

SECTION I.

Report on the History and Investigation of  
the Throop Mine Disaster, Pancoast Colliery,  
of the Price-Pancoast Coal Co., Throop,  
Lackawanna County, Pennsylvania.

April 7, 1911

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GEOGRAPHICAL.

The Pancoast Colliery of the Price-Pancoast Coal Company is located in Throop Borough, Lackawanna County, about four miles Northeasterly of Scranton. This Mine is known as Number 37 on the Anthracite Map and is included in the Third Anthracite Inspection District.

HISTORICAL.

On Friday evening March 11, 1904, the Breaker and old Boiler House, located under the breaker were destroyed by fire. No lives were lost in this accident, due, no doubt, to the fact that the new Boiler House, then under construction was partly completed and steam was furnished from the new plant to run the ventilating fans shortly after the fire. In the re-construction of the Colliery the Engine Houses, Boiler House, Compressor House and all other Colliery Buildings were constructed of Brick. The water tanks, sand house, breaker and washery are of frame construction. The main Hoisting Shaft and Supply Shaft Towers are of steel.

The engines on the Main Hoisting Shaft are 24 X 48 clutch drum. The engines on the Supply Shaft are 16 X 30 loose drum and geared. On the East Side of the Hoisting Shaft and exhausting from a separate compartment in the shaft is located a 35 foot diameter single intake port Guibal Fan. On the West Side of the Hoisting Shaft, exhausting from a separate compartment in the shaft is a 20 foot double intake Guibal Fan. These two fans are connected by a cross-drift on the south side of the shaft and a 20 foot double intake Guibal Fan located at the East End of the Colliery Yard furnish a total of about 370,000 cubic feet of air per minute, through the mines. The Boiler Plant is of recent construction and consists of eleven Dickson Locomotive Fire Box Type Boilers, having a total rating of 1835 Boiler Horse-power.

For Breaker, Washery and inside fire protection a 1,000 gallon capacity Knowles Pump is located east of the breaker. This pump bears the following inscription on a plate riveted to the air chamber:-

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"Underwriter's Fire Pump"  
18 x 10 x 12  
1,000 Gallons per minute or 4 good  
1-1/8" smooth nozzle fire streams.  
Never let steam get  
below 50 lbs. Nights,  
Sundays or any other time.

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During 1909 this Colliery had a total Mine Production of 625,665 tons, employing 1422 men and boys. We are informed that the Mine production during 1910 exceeded the 1909 by a small margin. During 1909 a total of six fatal accidents and seven non-fatal accidents occurred at this Colliery. The Colliery organization is as follows:-

Gen'l Supt. Jos. V. Birtley,  
Inside Foreman Wm. Reed and  
Paul Bright, and Outside Fore-  
man John E. Jones.

Mr. John R. Bryden, Scranton, Pa. is the General Manager. The Railroad connections to the Colliery are the D. L. & W., Ontario & Western, and the D. & H. The Mine is an individual operation.

#### GEOLOGICAL.

The Mine is a Shaft opening and considered gaseous. The Shafts, main hoisting and supply are sunk through the measure: on the West dip of the Lackawanna Basin and cut the surface, or Olyphant #4, locally known as Four Feet, Diamond Seam, Top Split of Big Seam, Bottom Split of Big Seam, New County Seam, Clark Seam and three splits of the Dunmore or Red Ash Seam, to a total depth of nearly 600 feet.

The bottom split of the Dunmore seam is also known as the China seam or Dunmore #4 and is opened from the Number two Dunmore by a rock slope, about 700 feet northeast of the foot of the Main Hoisting Shaft, from the shaft level gangway and also by a tunnel on the shaft level about 1200 feet Northeast of the foot of the Main Hoisting Shaft.

#### PHYSICAL.

The East Slope and Tunnel Main Haulage Roads are operated by a tail rope engine Marked "A" located about 400 feet East of the foot of the Main Hoisting Shaft.

The "North Slope" Engine Room, marked "B" on attached blue print, which was destroyed by the fire and was the cause of the disaster is located in a heading, driven parallel to the Shaft Level Gangway in the #2 Seam, Dunmore, and is located about 800 feet east of the foot of the Main Hoisting Shaft. The engine in this room draws the coal from the North Slope in the #2 Dunmore Seam from the North Basin to the Shaft Level. The "New North Slope" Engine, marked "C" on blue print located in the China or #4 Dunmore, about 800 feet via Shaft D-1, east of the North Slope Engine Room, draws the coal from the North Dip in the China or Dunmore #4 to the foot of the East Slope Level. The traveling distance covered by the engineer operating the North Slope and the New North Slope engines is about 1500 feet, which would require, according to ordinary speed of mine walking about five minutes travel. There is apparently no good reason why the engineer could not use Shaft D-1 for travelling purposes, which would reduce his travelling distance one half.

On the North Slope the engine hoisted from eight to ten - 5 car trips daily while in the New North Slope about four - 1 car trips per day are hoisted out of both slope and slope airway, requiring sixty minutes and two hours operating time per day, respectively.

The #4 Dunmore or China Seam is ventilated by two main currents and divided into six splits as indicated on attached blue print, one main intake entering the East Slope divided and returning up two shafts marked D and E on blue print. The other main intake enters the tunnel is divided as shown on blue print and returns up shafts marked E and F on blue print to the next seam overlying. These currents are indicated in colors on attached blue print.



### DISCOVERY OF FIRE.

According to statement of Henry Simpson, he and Geo. Simons, Company pipe line men, while at a point about 500 feet east of the North Slope Engine Room, shortly after eight o'clock on the morning of April 7th, noticed smoke fumes coming from the direction of the shaft and upon investigation discovered the North Slope engine room on fire. They gave the alarm and Driver Boss Lee Winters and pump runner Hank Parfrey responded to the call for help. While Simpson, Simons and Winters were connecting a hose to the water lines at the head of the North Slope Parfrey notified Wm. Mitchinson, the Tail-Rope Engineer who telephoned to Perry's branch (instruments shown on blue print, marked H) asking the Door Tender - Mike Kosey, who answered, to notify Jno. Bray Tail Rope Rider and Mine Foreman Knight, to get men out as quickly as they could - "the North Slope engine room is on fire." A few minutes later Parfrey succeeded in reaching Bray on telephone and gave him a similar message. Shortly after this Lee Winters requested Mitchinson to telephone to Supt. Birtley at the Colliery Office - which was done.

### METHODS OF FIGHTING FIRE AND WARNING MEN IN AFFECTED DISTRICT.

Simpson, Simons, Parfrey and Winters connected a hose at the head of the North Slope and applied the water to the fire from the North Slope side. As near as can be recalled this was accomplished about ten minutes after they discovered the fire. When Supt. Birtley arrived on the scene another line was attached and applied on the fire. When the fire in

the engine room was under control, they discovered that the timbers and a large number of mine cars on the passing branch were also burning. Supt. Birtley at this moment enquired if the men inside had been warned and being affirmatively informed he returned to the surface to procure the Throop Borough Fire Department hose and attaching same to Colliery Fire Service ran a line of hose down the supply shaft and by means of a twin coupling and valves they applied two additional streams of water (making a total of four) on the branch fire.

#### CALL FOR ASSISTANCE.

(Bureau of Mines and D. L. & W. Rescue Corps respond)

Between 12 and 1 o'clock Mr. Davis, Div. Supt. of D. L. & W. R. R. Mining Department received a telephone message from his office, requesting him to get in communication with the Federal Mine Rescue Car #1 at once, located at that time at Wilkes-Barre, and to request them to proceed to the Pancost Mine, located above Scranton, as a large mine fire was raging at that colliery, and that thirty men were entombed behind the same. He also understood this message to also request him to send the Lackawanna Rescue Car to the same colliery. He communicated at once with the Federal Mine Rescue Car and told them of the disaster and in reply, was informed that they had just received the message and were making arrangements to leave at once. He, therefore, directed that the Lackawanna car be gotten under way as soon as possible and arranged with the Yard-Master at Kingston for transportation facilities to reach the Pancost Mine as quickly as possible.

His car left Kingston Station at about 1.30 P.M. with twelve men on board and arrived at the Hancock Colliery at about 2.55 P.M., there he was met by Asst. Supt., of the D. L. & W. R.R. Mining Dept., Mr. C.R. Tobey, who directed him to the Colliery Office, where Mr. Jos. V. Birtley, the Mine Superintendent, hurriedly pointed out upon the tracings the location of the fire and where the men were supposed to be working. At this moment Messrs. Evans and Kellam with three men training from the Federal Rescue Car #1 arrived, conveyed to Scranton by the Laurel Line and then by Street Car to Throop. They were all ready to enter the Mines about the same time. The Federal Rescue Car #1 arrived via special D. & H. Engine at 3.55, with Engineer Enzian on the car, accompanied by seven men taking the Rescue Training at Wilkes-Barre, who had volunteered their services.

#### SURVIVORS

From the firearea only twelve men escaped, three miners, five laborers, two runners and two nippers or door tenders. One of the runners, John Mohulka, in describing the manner in which the men made their way out states that he was notified by the old door tender, Mike Kosey, that he had received a telephone message saying that the engine house was on fire. After sending the drivers to notify the men on that road to come out quickly he made three attempts to get to the telephone to ascertain where the trouble was. "In my last attempt I fell down and crawled back through the door (Marked M) and then went inside to look for Jack Perry and came out with him and the other men through the airway and through the

regulator (marked I). Perry went through the trap doors (marked J) to the gangway branch and several of the men followed him, but I stayed behind and did not go, telling him of my failure in previous attempts to go through that smoke. A few minutes later all the men excepting Perry returned to where I was sitting down. Then I said to them 'Come Boys' and they all ran after me until we came to a cross cut (marked Y) where we met two drivers and a runner from the east slope workings. These three men and myself went through this cross cut into the old workings while the other men of the party (11) remained behind. After traveling through the old workings for a considerable distance, we came across two miners working in their places and ordering them to follow us we finally came out through the east slope."

The eleven men who did not follow Mahulka, lead by Miner John Ruba, travelled through the regulator (marked X) down the straight place and out through the cut off (marked Z) and up the east slope. Mahulka states that the way he travelled they encountered very little smoke, while Ruba states that he and his party encountered considerable smoke on his route.

From statements made by the survivors, they reached the foot of the shaft at about 10.30 A.M.; or about two and one half hours after they had received the message that the engine room was on fire.

#### PRELIMINARY INVESTIGATION.

Messrs. H. G. Davis, Jos. E. Evans and party of helmet men descended the Mine with Mr. Birtley and visited the scene of the fire and casually noted the condition thereof. While returning from the fire to the head of the East Slope Mr. Davis over-heard a conversation between Mr. Edward

Reed, a fireboss of the Colliery, and Mr. Birtley, the Supt., referring to some regulator, located somewhere in the Mines, marked I on blue print, which the fireboss intimated had been closed since the fire had started. He also expressed his opinion, that it was possible that Mr. Knight, the Mine Foreman, who lost his life, was, perhaps, in this neighborhood and that he had very likely been responsible for the closing of this regulator.

Mr. Birtley turned the party over to Mr. Reed and directed him to take them anywhere they might wish to go, and Mr. Davis naturally expressed a desire to go to the Regulator which had been referred to.

Mr. Davis directed all the men, who had entered with him, to follow him; Mr. Reed led the way down the East Slope to the First lift on the right, through numerous openings and finally to the point where the Regulator, marked "I" on the blue print, was located.

Mr. Davis directed the Rescue men to remain a short distance back from this point, in the fresh air current; and without apparatus proceeded on an exploration trip with Mr. Reed, Lewis Richards, Lackawanna Rescue Man, Jos. E. Evans, Foreman Federal Mine Rescue Car #1, Paul Bright, one of the Inside Foremen of the Colliery and Samuel Daws, another fireboss. They travelled about 60 feet west of the regulator referred to above through a pair of trap doors, located on the Blue Print, marked J, and found the lifeless forms of three persons, indicated as "K" on blue print. Mr. Davis concluded and informed the men, who were with him, that from all indications these persons had been dead for several hours as they were cold and stiff in death.

**THE PURPOSE AND ORGANIZATION OF RESCUE  
APPARATUS EQUIPPED EXPLORATION  
PARTY.**

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When Mr. Davis and party returned from the above exploration they concluded that from the evidence, which showed that the regulator had been closed by someone, that there was a possibility that some men had barricaded themselves in the faces of the airway and gangway, by short circuiting the air either at the inside cross cut or by means of opening the doors on the inside cut off, indicated on blue print, marked L, on Perry's heading, and that someone of that party had come out to the regulator to close it so that the volume of the split of air would be decreased. It was therefore decided that the following: John A. Thomas, Lewis Richards, Joseph E. Evans and George T. Kellam, rescue men, with apparatus, should enter the airway parallel to Perry's heading by way of the regulator, explore to the face of the airway, pass through the inside cutoff and along the gangway and return through the trap doors "J" to the base of operations near the shaft marked "E". The time allotted for this trip was fixed at twenty minutes. The party left the base at 4.30 P. M. and were to return not later than 4.40 P. M. Five minutes after the above party had started from the base, Mining Engineer Enslan arrived and after consultation and short exploration of the airway with Mr. Davis, they remained at the base to await developments and report of the exploration party. While engaged in consultation, Kellam returned inquiring whether Thomas and Richards had returned, stating that Evans had collapsed at a point about 600 feet inside of the regulator marked "I" on blue print. Rescue men held in reserve were equipped and sent in to bring Evans out. As soon as he was brought to the

base, which was at 4.55 P.M., every possible means to resuscitate him were resorted to and continued until 10.30 that evening, but without success, although at one time probably thirty minutes after he was brought out, shortly after Doctor Jacobs arrived on the scene, Evans gave indications of reviving by moving legs, arms and head. This, however, was undoubtedly his death struggle. After the Doctor's arrival we were entirely governed by his instructions. The statements of Thomas, Richards, Kellam, Dan Davis and William White are attached hereto and made a part of this report.

#### RESULT OF EXPLORATION.

John Thomas and Lewis Richards of the exploration party had continued to explore to the face of the airway and gangway and returned by way of the gangway, along which they discovered several dead mules, and then returned to the base by way of the trap doors "J" and reported their observations.

#### FURTHER EXPLORATION, RECOVERY, AND CARE OF VICTIMS.

After receiving the report of the Rescue Exploration Party and noting the condition of the atmosphere returning from that section of the mine which was heavily charged with White Damp and Black Damp and realizing that it was impossible for anyone to be alive in that District it was decided to open the regulator marked "I" to drain off the section ventilated by the split which was governed by the regulator, and after several hours a second exploration party was formed headed by Messrs. H. G. Davis, Mr. Daniel

Young, Supt. Scranton Coal Co., David T. Williams, State Mine Inspector, Wm. Williams, Fire Boss of the Company and D. I. Jones, Mining Engineer of the Colliery. The fire at this time had practically been extinguished. They traveled through the affected area into the tunnel and explored as far as the inside turnout which is located inside of telephone marked "H"; also into Bolton's and Perry's Headings, discovering a large number of dead bodies lying along the haulage road. They returned to the surface and reported the conditions to the officials on the outside stating that in their opinion without the least doubt it would be impossible for any persons to be living on the inside of the fire area at that time. Preparations were immediately made for the removal of the bodies and a large force of competent men was selected to do this work. The dead bodies were brought from the mines by relay corps, to temporary morgue in the Colliery Machine Shop, where platforms about 12" above shop floor had been erected; several corps working recovering the bodies in the affected area and bringing them to the foot of the hoisting shaft and several corps were engaged in carrying the bodies from the foot of the shaft to the morgue on the surface. Here relatives and friends identified the bodies and turned them over to their selected undertakers.

#### TOTAL FATALITIES.

The work of bringing the dead to the surface was continued without interruption until 2 P. M., April 6th, when the remains of the last person was reported out, numbering 72 persons, who had lost their lives by this fire. Adding to this the death of Jos. E. Evans, Foreman of Federal Rescue Car #1, makes a total of 73 deaths.



#### DIRECTOR HOLMES' VISIT TO COLLIERY.

Dr. Joseph A. Holmes, Director of the Federal Bureau of Mines, arrived at the Pancoast Colliery at midnight of the 7th and after a short conference with the Colliery Officials descended the mine and explored the fire area and in as far as the point where Jos. E. Evans had become exhausted. Upon leaving the Colliery Dr. Holmes expressed a desire that Mr. Henry G. Davis, Supt. of the D. L. & W. R.R. Coal Department be communicated with and be asked to assist the Bureau representatives in an examination and investigation of this disaster. Accordingly Mr. Davis accompanied by Mr. W. D. Roberts, Rescue Foreman of the Bureau and Colliery Officials descended the Mine at 3.20 P. M. of that day and carefully examined the parts affected by the fire noting the conditions in general. In as much as the major portion of all the persons available for the investigation were all tired out it was decided to postpone further investigation until Monday Morning, April 10th, when minute examinations of conditions were started by us, which is contained in detail in this report.

#### PROBABLE CAUSE AND ORIGIN OF FIRE.

The engine room contained besides engine and steam line, timber frame for engine foundations, plank floor, wooden oil and supplies cupbear 12 sets (collar and logs) 8"x10" yellow pine timber and several plank for board walk from engine room floor leading through cross-cut to pass branch. In the cross cut several props were placed to support the r/ and sustain steam and water lines leading to the engine room. A del Kerosene Night Hawk lamp was used for lighting purposes.

The space occupied by the engine room is approximately 14'x2

From statements by Hoisting Engineer James Moran, he left the engine room after hoisting one trip leaving the "Night Hawk" turned down, at about 7.45 that morning, to go to the "New North Slope" engines. As previously stated, the ordinary travelling distance between the two engines is about 1500 feet. This distance is slightly more than half by traveling via shaft marked D-1, and we can see no good reason why the engineer did not use this route, which could be covered in half the time required by the other route.

His first intimation of fire was by smelling smoke while running the engines on the New North Slope and thinking that a door had been set afire he came out to investigate. Moran stated that he used an ordinary miners lamp for his light while at work, and a "Night Hawk" to light the engine room. Also that he kept his oil in a wooden cupboard, located a few feet to the right of the cylinders, that frequently during his absence the driver boys working on the branch came into the engine room and helped themselves to oil, taking from cans and even out of kerosene night hawk at times.

It is highly probable that the fire was caused from any of the following sources:-

The engineer himself may have been careless in lighting the kerosene Night Hawk. He may have changed the cotton in his mining lamp and left the burning stub on or near the floor - He may have dropped the match, or chip of burned wick from the Night Hawk, on the floor; or most probably he filled his own mining lamp, wiping it with cotton waste sparks clinging to same, and dropped it on the floor or near the timber frame, engine foundation, into the opening at the base of the brake and reverse lever stand.

Possibly the driver boys, one of whom is said to be very forward, after helping themselves to oil, wiped their lamps with cotton waste and dropped same into opening in floor at the base of brake and reverse levers stand, the point at which, from all indications, the fire originated. This part of the floor and foundation frame was burnt most.

The theory that the "Night Hawk" lamp exploded and caused the fire, has been advanced and the Coroner's jury seems to lay particular stress on this, but we could not find evidence of this feature, as we had this point in mind and paid particular attention to the conditions in this respect. We found practically all of the metal parts of the "Night Hawk" vertically below the hook in the roof timber from which the Night Hawk had been suspended. The hook remaining in the timber intact.

If conditions in this engine<sup>room</sup> were similar to conditions noted in other engine rooms examined, the oil soaked floor dry and heated from the steam cylinders and pipes was ready prey to the most insipient fire, and once started the flames were readily fanned into serious proportions by the strong air current circulating through the engine room and along the passing branch.

#### THE EXTENT AND EFFECT OF FIRE.

As indicated on the attached blue print the fire extended from the engine room through the cross cut to the passing branch and along the same, burning cars and timbers for a distance of 300 feet, feathering out in forked tongue at the junction of the shaft level and tunnel roads, and extending into both roads for a distance of 75 feet.

As indicated on print the fire developed along the south rib and in the center of branch, undoubtedly due to the cars being on the track next

to the south rib. The timbers along the north rib were not charred.

The smoke and gases evolved by the fire were carried into the tunnel workings by the main current, the velocity of which is about 450 feet per minute, and caused suffocation to workmen in an area of mine workings of approximately 25 acres, within about one half hour, according to survivors, after the fire started.

INVESTIGATION OF FIRE AREA AND  
PHYSICAL CONDITION OF SAME.

From the position of the lifeless bodies as found it would seem to indicate that there was apparently a lack of knowledge as to emergency exits by the workmen. The men on the west side of the Tunnel or Straight Road were found to be facing the return side of the current. The men on the Straight Road were facing the intake, while those on the East side were either undecided or bewildered as it was noted with the exception of the three men on the branch (indicated K.) who were facing the leakage from the intake, the bodies were found in all possible positions. One man, Jack Perry, was found at the door M. leading into the intake, with the door partly opened, also facing the intake.

The fire water service had been installed in the wrong place. It should have been placed on the intake side instead of the outlet side of the engine room.

The Tail Rope engine room examined disclosed rather careless and untidy conditions. Although a concrete foundation and floor, there was sufficient combustible material, such as long resting bench, wood cupboard, tool boxes, wood working bench, cotton waste and upright timbers in this room to cause menacing results in case fire should start here.

The engine room is located off the main intake air course but its suction would undoubtedly draw considerable smoke into the workings and over the men, working in the East Slope. The location of this room would permit a ready provision to allow the current to enter the main return air course, providing the doors in rear of engine room were opened immediately after the discovery of fire.

Such an arrangement, unfortunately, would have been absolutely impossible in the case of the North Slope engine room fire.

The ventilating appliances such as regulators, trap doors, check doors and main doors were so arranged that if handled by persons familiar with the flow of the air in that section of the mines the casualties would have been far less. The mine had ample facilities to fight small fires and also telephone service by which the workmen could have been notified in ample time to retreat to a point of safety had they been given a timely warning before the fire assumed such enormous proportions.

The fact remains that at the time the fire started no one in authority or with sufficient intelligence was in the neighborhood of the engine room that morning. The men attending to caging the coal at this landing had ascended to the landing in the Diamond vein to cage the coal there. However, it is highly improbable that even if the footman had been in the #2 Dummore landing that they would have discovered the fire earlier than it was discovered unless they should happen to be in that vicinity at that particular time. In other respects the physical conditions of this mine are similar to the average individual operation. It is safe to say, in fact, that in many respects this mine can be considered a modern mine.

From careful study of the existing conditions and information obtained from the Colliery Officials we were impressed with the apparent laxity as to proper means of emergency egress. It is customary in most mines in this region to provide separate runways or travelling ways for men and animals for all rope haulage roads, slopes and planes and wherever possible these travelling ways are provided as closely as possible to the main haulage roads.

In this particular mine the emergency egress openings from the affected area were ample. We regret, however, to state that the employees of the affected area were not familiar with these roads to safety.

#### INVESTIGATION OF OFFICIALS' AND EMPLOYEES' EVIDENCE.

A stenographic account of the investigation of Officials, survivors, volunteers and other employees evidence is attached hereto and we suggest a careful examination of the same. Our conclusions and recommendations are partially based upon this evidence.

#### RELIEF MEASURES INCORPORATED.

We were advised that immediately after the disaster the Company Officials notified the families of the victims, in order to relieve immediately distress and suffering, that they could obtain all the necessary emergency provisions and supplies from the General store at Throop.

At a meeting called by the Burgess of the Borough a citizens committee of twelve, composed of men familiar with the various languages was

appointed to investigate the circumstances and needs of the affected families with a view to report the conditions to the mine owners and to solicit funds by means of subscription to relieve immediate suffering. A general Citizen's Committee composed of thirty men was appointed to establish headquarters in the principal cities and towns in Luzerne and Lackawanna Counties and to receive relief contributions, accomplished mainly by having children sell tags.

Permanent headquarters were established in the Tribune Building, Scranton, Pa. This Committee has a President, a Secretary and a Treasurer. In each town a reliable business firm or bank is selected to act as custodian of money received, to issue receipts for same and transmit the amount received by personal check or cash to the Secretary and Treasurer. A Distributing Committee is to be appointed for the purpose of furnishing money or provisions to the deserving dependents. In addition to the above several newspapers have organized local funds which are turned over to the general fund. The various Coal Companies in the Anthracite Region have contributed liberally to the general fund. At the present writing this general fund aggregates in the neighborhood of \$70,000.

#### CONCLUSIONS.

From personal observation and analysis of conditions leading up to this disaster we arrived at the following conclusions:-

1st:- The cause of the fire was due to carelessness on the part of someone, who perhaps will never be known. It is highly probable

however that the engineer or other employees whose duty did not require their presence in the engine room may have originated the fire by carelessly dropping either a match or other burning material upon the floor or into the opening in the floor at the base of the brake and reverse lever stand, or possibly the Night Hawk dropped from the hook on the floor and upsetting ignited the floor and timbers.

2nd:- Insufficient precautionary methods were adopted in fighting the fire. The men thus engaged apparently lost sight of the fact that lives on the inside were endangered by the fumes and smoke. If temporary stoppings or brattices had been constructed in the heading off the North Slope leading into the engine room and on the main branch at the head of the North Slope indicated on Blue Print as H and O, respectively, the current entering the Tunnel would have been deflected down the East Slope and circulated through Shaft D-1 into the tunnel and would have been entirely free from fumes except perhaps from leakage through temporary brattice O, which could have been permitted to remain until all the men in the affected area had been removed to places of safety, and the fire fought systematically with a much better organization than it was possible to do under the circumstances existing.



3rd:- The number of casualties might have been greatly reduced - - -

- (a) If Foreman Knight and Fire Boss Dave, who lost their lives, had short-circuited the main intake current by opening doors P, Q, R and S on Bolton's Heading, and had lead their men across the haulage road into Perry's Heading through the trap doors marked J, which could have been done in a very short time after the fire was discovered. But you will note from the position of the bodies shown on this print, that Foreman Knight attempted to bring his men down the Haulage Road against the main intake air current instead of leading his men through the return air way into Perry's Road.
- (b) If more ready means, than by travelling old workings, had been provided for, a regular or emergency traveling way and that the miners in the affected area had been properly posted as to this means of egress.
- (c) If more men would have followed the same route taken by the survivors.
- (d) If Simpson and Simons upon discovering the fire had returned to the road on which they first discovered the flames and opened the door marked "T" and the door at shaft "D", the tunnel main intake current would have been short circuited directly to the main return to the fan circulating that split.

(e) If the men had been properly warned and led by persons thoroughly familiar with the mines it would have required only ten minutes walk from the farthest face of the workings to a place of safety by going through the door M. on Perry's Heading, and through trap doors J to the East Slope Workings and air currents, through which survivors passed, to foot of shaft.

(f) If the men had realized the impending danger as soon as they detected the fumes; undoubtedly they mistook the first fumes as coming from the tail rope engine brake band and lagging, which frequently becomes so heated that they give off considerable smoke, and which mislead the men as to the impending danger.

(g) If rescue apparatus and trained company men had been available at the time the fire was discovered the entire affected area could have been travelled for the purpose of either changing the ventilation or notifying and rescuing the men.

4th:- Apparently the Colliery Officials were handicapped by the absence of the Mine Foreman of this section of the mines, Mr. William Reed, who had been incapacitated for a period of six months; also by the fact that Supt. Birtley's health was not of the best. On that morning he had expressed to the colliery officeman a slight indisposition. He had not been in the mines that

morning before he received a telephone message informing him of the fire. In the afternoon when we met him he seemed to be laboring under great mental distress, superinduced undoubtedly by the realization of the enormity of the catastrophe. The remainder of the Colliery organization worked incessantly, loyally and heroically according to their conception of their duties.

5th:-

The Colliery Superintendent did not know that only one engineer was employed for the two engines. On account of not hoisting men on either slope we see no legal reason for the necessity of having an engineer on each slope, unless they are also intended to act as watchmen,- which would be highly commendable.

### RECOMMENDATIONS.

From the result of our examinations and investigations of conditions leading up to this terrible disaster, and bearing in mind the numerous object lessons to be learned from such an experience, we feel that we can unhesitatingly make the following recommendations:-

### FIRST

We recommend that all rooms, in which steam or electric machines for hoisting and pumping purposes, are installed, or stables, tool storages, fire-boss stations, emergency hospitals, etc., especially if their installation is intended to be permanent, be constructed as far as possible of incombustible material, such as concrete, brick, steel, etc., and that closer inspection of such rooms be made and insisted upon by the Colliery Officials. The use of all wooden cupboards, boxes, benches and other inflammable receptacles should be prohibited. Wherever practicable the use of timber should be discouraged in the construction of entrances of all kinds, such as tunnels, shaft lining, shaft brattices, etc.

## SECOND.

### A

That all Mines be equipped with sufficient Rescue and resuscitating apparatus for emergencies of this kind and kept in a building as near as possible to the mouth of the openings and always in good condition. The men in charge of the Colliery should be held directly responsible for the same.

### B

That a corps of not less than six, preferably more, competent men be selected at each Colliery and be thoroughly trained in the use of the rescue apparatus, means of ventilation and the location of main doors, trap doors, and regulators, the location of emergency and regular traveling ways and the location of all fire fighting appliances, so that in case of emergency, the interior part of the workings could be explored,

if necessary, ventilation changed, the men directed to the proper traveling ways and fire could be fought in the most efficient manner by these rescuers and thus greatly increase the probabilities of saving lives. All colliery officials and employees be instructed that in case of Mine fires a messenger must be sent immediately to the surface or elsewhere to get into communication with the Superintendent of the Mines and notify him of such fire; and he should immediately order all colliery operations suspended so as to permit the free use of shafts or slopes, as the case may be, for the purpose of getting men and necessary material to the seat of trouble. He should notify his Rescue men, First Aid and Fire Fighting crews, and order his fire fighting and emergency apparatus into service at once. In other words, the adoption of a system

similar to the one in a modern city Fire Department,  
as no one will suffer, if, after taking all these  
precautions it is discovered that the fire has been  
extinguished, without the aid of the men or material  
ordered for this purpose.

—c00—

### THIRD

We would recommend that as far as possible all travel-  
ing ways or means of egress be marked with finger boards  
or signs, painted "THIS WAY OUT" and that all employees  
be trained to make their escape from the Mines at certain  
intervals through these travelling ways or means of egress.  
We realize that in many instances such drills might  
seriously interfere with the Anthracite Mine law, which



provides for the hoisting of men on slopes of 1000 feet in length and over 15 degrees pitch, but notwithstanding the hardship placed upon the men in drilling to make their escape from the Mines through these avenues, great benefit may be derived from it in case of emergency, as in many instances frame breaker buildings are erected over the hoisting shafts, and in case of fire in such buildings serious results might occur if the men are unable to make their escape through the regular travelingways. All other unused roads not leading in the direction of the escape shafts or openings should be securely fenced off and properly marked, "DANGER" and a finger board as above, indicating the proper way of exit be placed under or near the "DANGER" sign.

#### FOURTH

That as far as possible, connecting doors should be placed between all main intake and return airways near the foot of the main upcast, and at the entrance to each split, so that the air currents, in case of necessity, could be short circuited.

#### FIFTH

That in all cases in underground mine stables constructed of combustible material, a door of sufficient area be left at the back or return end of same. This door to be operated from entrance to such stable by a connecting chain, wire rope or some other contrivance, so that the volume of smoke from a fire in the stable could be sent immediately to the main return and not carried into the interior part of the workings.

This should also apply wherever practicable to all engine and pump room, etc. We realize, however, that for such rooms, this, in many instances, cannot be accomplished, except at a prohibitory expense.

Wherever practicable the locations for stables, engine and pump rooms should be selected so as to afford a separate split of air for each, returning directly to the main return air course.

#### S I X T H

That all main ventilating doors and timbers on main haulage roads, be given a coat of white wash at stated intervals.

All loose bark and decayed portions of timber should be carefully removed before applying whitewash. This would serve as a partial fireproof treatment.

## SEVENTH

That all fire service lines, fire pumps and other fire fighting equipment at the Collieries be kept in good condition. All engine and pump rooms and stables be equipped with water line connections with sufficient hose and chemical fire extinguishers; these to be kept in a fireproof room where they could be available for immediate service in case of fire. Each Mine Foreman should be directed to report, in writing, to his Superintendent, at least once every month the result of tests made under his personal supervision and noting the condition of this equipment. All fire fighting appliances should be installed on the intake side of the entrance to the rooms, stables, etc.

## E I G H T H

We cannot at this time recommend better means of warning the men in case of accident than the liberal installation and use of telephone on the main haulage roads, passing branches, hoist rooms, slope engine rooms, pump rooms, etc. However, we would urge that hereafter these phones, at which there is not stationed a constant attendant, be equipped with a loud-sounding gong, so that it will attract the attention of persons at considerable distance away. The gong to be sounded only in cases of emergency, and the men thoroughly instructed that the gong warning must be heeded at all times, whether for practice drills or actual emergency.

#### F I F T H.

That there should be inaugurated at each Colliery a rescue, first aid and fire fighting crew; each organization to have a chief and assistant chief; the men to be selected from the most reliable employees and whose daily duties require them to remain more or less in constant touch with the various appliances pertaining to their respective organizations. Each crew should be furnished with instructions by the Superintendent or some person designated by him from maps of the mine workings on which are indicated the ventilation and its appliances, main traveling and haulage ways and such other physical features and information which might be of value in cases of emergency. They should hold meetings at stated intervals at which various methods of carrying on emergency work should be studied and discussed.

THE H. T. H.

There should be inaugurated at each colliery a systematic campaign of instruction pertaining to the safety of life and property. This instruction should be extended to all Colliery employees. As an inducement for cooperation there might be placed at a convenient point near the colliery office a box into which the men be invited to deposit questions, answers and suggestions on all phases of mining in and about that colliery. As a stimulus to this cooperative plan there might be offered a nominal prize, say one or more tons of coal, to the employee who offers the best suggestion or solution on some particular phase of the work at the colliery, during the period of three months. In this connection it might be practicable for the colliery management to issue, say quarterly, a brief

bulletin printed in various languages pertaining to mine law, colliery rules and regulations, instructions as to care and precaution to be exercised in the mines, what traveling ways to use in case of an emergency in various districts of the mines, and also the best suggestions or solutions offered, and by whom the prizes were won, during the preceding period.



#### E L E V E N T H.

That as soon as practicable other material, such as asbestos, etc., be substituted for the present use of wood blocks on brake bands, which due to friction heating give off smoke and fumes readily mistaken as coming from a wood fire.

That portable kerosene blast furnaces with crucibles be used in melting lead for reeving inside ropes. This would eliminate the smoke fumes, due to the present objectionable method of heating the lead over a wood fire, from entering the mine workings.

#### T W E L F T H.

In connection with the foregoing that a corps of at least ten competent men be selected from the fire fighting and rescue crews of the various collieries and companies; these men should be

chosen by the superintendents and the Bureau of  
Mines for the following Districts:

Carbondale	Hazleton
Scranton	Mahanoy City
Pittston	Shamokin
Wilkes-Barre	Centralia
Nanticoke	Pottsville
	Lansford

and to be subject to a call for service in their  
respective districts at any time from the Bureau  
of Mines or any of the mine superintendents; and,  
of course, are to be considered the picked men  
of the rescue and the fire fighting crews of the  
region.

The representatives of the various companies to  
determine upon the rate of compensation for such  
service. The management of any mine receiving  
such service to be responsible for the compensation  
and expenses of the men responding.

### THIRTEENTH.

In connection with these recommendations for the safeguarding of life and property in and about the Anthracite Coal Mines of Pennsylvania, we would recommend that the position of Mine Inspector be placed under Civil Service Regulations and that the applicant for such position should be appointed, by the Chief of the Department and said appointment approved by the Governor, for a period of not less than five years, preferably more during efficient service and good behavior. It is hardly necessary to state that all Mine Inspectors are human and of necessity are compelled to cater to the workmen as well as the operators in order to secure their reelection or return to office at the expiration of their term which is now but three years.

We heartily endorse the sentiments expressed by the Director in a recent address on this subject, which is as follows:-

"The selection of state mine inspectors by popular vote must be stopped if there is to be a reduction of accidents in the coal and metal mines of the United States. The state mine inspectors should have greater permanence in office and freedom from political and other outside influences. Their selection and continuance in office should depend upon their training and experience. They should be examined by a non-partisan board of mining men. They should be appointed upon the recommendation of such a board from the applicants that have shown the highest skill and best experience. Under no circumstances should they be selected by popular vote. In other words, politics should have nothing whatever to do with their selection or their continuance in office. The inspectors should have better support in the way of compensation. In fact, the salary and other conditions should be such as to enable the state to secure the best possible type of men for this important work."