possible that explosion was primarily caused by ignition  
of black powder in a miners box by a burning sack which had been  
accidentally fired sometime before by an open light.

How preventable -

As this case is a complicated one, it is  
difficult to state precisely, how it could have  
been avoided - - If gas was the primary cause,  
suspicion should have been made by a fire boss  
before the men were allowed to enter the area  
with naked lamps - Or, it would be preferable if

If explosives were the primary cause, greater  
precautions should be taken, explosives should  
be kept in separate boxes from other tools and  
should not be handled by a miner holding a  
naked lamp in his hand or on his cap.

or  
safety lamps -  
portable electric lamps -  
miners were supplied with