

Denver, Colo., July 24th, 1909.

Hon. John F. Shafroth,
Governor of the State of Colorado,
City.

Dear Sir:

Herewith I beg leave to submit to you my report on the explosion which occurred at the Toller mine on the morning of the 6th of July, 1909, and which resulted in the death of nine persons.

The Toller mine is situated in Road Canyon, three miles southwest from the Ludlow station of the C. & S. R. R., and about twelve miles northwesterly from the town of Trinidad, in Las Animas county. It is owned and operated by the Cedar Hill Coal & Coke Company, whose headquarters are in Denver. The officials in charge are D. M. Harrington, general manager; David Davis, general superintendent, and Emory Fisher, local superintendent.

The mine is opened by two vertical shafts, one for hoisting and the other for both air and escape-way. They are located about 300 feet apart and sunk to a depth of 352 feet to what is locally known as the "Berwind" coal bed. The main shaft has three compartments, timbered with 8-inch "square sets," and is equipped with automatic dumping cages fitted with the latest safety appliances. The air shaft is 6'x8' 8" in size, and provided with a substantial stairway separated from the air passage by a strong wooden partition, with safety platforms at regular intervals from top to bottom. Twenty feet to the south of the shaft's collar is a 5'x11' Clifford ventilating fan with steel casings enclosed within absolutely fireproof concrete walls, and constructed and arranged so that the fan can be made to either force or exhaust as required. The fan is built to run as high as 200 revolutions per minute, but the excavated territory being of small dimensions, it was regulated to a speed of 78, at which rate it produces 25,000 cubic feet of air per minute, and which is more than a sufficient quantity to keep the workings clear of all gases and in a safe condition until the mine attains to much larger proportions than its present area, when the fan speed will, of course, be increased proportionate to the development of the mine, or as conditions require.

The coal is of the coking variety and the bed varies from 5 to 6 feet in thickness, dipping three degrees to the southwest. It gives off "methane," or "marsh" gas very freely, and which is very noticeable in all the faces of most of the advanced workings by its loud buzzing as it issues from the coal bed.

Mode of working is the double entry room and pillar, and the present workings consist of four pairs of entries and six rooms. The furthest point yet reached will not exceed 1,200 feet from the shaft bottom.

The total number of persons employed underground at the time of the accident was forty.

The fan had been put into commission only two weeks prior to the explosion, as up to that time the mine had been ventilated by a natural current generated by a difference of temperatures of the air in the two shafts created by steam pipes and steam exhausts used temporarily to operate the pump until the permanent electric equipments were installed. Even with this crude method they had managed by judicious conduction of the air current to keep the workings clear of gas accumulations.

Up to the time of the explosion, the fan was "forcing," and consequently the hoisting shaft was the outlet, a very unscientific system of ventilating a mine producing firedamp in such quantities as in the case of this mine. By this method the gases from the workings are carried along the main haulageways, where the drivers and most of the roadmen are at work, to the main shaft. With the fan exhausting the firedamp and the impure air is forced away from the men into the back air courses and out through the air shaft, thus lessening the chances for an explosion and increasing the sanitary conditions of the mine.

On the day of the accident, I was inspecting the South Canon mine, Garfield county, and received notice of the disaster at 4:45 p. m. I took the first available train and arrived at Tollerburg, which is the name of the camp of the mine, late on the evening of the 7th. From my investigation I learned that a few minutes before seven o'clock on the morning of the 6th of July, nine men, consisting of the cager and eight miners, entered the cage and descended into the mine. When the cage was about half way to the bottom, 176 feet from the surface, a body of firedamp was encountered and was ignited by a naked light, causing an explosion and which resulted in killing the entire crew of men.

From the testimony of those who were present at the time, the deceased miners all had safety lamps, and only the cager had a naked light which he always used to work with. Therefore, it is reasonable to believe that the ignition was due to his lamp. Supt. Fisher, the official in charge of the mine, upon being questioned as to the cause of the explosion, stated that July 4th was observed on the 5th, and therefore the mine had been shut down completely on that day and the night following. That on the morning of the 5th, between five and five-thirty o'clock, the fan was stopped and remained so until within five or ten minutes previous to the explosion. He further stated that he arrived about a quarter to seven on the morning of

the 6th, and found only a small number of men had reported for work, and concluding there were not enough miners present to keep the drivers going, he decided to keep the mine idle another day and that he then informed the men there would be no work that day. He (Fisher) then walked over to the air shaft and started the fan, and while engaged in this act, the nine men entered the mine and the explosion followed.

Wm. Day, hoisting engineer, stated that the cage was descending slowly, and immediately when the fatal point was reached the winding rope suddenly relaxed to an extent of several feet, which was caused by the cage being held or forced upwards by the pressure of the explosion from below while the drum was still in motion. The instant he noticed that the tension was off the rope, he stopped the engine and the cage dropped at once to the point where the rope had slackened. Volumes of black smoke were issuing out of the shaft. He then realized what had happened. In a few seconds after the force of the explosion had spent itself, the signal bell rang 2 and 1. The signal to hoist men being 3 and 1, Day thought the men were still alive and were trying to give the hoisting signal, and knowing that they could live but a short time in the afterdamp-laden atmosphere, he tried to lift the cage, hoping to save the men. He made repeated efforts and applied increased head of steam each time, but it was ineffectual, as some obstruction had fallen upon the cage, blocking it against the shaft timber, which the power of the engine could not overcome. It was then decided to lower the cage, which was done without any difficulty. In the meantime Supt. Fisher, George Wallace, Sandro Sanden and other employes entered the mine through the air shaft, and upon reaching the foot of the hoisting shaft about twenty minutes after the explosion, they found the bodies of the deceased lying upon the floor of the cage. Some in such positions that their heads and shoulders, and others with their legs, hanging over the ends of the cage. They were all, according to Day's statement, more or less mangled, excepting Noah, the cager, and every one was burned to some extent. It is possible that Noah lived and was conscious long enough to ring the bell, but some were of the opinion that the bell ringing was caused by debris, stirred by the blast, falling through the shaft and striking the bell wire lever at the bottom.

The damage to the property was not very heavy and consisted of eight or ten falls of roof at different places in the entries, aggregating about 200 tons of rock, and a few pit cars were demolished. Both shafts practically escaped injury.

Judging from the rapid rate the gas was escaping at the "faces," I would think that the miné had become at least half-filled with firedamp during the time that the fan had ceased operating, about twenty-five and a half consecutive hours before the explosion. It is possible that the accumulation of gas was

such that its outward edge was close to the bottom of the shaft, and when the fan started the air current, the gas was forced out in a body and met the men. If the fan had been exhausting at the time, as it should have been, it is very probable that the gas would have been forced away from the hoisting shaft before the men had reached the bottom, and as all the miners had safety lamps and were carrying no naked lights, very likely they would have discovered the gas as soon as overtaken in the haulageways, and they would have retreated to a place of safety, thus avoiding the accident.

Mr. E. S. Davis, the regular fireboss, who acted also as mine foreman, was absent on a vacation since July 3rd, and Mr. Fisher, in response to questions, stated that he intended to act as fireboss until his return.

Although the mine workings were small in extent, it nevertheless would have taken at least one hour to make the necessary fireboss' examination of all the workings, consequently had a sufficient number of men reported for work that morning to justify operating the mine, it is obvious that they would have been kept idle for the first hour of the shift until such an examination could have been completed and the fireboss' report made known.

Alex Osvick, pumpman, stated to me that he heard Fisher telling the men that the mine was not going to work. He also stated that some of the men who were killed were not present when Fisher announced "no work," and that they appeared at the shaft after Fisher had gone to the fan house. It is customary at coal mines for the miners to go in on days the mine is idle and prepare their coal for the time hoisting operations are resumed.

By section 4 of the mining law it is provided: "All mines generating firedamp shall be kept free from standing gas, and the working places shall be carefully examined every morning with a safety lamp, by a competent person or persons, before any of the workmen are allowed to enter the mine." Whether or not the statement of the superintendent to some of the men was equivalent to a caution to the men not to enter the mine, I will not attempt to say, but the statement by the superintendent in the miners' language that "the mine is not working" means that the mine is not hoisting coal, and it appears from the statements of employes that miners did enter and were permitted to mine on days when there was no hoisting of coal. Just what the men who entered the mine understood cannot be determined. However, the language of the statute is "that there shall be an examination by the fireboss before any workmen are allowed to enter the mine." Therefore it is clear that the explosion was due to the disregard of the officials in charge of the mine of the plain provisions of the law, and whether this disregard was due to incompetency or lack of care on the part of these officials, the sad result is the same.

About two months before the accident the mine was examined by this department and all the provisions of the statute at that time were being complied with, and at the time of the accident the mine was equipped for safety as I have heretofore set forth.

Following is a table containing the names, etc., of the victims of this accident:

Name	Nationality	Occupation	Age	Single or Married
Thomas Smircich	Austrian	Miner	32	Married, 3 boys and 1 girl
John Obrezzi	Slavonian	Miner	43	Married, wife in old country
Antonio Bronk	Slavonian	Miner	26	Single
Angelo Grizenti	Austrian	Miner	30	Married, wife in old country
Clementi Grizenti	Austrian	Miner	24	Single
Venuto Moser	Austrian	Miner	35	Single
Joe Fontenari	Austrian	Miner	42	Single
Louis Leonardelli	Austrian	Miner	24	Single
Albert Noah	American	Cager	24	Single

Respectfully submitted,

(Signed) JOHN D. JONES,
State Inspector of Coal Mines

The establishing of the following rules at the Toller mine have been recommended by this department, which, if enforced, will safeguard against the repetition of such an explosion:

- (1) You should have a specially constructed lamp house, the same arranged and provided with the equipments for oiling, cleaning, locking, storing, etc., all the safety lamps.
- (2) The exclusive charge of the handling of the lamps should be entrusted to a man or men, employed especially for such purpose and who are thoroughly competent in such capacity.
- (3) See that a thorough examination is made of the mine by a competent fireboss every morning, or any other time, and that all places are safe and free from gas before the men enter the mine.
- (4) The fireboss should return to the surface before the men are lowered into the mine, until a fireboss station is established in the main intake air way in the vicinity of the shaft bottom. This station could be safely located at inside end of the shaft's double parting, or at the entrance to your slope air courses.
- (5) Should the fan stop running, withdraw all the men from the mine at once.
- (6) Keep the fan running as exhaust continuously, so that the gases are carried away from the main haulageways. Should anything happen to the fan, which would necessitate its

cessation for repairs, or otherwise for any length of time, do not permit even the fireboss to enter the mine until the fan, when restarted, will have run sufficient time to clear the gases away.

(7) Do not allow any but locked safety lamps beyond the lamp station.

(8) Should an emergency arise whereby the hoisting shaft is temporarily made the up-cast, forbid the use of naked lights below the surface.

(9) Forbid the men to carry matches, or pipes, in the mine.

(10) I recommend the use of the Wolf lamp, exclusively.