

FRATERVILLE MINE EXPLOSION

Monday, 7:20 a.m. May 19, 1902 184 killed  
Fraterville mine, Coal Creek Coal Company, Fraterville, Tennessee  
(2 miles east of Briceville)

Resume' of Testimony taken by R. A. Shiflett, Commissioner of Labor and Inspector of Mines, at Coal Creek, Tennessee, beginning Friday, June 6, 1902. (Condensed) (Official investigation committee: R. A. Shiflett, Q. R. Smith, William Williams, Chute Lewis, William Lewis, and George Camp.)

William M. Lewis, age 47, mine foreman, LaFollette, Tennessee.

I have had 18 years experience in mines, 3 years as a fire boss in south Wales, 15 years as a miner and mine foreman in United States, in Kentucky, Colorado, Iowa, Virginia, and Tennessee. Now employed at Kent mine, LaFollette. Hold Class A mine foreman's certificate. Have not worked in Fraterville mine.

I led a rescue party in reach of bodies at the Fraterville explosion. I was all over the mine in 3 days. The mine was in very good condition, considering an explosion had occurred, mine was damaged very little, in better condition than many mines now being operated. I found no gas, made tests all over the mine, except in No. 13 air course and in Room No. 3 off 13 air course, where I got about one-half inch cap on my safety lamp. I saw you (Mr. Shiflett) and others make tests and gas showed in your lamps.

The No. 3 room was broken through into the workings of the old Knoxville Iron Company. I found three other openings into the old Iron Company, one from Room No. 3, about size of a fist, one from Room No. 1, about 8 x 8 inches and one from the Old No. 13 headings about 16 x 18 inches, about the size to admit a man's body. I crawled through this latter opening into the old Iron Company mine, found plenty of black damp but no fire damp. There was too much black damp to show any fire damp, but I am satisfied there was plenty of fire damp in the old mine.

In my opinion, the furnace had not been running Saturday night or Sunday and possibly was not fired until Monday morning, that gas collected in the Fraterville mine from the old workings or that possibly they had a fall in the old Knoxville Iron Company mine, which forced the fire damp into the Fraterville mine through the openings and the thin coal, the gas collected, and when the man-trips ran in the main haulway, forced a current of fresh air up the 13th haulway and supplied

a sufficient amount of oxygen and air to render the gases, that had collected, to an explosive mixture. Then the first light that contacted this explosive mixture, ignited it, and set off the explosion.

There is no doubt in my mind but that this was a gas explosion. I am satisfied that dust played a very small part in this explosion, although there is dust in the mine.

I found some dust partly coked on the new haulway on the timbers, some slightly coked on the main entry down about the junction of the new 13th haulway and the bull-wheel. I found charred bark and some timber burned on the new haulway. I know this was done by flame from gas. I have been in two explosions and was burned in each. I have helped recover bodies from three other explosions. I know the difference between a dust explosion and a gas explosion. I believe gas was not generated in the Fraterville mine, except in 13th right, and which is coming from the old Knoxville Iron Company workings. The mine is dry in places and wet in places. I did not find charred timbers along the main haulway, I found some slightly coked dust, a good deal of slack coal but not very much dust.

The greatest evidence of heat was on the new haulway, between the siding and the junction of the main entry. The greatest evidence of violence was along the main haulway on the sidetrack below the bull-wheel. Here some cars had been shattered by the explosion and timbers had been thrown from their places, one cog had been partly removed, and coal from the loaded trips had been scattered around. The doors were also blown down on the left entries from there to 17th left. I found no gas in the left cross entries, the main, and the right entries.

H. C. Snodderly, aged 25 years, miner, Briceville, Tennessee.

I have worked in the mines 11 years. I was working at the Thistle mine of the Coal Creek Coal Company, on the morning of the explosion. At the time of the explosion, about 7:15 a.m. I was on a trip of cars going into the Thistle mine. I got to the mine about 6:30 a.m., I saw Tip Hightower standing on the inside, as he often does, about 20 or 30 feet from the mouth of the bank. I have seen Tip away from the furnace, sometimes 30 minutes at a time, and sometimes several times a day. I drive in the Thistle mine and see him frequently on my trips in and out. I don't know whether he had been in the mine that morning or not, he was coming from the mouth of the mine when I saw him.

I don't know whether the Fraterville furnace had been fired that morning or not, I saw smoke coming from the stack when I got to the mine, I didn't make an examination of the furnace then. I made a trip to 6 left and pulled my trip to the outside. Maybe about 7:30 o'clock

or later, when I got to the outside, I saw awfully black smoke going out the Fraterville stack, about 100 feet above the stack. Someone remarked they had an awful fire in the furnace, but Hightower was then on the outside. It takes about 20 minutes for me to make a trip.

When I called attention to the smoke coming out the stack, Joe Vowell, our mine foreman, said "Some fool must have gotten burnt up with a keg of powder again." Looked like powder smoke to me, kind of light, not dark like coal smoke. Shortly after, a message came from Fraterville that something was wrong. Tip Hightower started to the furnace and I started on the 2nd trip. When I came out again I heard about the explosion, cut my mule loose and rode him to Fraterville.

I have never seen the inlet doors from Thistle to Fraterville standing open, but could not say that they have or have not been open. I have heard complaints from George Adkins, foreman at the Fraterville mine, a few times about a week or two weeks before the explosion, about the air in the Fraterville mine being bad, he said he thought the furnace was not being fired. I saw him, with one of his men, about 3 o'clock one evening, go to the furnace, about a week or two before the explosion. Hightower said the reason the air was not good was because the wind was coming against the stack and it would not draw.

B. N. Johnson, aged 63, Briceville, Tennessee.

I reached the Thistle mine about 6 o'clock on the morning of the explosion. Tip Hightower told me not to go into the Thistle mine until the fan had started, the air was bad, that I could not get down the main entry as it was full of black damp. I found the air all right when I went in. There was nothing wrong with the Fraterville inlet as I walked to my working place without trouble. I don't think Hightower knew much about the air in the mine, I don't believe the furnace had been fired. I don't think Hightower is the proper man to fire the Fraterville furnace, he is not careful or responsible. I see him outside very frequently when he should be inside firing the furnace.

Ive Edwards, aged 40, miner, Coal Creek, Tennessee.

I have mined coal near 20 years, and have worked at Coal Creek over 5 years. I was walking inside Thistle mine, when the Fraterville explosion occurred, walking to my place in 4th right entry. I did not examine the Fraterville furnace that morning. I see Hightower on the outside a great deal. He has to dig his own coal and fire the furnace too. I think it would take all of his time if he did that. He would be outside at least a half hour at a time. It would take the greater part of his time to dig and bring the coal any distance and fire the furnace.

I was with a rescue party, bratticing for the men ahead. I carried the air from Thistle to Fraterville to get it across on the right. It is against the rules to ride in to work so I walk. Hightower is generally on the outside when we go in about 6:30 in the morning and when we come out about 4:30 in the afternoon.

J. E. Hightower, aged 53, mine foreman, Coal Creek, Tennessee.

I came here in 1869 and have worked in the mines about 30 years. I have worked in the old Knoxville Iron Company mine, on this side and on the other side of the mountain, Nos. 1 and 2 mines, and later opened the Slate Stone mine of that company. They had two openings on this side, first at Old Long Chute and then an opening around where they operated with convicts and then at the Slate Stone mine. I later ran the Royal Coal and Coke Company mines, I leased the Cambria mines for about 11 months. I worked in Kentucky and the last 3 or 4 months in Tennessee.

I worked in the Fraterville mine, and as foreman about the last year. I found gas in Fraterville only once, just enough to detect on a lamp; it was in the 5th or 6th cross entry under the fault, to the right, one had gone into the old Iron Company mine; it was little over half full of water and there was a little gas there. Some of the airways in the Fraterville mine were in bad condition. My last trip through the return airway to the Fraterville furnace, with the State inspector, it was knee deep in water, some places waist deep. It took us about 4 hours. I was instructed to clean up this return airway, to enlarge the airway in two places. I had one airway cleaned up except the water was not removed. I drove another airway around part of the old, but the water in the old airway did interfere with the ventilation of the mine. I don't know what was done after I left them.

I was a member of the rescue party. I was the first man through the hole near the bull-wheel on the main entry from Thistle into Fraterville. I came to the mine when they phoned me, got there about 9 o'clock on the morning of the explosion. I found slate down in the airways, not bad. On the main entry, where the force of the explosion came, a great deal of rubbish had been thrown back by the explosion, in the entries. I didn't examine the furnace.

We couldn't go in through the Fraterville mine and had to enter through Thistle. Air was very bad, furnace taking air out of the old works. Some of the bodies were burned badly, others not burned at all, others on the main entry were torn up, one man had clothes burned off of him. I helped rescue bodies from 15th and 16th left, along the main entry and 14th right, some were thrown with the slate along the ribs. As we went more to the head of 14, 15, and 16 left, the less was the

damage, 14th entry was blown partly heavy up towards the head. The 14th is about the highest entry in the mine, highest ground. I did not test for gas during recovery work.

When I worked at Fraterville mine, the Hightower entry, cut into the 7th right entry of the Knoxville Iron Company. It was there when I went there. Don't know who made the opening. We put a stopping in there. A good many places, rooms generally, off the next entry, to the left opened into the old Knoxville Iron Company. We tried to wall them up with dirt, put our lights out, put brattices across. Vowell, or No. 10 entry knocked through, and I put a brattice across the entry. I was never bothered with black damp any more, and must have got the openings blocked.

I ran the old Knoxville Iron Company mine about 14 years. It generated gas, had an explosion there once, 2 years after the convicts came there, on a Monday morning, about 1885. A convict, who had missed a shot, ran in ahead of the mules, doormen had not gone in yet, and was blown 40 feet. The mine was very badly torn up, worse than Fraterville in this last explosion. There was no dust, it was all wet. Explosion started on the main entry. I made tests for gas for 3 years after I took hold of it, 3 o'clock until work time, and found gas every day, until I got the return airway through, the inlet was 14 feet and the outlet was only 5 feet. Drove another airway from the furnace. The convicts did slip over on the side next to Fraterville, reports show on State's books, and were "punished for cooking on gas." Had a crack along the airway and I have never seen the time you could not stick your lamp into it and set it afire; this crack would be about adjacent to or would strike about the new 13th, or 1st right off the new haulway in the Fraterville mine. I cut into this part of the old Knoxville Iron Company mine from the Fraterville mine. The State inspector told superintendent Captain Chumley that there was enough gas in there to burn up his property and kill all of his men.

I believe the Fraterville explosion was a gas explosion, that the gas came in from the old Knoxville Iron Company mine workings through openings between the two mines, and that gas had spread through out the entries off the new haulway, that when the furnace started up this gas was circulated out on the main entries, that the air current taken in with the man-trip from the outside mixed this gas well, and was set off by the first person to stick his light in it. The burning gas rolled to the sidetrack where she exploded. The 14th right entry was badly torn up. I found burned dust along the main entry and sidetrack, the dust was piled up by the explosion, rocks were blown from a wall bracket.

I think the furnace was properly fired, it seemed that the men had all reached their places before the explosion. One precaution was not

taken, the openings between the Fraterville and old Knoxville Iron Company mines were not bratticed off. I think that if the mine had been examined by a competent man before the miners entered, the explosion would have been prevented. The rooms working down toward the old work would have shown a certain percent of gas. Gas in the old 13th entry and rooms would not have been detected.

I think the Bank Boss was responsible for the disaster. On my last two days of work at Fraterville I told Mr. Adkins about the gas over here. He told me he had never handled gas and didn't know anything about it. I told him what I knew about gas and how to find it. I would judge him as not competent to stand between life and death of a body of men in a mine.

I have never seen holes used in advance of workings approaching an old or abandoned mine, except once on Coal Creek. If the openings to the old mine had been bratticed off the explosion would not have occurred. I took the bank boss, on my last day, 1899, and showed him and told him about the black damp coming through from the old mine, and that when he left the black damp at the top of the hill he might expect gas or fire damp. I had bratticed all the way. I had been told by the State inspector to use brick or stone-filled double brattices and to use boreholes before driving in the direction of the old Knoxville Iron Company mine. I cut through into the Vowell entry unexpectedly, didn't think I was within 150 feet of the Huggins entry or the other side.

I got to the Thistle mine about five or six o'clock on the morning of the explosion. Mr. Hightower and I walked to the mine together. I last saw Mr. Hightower at the Engine house at the mine mouth when I went in. I don't know if he had been in to the Fraterville furnace, he has to enter through the Thistle mine. I don't know how long he stays outside. I have fired the Fraterville furnace. To do the job properly, I had to stay too close to the job, digging my own coal, so I quit. It takes two tons of coal a shift to fire right, which is a good deal more than it gets. They wanted me to dig my own coal and fire the other furnace at Thistle so I quit. I am strong and in good health, it took all of my time to fire the one furnace.

I recall the State inspector telling Mr. Adkins to have the furnace fired good, to put two cars of coal in place of one, but they would pay for one car of coal. He was also told to keep the returnway next to the furnace cleaned out, to keep the ashes hauled out but this was not done for several days before the explosion, gobbled their ashes so the car could get past. The State inspector also told Mr. Adkins to keep the doors in the inlet from Thistle shut. I was instructed by the inspector to start firing at 4 o'clock. They did not pay me for or give me the two cars of coal as instructed. I asked but they would not pay

me three cars if I dug it. I did not haul ashes out of the mine. If the Fraterville furnace was fired on Saturday, Saturday night, or Sunday night before the explosion on Monday morning I do not know it. I fired the furnace on Sundays, I saw Hightower with clean clothes on each Sunday, and never saw him at the mine on any Sunday. I don't think the Fraterville furnace was fired on Monday morning before I got to the mine. Hightower said he used one car a day on the furnace, it should take two 1-ton cars a day.

James Burris, aged 28, driver, Coal Creek, Tennessee.

I was just inside the mouth of the Thistle mine when the wind of the explosion hit us and knocked our lights out. I made two trips before they told us. I have fired the Fraterville furnace, used one ton a day. Some of the idle days, the furnace was not fired. The furnace was fired on Sunday morning, before the explosion, by Tip Hightower's two boys, about 14 and 16 years old. I live right at the stack. It is usually after 5 o'clock each morning before the furnace is started. I don't know if the Fraterville furnace was fired that Monday morning.

When Tip Hightower and Joe Vowell came back from the Fraterville furnace to Thistle that Monday morning they said the fire had kind of a blue color, as if someone had burned a keg of powder. When I saw the smoke coming from the stack it was right smart, looked like something was wrong. I banked the fire on Saturday evenings.

John B. Hickman, aged 43, miner, Minerville, Tennessee.

I have mined coal 23 years. I work at Minerville. I have worked in Fraterville. I was on a rescue party. I was used to prevent open lights going beyond a curtain where there was danger. We found places where very little dust had been kicked up and then where cars had been blown over.

I think the cause of the explosion was because the shaft had not been fired, and there was a small amount of gas generating on the right side that started the explosion that morning, everything was on the stagnate that night. I heard that they had cut through into the old Knoxville mine. The Fraterville mine was considered a safe mine. I have seen small feeders in the old Knoxville Iron Company mine. This was on the Fraterville side. I have heard Hightower, their mine foreman, talk of a big feeder in a floor crack, and that the convicts fired it.

Some of the bodies had no burns, just smothered to death. Davis and Bullmer were in charge and usually put me in charge of a door.

Lewis Tipton, aged 30 years, Briceville, Tennessee.

I have worked in the mine since I was a boy. I have not worked in the Fraterville mine. I had been building brattices in the mine. I hurt my eye digging coal and was brought outside. I was working on the outside at Thistle before the time of the explosion. On Monday morning I was inside about 40 minutes, about 7:30, when the black damp came in so thick you couldn't see a man near you. I was in there when they came in and got me. It takes about 4 to 5 minutes to walk through to the Fraterville furnace, the fire was smothered down, top was black, fire was bedded on the grate, top smothered out. I turned the fire over and it smothered again. Throwing fresh coal on it did not make it burn. It was about 7:40 a.m. when they brought me outside. I went into the Thistle side track and told the parting boss to send the men and mules out as quick as possible.

Hightower, the furnace man, was very derelict, would stay outside a half a day at a time, might go in once in the afternoon to bank the fire. I have fired one day, when it took 4 cars of coal, usually takes two 1-ton cars. Orders were to fire at 4 a.m. He always quit at 4 o'clock in the evening. It had been reported, Mr. Camp had been up there lots of times, find Tip on the outside, Joe Vowell, the Bank Boss of the Thistle mine, would have him doing other things. Mr. Camp seen it. The Bank Boss sat around on the outside and did nothing. The furnace was not fired on Sundays, was not fired Saturday night nor Sunday. Tip came out about 7:15 a.m. on Monday, on day of explosion, when they phoned from Fraterville and wanted to know about the furnace, the men had just gone in. I live about 200 yards from the Thistle mine and know the furnace was not fired from Saturday until Monday morning. Hightower usually passes my house about 4:30 to 5 a.m. and in the evening about 4 o'clock.

They shoot in Fraterville about 4:15 p.m. Hightower banked the furnace about 3 to 3:30 p.m. The powder smoke remained in the mine all night. I have been in the mine all night. If the furnace is fired right, as it is now, it would taken about two to three hours to clear the mine. I found the men near the main haulway door badly bruised and burned but on upper part of new haulway not even burned, some of men in 15th right were burned, some burned at door on 16th right. Men at bull-wheel, including Adkins, were badly burned. I think most of the men were burned by gas and dust. The 14th and 15th left showed a violent explosion. According to the direction the brattices were knocked, the explosion travelled up one set of entries and down another.

I think the gas was set off by powder, or dust thrown up by trips between the doors set off by the 50 to 75 lamps of men waiting for man-trips would be set off. Gas was found near the roof at the 6th door

in the new haulway by Captain Nelson. It could have come from the old Knoxville mine. It takes two men to dig and transport the coal and tend the furnace as we are now ordered to. Have to push the car on poor wooden track.

Abe Hale, aged 41 miner, Briceville, Tennessee.

I have worked in the mines 30 years, trapper to mine foreman. I worked at the Thistle mine for 4 months, before that for 16 years, and also at Fraterville. I'm now employed as a gas inspector at Thistle. I was a foreman at Fraterville 3½ years ago. On Monday, I was in Thistle from 7 to 8:30 a.m. I went to the furnace, it was about out from black damp. Joe Vowell and Tipton were there. Hightower was always in the yard when I passed in or out of the mine, 2, 3 or 4 o'clock in the afternoon. Adkins has called up several times to know what was the matter with the shaft, that they were getting no air current at Fraterville. Joe Vowell blamed it on Fraterville air-course falls. Each mine had to take care of their side of the shaft; the airway was full of water, and they just left it up to the other. When the level rooms were working near the shaft, the furnace coal was easier to get; it is now about 250 feet from the nearest room face. I don't think Hightower took care of the furnace.

At Fraterville, I alternated between digging coal and working as a foreman. I can detect fire damp in the mine. I last found gas in Fraterville several years ago, in the bottom of the swag at about the nearest point to the old Knoxville Iron Company mine. I have been a shift foreman at Fraterville since the explosion, building brattices and cleaning up. I am not decided as to what caused the explosion. The explosion originated from gas or powder. The gas could have come through the connections to the old Knoxville mines.

The room in which Mr. Woods worked and was found badly burned, had a hole through to the old Knoxville Iron Company mine. It had been holed through several days before the explosion because the track had been changed.

There were other evidences of fire at the door at the upper end of the sidetrack. Cogs along the rib here had been blown in both directions, the bull-wheel timbers had been blown up the hill and cars at the sidetrack were blown the other way. Coking was heavy along the main haulway above the double doors. This would have been the origin.

There was evidence of a powder explosion in the 5th or 6th car from the front of the trip, which were all blown to pieces, and 2 or 3 cars at the front end were torn up. I believe the explosion occurred at 7:15 a.m.

I have seen gas in the old Knoxville Iron Company mine where I was employed as a digger. It was a gassy mine. I set it afire almost every morning to burn it out of the face. They had a man to see that the entries were cleared. The gas usually showed up in airways. I worked on the side toward Fraterville. It was about 1,000 feet from the main entries in the old Knoxville mine to those in the Fraterville mine. The cross entry off the old Knoxville mines was in about 1,200 feet. The gas was burned out from the Knoxville headings and rooms.

I have bratticed up three openings, between the two mines, since the explosion, near the head of 13th right entry in Fraterville. The old workings are full of black damp. A competent foreman would have bratticed off these openings. Fraterville is a tolerably dusty mine. There is no water in the mine from the swag to the head, about 800 yards. I think the mine boss is responsible for the explosion, the mine should have been examined before the men entered.

Daniel Fulton, aged 42, miner, Coal Creek, Tennessee.

I have been mining coal 33 years, have had experience in gas about 17 years, and was mine foreman about 10 years. I have a first-class miner's certificate from Pennsylvania, and a first-class certificate (mine foreman) from Tennessee. I have worked in the Fraterville mine, left there about 6 months ago. I led a rescue party at the Fraterville explosion. I later made an examination of the mine with a party headed by the chief inspector, Mr. Shiflett.

In my opinion, the explosion was caused by gas. I did not find any gas in the headings except 13th right where I have observed gas three times in the 3rd room, gas was also found there a week later by the committee. There was an opening from the No. 3 room into the old Knoxville Iron Company mine. A fire had occurred in this room and to the face of the airway, we found burned clothes and burnt paper there, timber burned along the 13th airway, some coked dust.

I believe the explosion started in the new haulway and the 12th right from the damage done. There was a large percent of gas in the No. 3 room opening to the old mine. I think the gas came in from the old Knoxville Iron Company mine. It was the duty of the mine foreman to have closed these openings. If he had used boreholes ahead he wouldn't have driven into the old Knoxville mine. It will be difficult to put up brattices in these openings, roof is bad. I think Fraterville, insofar as gas was concerned, was a safe place to work. If the openings had been bratticed the explosion would not have occurred.

About 235 men were employed in the Fraterville mine. One man could not look after all these men, two would have been better. I think

the bank boss was responsible for this explosion. Many of the inspectors' instructions were not carried out, such as repair of doors. The area covered by the explosion was from the 16th to the 4th left entry on top of the hill, and to the rock curve. Most of the men and mules burned were by gas.

I have been in four explosions. I have seen men burned by gas and powder, but not by dust. A gas burn is kind of yellow, some were burned black. If the mine had been inspected every morning the explosion would not have occurred. I could find no evidence of a shot having been fired that morning. The explosion recovery work took 4 days, and the investigation four. Mr. Nelson thought the gas was lit by a driver in the 15th entry. He was later satisfied it was started in old 13th.

William S. Riggs, 35 years, miner, Coal Creek, Tennessee.

I have worked most of the time during the past 19 years in the mines, mostly as a miner. I have worked in the old Knoxville Iron Company mine and the Fraterville mine. I last worked in the Fraterville mine on the Thursday preceding the Monday explosion. I didn't work Friday as I had finished my place and they wanted to put me in a bad place. I wanted it fixed up.

The air of a morning was pretty hot and late of the evening it was very hot. I usually worked late and went out after the drivers. I loaded one car on Thursday. I worked on the 13th entry, the air had gotten bad, the boys had headaches a day or two before the explosion. My entry was tolerably bad, a sight of dust not cleared up, the mine was in pretty bad shape. One reason I was quitting that entry was they were getting the coal cheaper on the other entries; the drivers would get off the track and be a long time making trips.

I saw gas burn in the "C. C." mine, near Beech Grove. I didn't see gas burned in the old Knoxville Iron Company mine. In the Fraterville mine, we would leave our places and go up to the parting until the drivers started; I left the parting, when the smoke was so bad I could not get my breath and I would go up behind the door and when the driver came along I would jump into his trip. They had a long bug light, it would make terrible smoke, in 15 minutes it would fill the whole thing with smoke.

I went in early. I don't believe the furnace was fired a great many times. We had better air when it was fired. We all complained. The foreman said "If any of you are dissatisfied, I will change you." It was worst early in the morning and late in the evening. The men fetched their powder in baking powder cans. One boy burned his hand while shooting.

Mr. Adkins was careful about the ropes, he told us about getting in and out of the trip, be careful about bad top. I don't think he understood his business as a mine foreman. He would stay at the parting to see that the drivers got the coal out. He didn't examine the mine everyday. He stopped in at our working places, I was drawing pillars, once or twice in the last 3 months he went nearly up to the face of my place. He was more afraid of a bad crack in my roof rock than I was. The squeeze had been getting unusually violent in the last few months, especially on the 14th, it was creeping, it would scare the fellows that lately came to work.

They didn't have enough day men to look after the mine. The roadmen looked after the brattices, had but 4 roadmen to see after the air. The stoppings were built of slate and dirt. The smoke at the parting would be gone by 10 or 11 o'clock. Rooms were driven about 100 yards, some went a little farther. Breakthroughs were not made but one where I was. Lately, they've been making 2, 3, and 4. I think it was a gas explosion. The furnace had been stopped. I was always fearful of a dust or powder explosion. This thing tore up so much I think it was a gas explosion.

Mr. Adkins when he came in where the smoke stayed so long, told us it was dangerous, men could hardly get their breath, and they burned coal oil in there. Many of us would blow out our lights during the smoke before we would start in; the furnace was burning, this would be about 6:30 or 7:00 a.m. The trip lamp had a flame about a foot long, very smoky. The powder was sent in on the trip, put it in front so the parting men would get it and know where to send it. I have seen two kegs in the car the flame was on. The miners put the powder in there. The room men carried their powder in little cans, the entry men carried it in kegs. They would tap it with the augers. The Fraterville mine was considered a nongassy mine; some people were afraid of a gas explosion. Thistle had an explosion when I was working at Fraterville. (No questions asked.)

C. A. James, aged 32, miner, Coal Creek, Tennessee.

I have worked 15 years in the mines, including Fraterville, I was working at Beech Grove, Black Diamond mines. I helped pick up bodies at the Fraterville explosion. They were burned on the 13th right entry, but could recognize them, blistered; on the new haulway few were blistered, some not scarred, must have smothered. In one group some were burned some were not; I figured they had left their work and came down without their pails. On 16th left, up to the 73 or 74 room, was badly torn up, 13th left was not torn up, but were burned. I thought it was a dust explosion, but it would have to be started first. The part of the mine I saw was badly torn up, brattices all knocked down, falls along the sides, track torn up.

I quit working at Fraterville because of the bad air, awfully hot, I got uneasy, you couldn't work well in it. I worked in 16 left 13 room. One morning the furnace was idle and our lights wouldn't burn above the double doors in 15 left, it got better during the day. I did not consider Adkins a suitable man for the position. A driver told me that Adkins said there was no such thing as black damp in the mine; the driver asked him if he knew what black damp was and Adkins didn't answer. He said there was no such thing as bad air. Uncle George said he didn't think it was necessary to sprinkle the roads or take the dust out, even if the men strangled. The mules raised a lot of dust in passing it was like hot air and smoke.

We cut breakthroughs every 60 feet after the last legislature, but Adkins changed it to every 100 feet. The entry brattices were made of plank walls filled with dirt and rock. I have never seen them load the dust out, they gobbled the dirt and slate. Jim McDonald told me the airway was full of water.

Cain Snodderly, aged 36, miner, Coal Creek, Tennessee.

I have worked in the mines, off and on, 21 years, last as a driver. I worked at Fraterville up to 5 years ago. I worked inside and helped carry coffins and the dead. I gobbled some of the holes cut through into another mine. One man had a slight burn but his head was smashed. I have touched gas off in the Beech Grove mine and seen it burn out.

Aaron Sharp, aged 34, miner, Coal Creek, Tennessee.

I am checkweighman at Fraterville. I dug coal until May, last in 17 left 5 room. The air and the dust was very bad, was very dusty between the doors on the main entry. Hauled the dust back to the cross entries and threw it in the rooms that were working. Never sprinkled. I never heard of them examining the places before we went in. I never saw Adkins examine the mine. When complaint was made of the mine to George Camp, Mr. Adkins tried to find out who it was, it was this year. Men had to come out early because of the bad air. John Dyer is the only living member of the bank committee. They made complaints.

The company put up a set of safety rules but they were never agreed to by the men, we never got a copy, put up in the shop about a year ago. I read them. One rule was against riding in the cars, would discharge without notice. Pick sharpening should have preference in the shop. Mules were to be blown out of the stable at 6:30 a.m., leave the bull-wheel parting for the outside at 4:30 p.m. Drivers should take mules to barn. Shooting should start at 4:30 p.m. No copy was posted in the mine, no copy was submitted to the Local. Mr. Adkins read the rules to

us, but the rules were not signed. Fraterville mine was not managed right, Beech Grove was much better. The parting boss, who had to travel the air course, said it was very near impassible because of the water, about a year ago. I have heard the State inspector tell Mr. Adkins to make the air better on one entry, he made only promises. I know of one man who was discharged for reporting the condition of the air to the mine inspector. The air reversed once when the fumes and fan were going, Adkins said the wind had reversed it.

W. A. Bayer, aged 26, miner, Briceville, Tennessee.

I have worked in the mines 14 years. I worked at Thistle. Never worked in Fraterville. At the time of the explosion, I was the third man to go in Fraterville, it was about noon; Mr. Fulton and Captain Nelson preceded me. When I saw the furnace about 8:30 a.m., it was about out, blue flame, about two bushel of fire on the grate and a little less than a car of coal ready to put on the furnace. I fired it for about an hour. I usually see Hightower at the mine mouth when I go to work about 7 o'clock in the morning, and he is dirty from working. I don't think a man can dig his own coal and fire the furnace properly. I have fired these furnaces. I was on a rescue party. I can distinguish a gas burn from a powder burn. The men I examined were burned principally by dust. In 17th left they died from suffocation. The men in 16th left near the main entry were badly mutilated, up in 16 left only suffocated, about the same in 15th left, in 13 left they were burned. I believe that the explosion was started by a gas ignition and the intensity of the explosion was caused by the dust being ignited. It could have started on the new haulway or down by the bull-wheel where one door was blown away from the other. I hold a certificate from Pennsylvania as a practical miner. I believe the gas came from the old Knoxville Iron Company mine. If both doors were left open in the main entry the gas would come out. The safety lamps, purchased by the company, sat in the Coal Creek store, I don't know of them ever being used, I never saw a safety lamp in the mine. I asked for a safety lamp when I went outside that morning but they didn't have any.

D. R. Thomas, aged 62, miner, coal Creek, Tennessee.

I started to work in the mines when my daddy carried me on his back. I last worked in the Fraterville mine in February, on 15 right entry. I went in with the first party after the explosion. We got as far as the bull-wheel on our first trip. If we had a fan to pull instead of pushing the air with a furnace, and built temporary brattices we could have saved these men.

The Fraterville mine was considered as nongassy, though we found little pockets of gas here and there. About a month before the explosion,

I was examining around the mine for the Provident Insurance Company. The mine, at that time, was bad in one respect, it was poorly ventilated. The mine was very dry, was going up hill all the way, it was awfully dusty.

I think the explosion was a combination of causes. The dust should have been cleaned and the mine sprinkled. The previous Saturday being pay day, everybody was in a rush, probably most of the doors were left open, filled up with gas, might have struck a blower, and set off Monday. Gases coming from the old Iron Company, in combination with the dust, mixed with a little pure air. Must have come from that mine, as the men on the right side were not burned but simply smothered to death. The explosion gathered force at the bull-wheel, divided up and went in both directions.

I worked in the old C. C. mine of the Iron Company, the dip entries were right above the Coal Creek store, up on the hill, dipped toward the old Knoxville Iron Company mine. In the C. C. mine we cut into the gas belt, runs southwest, with the fault, they had gas. I knew Mr. Adkins when he worked on a section, where he should have stayed, he was careful but not competent, didn't know. Superintendent George Camp's ability as to managing mines couldn't be much as he never had any experience in mining. Even if the mine had been examined every morning before the men entered, the explosion could have occurred as the ventilation was very poor. Boreholes were not used ahead, as picks knocked through very often and these holes were just gobbled up.

Black damp has been so bad on Monday mornings we could hardly work. Bratticing these openings would have greatly improved the ventilation. Black damp did come out of these openings as on 12th, where they were intakers. The air exhausted at the furnace. No splits. Splitting would not have made it more healthful.

Tip Hightower, aged 50, miner, Coal Creek, Tennessee.

I have worked in the mines about 35 years. I was recently employed at Fraterville. I am now employed at Thistle by the Coal Creek Company, as a furnace man at the Fraterville shaft. Before that I fired boilers at Fraterville. I was firing the furnace on the morning of the explosion. On that morning, I went to the furnace about 4:30 a.m., by Mr. White's time piece. I left home at 10 minutes past 4. Mr. White was firing the engines. On Mondays, I go in at 4 a.m., on the other days at 5 a.m. I was told to fire it and do the best I could. I was paid \$1.50 per day, nothing extra for mining the coal, I used a ton to 1½ tons of coal a day. I dug it from a loose place near the shaft in the 5-foot coal. I banked the fire at 4:15 p.m. I do other work on the yard, help dump cars of slate, 5 or 10 minutes work. If the men came out early I

banked the fire, as I was told, and helped on the yard. I stirred up the fire about every hour and a half. Uncle George thought I kept my fire too high, told to keep it about 12 to 18 inches deep over the grate. The furnace was not fired at night, nor on Sundays until about 2 to 4 p.m., when I would build a good fire and bank it.

On the Sunday night, before the explosion, Uncle Jake White or Mr. Vowell will tell you, my little boy went over between 2 and 4 o'clock and stirred up a good fire and banked it, they are not usually quite that late. There was no fire made in the furnace until the next morning. We ran all day Saturday. I had a good fire at the time of the explosion. I was getting oil in the "Luber" house when the explosion came. I didn't see it, I was back at the shaft when they called for me to stir the fire up that something was the matter on the inside. I built up a good fire a second time and when I came back the smoke was right below the doors, between Thistle and the shaft. This was about 7:30 a.m. I didn't have a watch. Mr. Vowell told me "Somebody over there has set a keg on fire." We couldn't get beyond the doors so we opened them and let the draft from the mine go through the doors to the shaft. My boys were killed in the explosion.

I did not fire the boilers in working hours. If we were idle I would. The fall in the return airway near the furnace occurred 2 or 3 days before the explosion. I notified Mr. Vowell but he didn't send any men to clean it up. I thought I worked under Uncle George's instructions. I didn't report the fall to Mr. Camp or Mr. Adkins. I am still firing the Fraterville furnace. I remove the ashes to an old room. I had taken all of the ashes out that morning. The ashes in the return airway were there before my time. Uncle George came to see my work fairly often, Mr. Adkins has been there about twice, Mr. Camp has been down 3 or 4 times. Mr. Adkins told me the air was better after I started. Mr. Adkins was careful but he didn't understand black damp or fire damp. I have seen gas burned in the old Knoxville Iron Company mines but not in Fraterville.

Harry Davis, aged 62, miner, Briceville, Tennessee.

I have been in the mines since I was 12 years old. I worked in Kentucky, and 21 years in Coal Creek. I mined in England, very gassy, worked with safety lamps only. I worked several years as a fire boss. I worked last in the last room off 10 left towards 11 as an airway or return to the furnace, about 3 years ago. Dan Fulton was the boss and Charley Popp was superintendent, I quit before they were discharged.

I was one of the first in after the explosion, went to the brattice and knocked it down, it was a plank brattice but had 12 feet of dirt in it. As to the sources of the explosion, there were two

possibilities; the destruction along the main haulway, and most of the 15 or 20 bodies in 15th entry, including a little boy at the neck of the entry, were burned. I believe it was a gas explosion, I have been in small ones. I believe they were burned by gas. I have seen gas in Fraterville in the main entry when driving there; not at the fault but at 10 and 11 left, about 6 years ago. I have seen gas in the C. C., Thistle and the Slate Stone mines, usually out of rib feeders. We had gas in the entry near 4 and 5th entries, had a safety lamp there in the morning, find a little gas.

Mr. Adkins didn't understand mining. He was a farmer when I first knew him, about 11 years ago. He first came in to lay track, didn't dig coal, but laid track until he became boss, he didn't know anything about gas. He was not competent.

I think some doors were left open on the right side, near the bull-wheel, gas accumulated, men going in shut the door, and went on into the gas! They didn't examine the mine when I was there.

J. A. Prosize, aged 62, Coal Creek, Tennessee.

I work at the Thistle mine, repairing cars. As far as I know, Mr. Hightower fired the furnace Monday morning. I could see the smoke in the shaft.

J. J. Dabney, aged 33, miner, Coal Creek, Tennessee.

I have worked in the mines 13 years. I worked in Fraterville the Saturday before the explosion, in 13 left, robbing. The air has been bad in there for several months, no air at all. I left the mine about noon. The doors are frequently left open at night, find them open in the morning, especially cross entries. I've worked on 14 right, 11, 12, 13, 14, 15 left, old 13 right. The ventilation was not good anywhere in the mine, much better since the explosion.

Old Tom Davis, fire boss at C. C. taught me about gas. There was plenty in C. C. I travelled the airways with him and watched him test for gas. The Nos. 10 and 11 entries went through to old Knoxville mine and were never bratticed off. The big head lamp on the trip could have set the gas off in there. No. 10 is very dusty, some of the cross entries are very dusty. No. 13, where I robbed, was nothing but a roll of dust. The ventilation now is much better than it was before the explosion.

I knew Mr. Adkins very well, first as a farmer near us. From his later conversation, after bossing, I didn't think he'd ever seen the inside of the mine. He told me once about cutting through into the old Knoxville Iron Company mine, blew his light out, cut the hole larger with

a pick and stuck his light through again. I told him he might have blown us all up. He didn't know that gas might follow the black damp.

I have set fire to the gas in the old Knoxville mine. When I complained to Mr. Adkins about bad air he said he would change me, he told others that they were trying to run the company's business. Fraterville mine was never sprinkled. The dust and loose coal got so bad they would have to clean up to get around. They would haul it back in the rooms and cross entries. It was dangerous. I never heard of boreholes being drilled ahead when advancing toward the old Knoxville mine; we did at old C. C. Fraterville had a continuous air current.

John Dyer, aged 27, miner, Coal Creek, Tennessee.

I have worked at the mines for 9 years, 5 at Fraterville. I didn't work the Monday of the explosion. I worked last on Friday. I worked on the track. George Adkins instructed me. We roadmen did all of the bratticing, we put up plank, double the plank, and pile rock and dirt against that. Joe Vowell built the brattice on 14 left last fall, to keep the furnace from short-circuiting the air. The ventilation was good the last several months, the airways were in good shape, the brattices did not leak. Mr. Adkins and I examined the airways, a few were leaking from the Thistle side, built new ones. Found no bad falls and a little water in the airways, about 2 feet, didn't block the return, had a large area at the water. Made no attempt to get the water out. Dust was mucked out about once a month. The main haulway and the new haulway had never been mucked. The old main haulway had been cleaned a little last month, hauled it up to the next big brattice on 14, and threw it in the old rooms. Never sprinkled. The mine was tolerably dry in some places. Mr. Adkins required the men to bore holes in the places on 10 and 11 right going toward the old Knoxville mine, generally in the top of the mining, about 6 feet deep. I didn't know the law. We never bored through into old Knoxville. They knocked through them. I put up brattices in 10 by instruction of old man Hightower, on 11 and 12 by Mr. Adkins, about 2 years ago. Plank brattices with dirt behind them were put up 2 or 3 days after going through. I helped brattice 12 off about 1 year ago. I knocked holes through about a year ago last May, bratticed these off.

Openings made from Nos. 1, 2, and 3 rooms off 13 air course into the old Knoxville mine, 3 or 4 months ago, were filled with slack. These holes were large enough to crawl through. All of these brattices and stoppings were blown out by the explosion. Openings were made in No. 3 room off the air course made in May. Mr. Woods reported it, we stopped it with slack. The miner broke through twice at the face, dropped off each time but continued driving the face toward the old Knoxville mine, even when the explosion occurred. There was a loaded car at the face,

we had turned his track parallel to the entry. You had to go down hill to go into the Iron Company. The highest point in the old Knoxville mine we called the Garner entry, not far from where No. 3 cut through. We found a gas feeder in the Knoxville mine, some gas in the Garner entry. I have fired gas there, off the bottom. The feeders burned pretty strongly.

After the explosion, I found black damp and gas in No. 3 room, made a good cap on the safety lamp. Never tested there before. We found gas in No. 2 room on the lamp before the explosion, also in No. 3 room, also in 13th right entry, a pretty good blue cap. Black damp puts the flame out. Found no gas elsewhere.

It was a gas explosion. All holes to the old Knoxville mine were not bratticed off. Fraterville did not generate gas. Very little coal pillar between the mines in some places. Could punch a bar through the thin coal. Fraterville is not a very dusty mine. I last examined the return airway to the furnace with Mr. Adkins last week of April, found a  $3\frac{1}{2}$ -foot high fire on grate bars, Fraterville mine operating, and met Mr. Hightower at the blacksmith shop sitting there talking. When I was on the bank committee no complaints were made to Mr. Adkins. The men did complain about bad air last February, they went over the air and improved it right smart I think.

Earnest McDaniel, aged 39, miner, Coal Creek, Tennessee.

I have worked 19 years around the mines. I was part way in the Fraterville mine at the time of the explosion, about 1,000 feet in by the main entrance. I entered a few minutes after 7 a.m., the trip was pulling into the mine as I came out at the scalehouse. I was walking in past the first entry at the "Spring" when I felt a big wind, like a cold wind I had felt before in coal banks, thought it was from a fall of slate in the old works. I took about one step when I felt the hot air hit me in the face, knocked my light out, took one more step, the hot air hit my face, I turned and it burnt me on the back of the neck. I ran, threw my pick and dinner bucket, I hit my head on the roof. It was getting so hot I couldn't stand up, so I went to the bottom and crawled; when I got to the Spring I felt the good air but I was very weak. I could not stand so I crawled until I saw the outside light, my light wouldn't burn. It happened about 7:30 a.m.

The ventilation in my place, at the head of the main entry, was very weak until the cars had run back and forth. A man could stand it a little better toward the middle of the day. I complained to the bank boss several times, sometimes he wouldn't answer me and I walked off. I came out Saturday from the bull-wheel with Mr. Adkins. He sometimes said he'd send the roadmen to see about the brattices, he never came

himself. The roadmen never came from the time I commenced kicking so hard. It was a single brattice, if they found holes in it they'd patch it and throw roof slate and dirt against it. On Saturday, pay day, coming out together, I told Uncle George I needed better air and more cars, I told him a man couldn't do more than 3/4 of a day's work because of the hot air; he gave me no satisfaction.

I have seen gas tested by safety lamps and fired in the old Knoxville mines, to burn it out, I have not seen gas in Fraterville mine. There is a great deal of dust in the Fraterville mine, very bad from the double doors back to 15th. If I had it to do over again I would never light the gas feeders.

Mr. Adkins was a careful man until he got his certificate, a first class certificate, then he became dilatory. He was not competent. Examinations for gas were not made in the Fraterville mine. The miners entered the mine from 4:30 a.m. to 7 a.m. When the tracks were covered with spilled coal and dust, they would clean it up at night.

W. T. Smith, aged 48, miner, Coal Creek, Tennessee.

I was originally from England. I have worked 43 years around coal mines, and have worked as water bailer to superintendent. I have worked about 4 years as a fire boss and gas man. I have been in explosions, have been burned twice myself. I sunk the shaft and drove the first 200 yards of airway in the old Knoxville Iron Company mine, and found the first gas in the C. C. mine. The Beech Grove and Towand mines made almost as much gas as the other mines. The only gas I found in the Fraterville mine was where it broke holes through into the old Knoxville mine. I was a member of a rescue party at the Fraterville explosion. I was the first man sent for by George Camp. On May 3 I capped my lamp in 13th right, had a small percent at the face of the entry. I found gas in Wood's room, May 6, he had holed through into the old Knoxville mine. The investigating party found gas there after the explosion. The first bodies we came to were baked, not burned. Found 3 men in No. 14 as if asleep, no burns. The fire reached 600 feet up old 13 entry, timbers were charred on both sides, dust was coked. Clothing in No. 3 room was scorched.

I believe the explosion started from gas, that the gas accumulated from the old Knoxville Iron Company works, that the ventilation was stagnated, furnace was not fired from Saturday night until Monday morning, furnace starting and trips going in circulated the gas out on to the entries, ignited by the naked lights of the men passing, the explosion travelled the intake, around the Knoxville mine workings, back on the bull-wheel parting at No. 12 airway. I have made a thorough examination on the entry, that's where she was first ignited, then the

explosion split, the fire travelled back up the 12th, up to 13th, back down the haulway, another part went back to the mouth on the intake, returned and met at the bull-wheel, then it sweeps everything both ways, where it confined the dust, hit the solid rib on the left side, came back, there again was the big force of the explosion. It kicked the cribs out, blew the dust and men. It went in the parting there, we found afterdamp boiling out of there, went up No. 12 and returned, hit the gas, went back into the Iron Company mine. It did a heap of damage, it could not get out the small holes. If the air current had been heavier, it would have closed the mouth of the mine, but the sluggish or weak current, with very little fire on, made the explosion weaker. The fire burned up the oxygen.

I fired gas in the old Knoxville mine before I could get 50 feet from the mouth. We had to roof the shaft in the dark on account of the gas. Could light the feeders going down the airway, all the way from the surface. In the gas belt, it is still giving off gas; if Fraterville is not in it, it will be shortly. An explosion occurred at the old Knoxville Iron Company mine when the convicts were there, 2 or 3 were killed. The gas man went in each morning to burn her out, but that morning it was more than they expected, and blew up.

The highest part of the old Knoxville Iron Company mine is opposite and about at the head of 13 right in Fraterville; it would be the natural place for the fire damp to collect, being lighter than air. If you removed the black damp at the lower level from the old Knoxville mine you would expect to find fire damp. Same in the C. C. mine. I think dust played a part in the explosion, it intensified the explosion once set up, the gas explosion picked up the dust, heated it to a flame, and caused a heavier explosion. I don't think we are liable to have a dust explosion from open lights. I have been in clouds of coal dust that I could not see the face with the light on my head and if there had been any danger my head would have been blown off long ago. It requires a temperature of about 230 to 240 degrees before the heat is sufficient to explode the dust.

It is the general rule, when advancing toward old workings, to use boreholes about 20 to 30 feet ahead. I considered Mr. Adkins a careful man but he was not competent. One man could not examine the Fraterville mine in one day, as it should have been, possibly more than two men could do so. If the openings to the Knoxville Iron Company mine were stopped they were very poorly closed as I crawled through some very easily. I do not think that the Coal Creek Company or its officers, from what I have seen, used the proper precautions to protect the lives of the men working in the Fraterville mine. I consider the Coal Creek Company and its officers, the parties who managed it, responsible as not having had in the mine the proper amount of air, and an inexperienced man or men

to boss it. They did not fire the furnace that morning as they should. They are responsible for it. If the mine had been examined by men who understood their business, that explosion would not have occurred. They would not have allowed the men to go in if they had discovered the conditions. They would have detected a vacancy of air, even if they had not detected the presence of gas.

C. A. Defibough, aged 26, miner, Briceville, Tennessee.

I have been in the mines 15 years. I was a member of the rescue crews, and have been all over the mine since. As to the cause of the explosion, I have found no gas since the explosion. I believe the explosion started near the bull-wheel where most of the force was, went both ways, blew mules over the top of cars. The brattices were very poor. I learned to know gas in Pennsylvania. Only a few brattices, and they were mostly dirt. I don't think one man could inspect the Fraterville mine. If the mine had been properly handled the explosion would not have occurred.

B. F. Loving, aged 30, Coal Creek, Tennessee.

I have dug coal for 15 years, generally at or near Fraterville. I was in last on Thursday before the explosion, didn't have any work, mine only worked a part of Thursday. I was going to go on nightshift Monday night, doubleshift the new haulway. Air was very bad in the morning and evening, awfully hot, be better during the day, smoky and thick. Dust got stirred up a good deal, the drivers all gathered at the upper end of the bull-wheel parting, as many as 40 or 50 drivers and all the mules. I had been uneasy about it and talked to them; they paid no attention to me. The mine was reasonably dry. I don't know much about dust, never was in a dust explosion. I have told Mr. Adkins, when he was in my place, about the air being hot by not having any crosscut, dust and smoke got pretty thick. He made crosscuts about 75 to 100 feet ahead. Dust was hauled off the side tracks at times and thrown in the rooms, it got bad pretty quickly. I have never known of it being sprinkled. It was called the safest mine on Coal Creek and nearly everybody thought so. To fire a furnace right, as they do at other mines, the furnaceman must stay near the furnace and the coal is put to him. The main entry was very dusty and the rooms were tolerably dusty. Thistle was even more dusty. I thought Mr. Adkins a careful but not a competent man, not to run a mine like that. One man couldn't examine the mine and do the mine and the men justice. One man was not enough.

S. W. Sorrels, aged 36, miner, Coal Creek, Tennessee.

I have mined coal 12 years, mostly for the Coal Creek Company, Fraterville and Thistle. I have fired the Fraterville furnace, I dug

coal for it, about  $1\frac{1}{2}$  tons per day, but they only paid me for a ton. I fired both furnaces at the same time, Fraterville and Thistle. I was mashed up in the mine and had to quit work. Doors were left open at night, trappers were hired to attend the doors, but when their time was up they'd get their buckets, shut the doors, and leave ahead of many of the men.

W. L. Underwood, aged 26, miner, Minerville, Tennessee.

I worked 13 years in the mine, never at Fraterville. I helped to recover at least 198 of the bodies. Some men bruised, some burned, some not, some with heads blown off, arms off, legs gone, some smothered to death. Some looked like powder burns.

I think gas started the explosion, and dust was ignited by it. It takes heat to ignite it. I found some burned dust. Plenty of dust in the mine. We ignited gas in the Tennessee mine.

George M. Camp, aged 29 years, superintendent, Coal Creek Coal Company, Coal Creek, Tennessee.

I have been superintendent for the Coal Creek Company for 3 years. I had charge of the Fraterville and Thistle mines. George Adkins was the mine foreman at Fraterville. I had no other foreman or boss inside, no assistant foreman, had an outside foreman.

The Fraterville explosion occurred at 7:20 a.m. on the morning of May 19, 1902. Number deaths was 184, all bodies have been removed from the mine. There were 140 miners, (9 colored) 9 helpers, 17 drivers, 11 trappers, 4 roadmen, 1 rope rider, 1 parting boss, and 1 mine foreman. I go in the mines at times, last time was Tuesday before the explosion. I went down the haulway to the head of No. 14th right and on the main entry to the 15th, near 13 right and the new haulway. The mine conditions were as good as I ever saw them. Mr. Adkins told me the ventilation was the best in about 2 years. Air measurements were made on an average of about twice a month by Mr. Adkins. No air measurement records were made, or for the State, as I didn't know if our instrument readings were correct. I have a record of the 4th of May by Mr. Adkins. Sixty cubic feet of air per man is required by the State of Tennessee. An average of 200 men and boys worked in Fraterville. I think we had enough air. The mine was dry in parts. There was an accumulation of slack on the parting, I don't know how long since it was cleaned. Cleaned the parting about every 2 weeks, used some for brattices, took some outside. Never sprinkled. There was some water in the old workings left of the main entry.

Three openings have been made from Fraterville to the old Knoxville Iron Company mine since I came here, one in 12 right, one in

13 right, and one in a room off the 13th airway. The 13th airway opening was found after the explosion. The stoppings were put up immediately after knocking through, put by Mr. Adkins and his roadmen. They were brattices, doubled, with dust and rock packed in tight between them.

I employed Tipton Hightower to fire the Fraterville furnace, his boy helped him. He was told to fire the furnace not later than 4:30 a.m., to bank his fire in the evening about 5 or 6 p.m., to dig his coal for the fire. He was paid \$1.51 a day, and we paid him for the coal he dug, usually more than a ton a day. He was to keep the grate bars clean, keep a flash going there all the time, never let his fire die down. I always found his fire all right. He was trustworthy. He had fired boilers for us.

I suppose every brattice has been rebuilt on the main line, mine cleaned up thoroughly, airways cleaned up, tracks relaid, timbered as needed. I erected the brattices as instructed by the inspector, double brattices filled with dust and slack. Double doors were erected in the inlet between Fraterville and Thistle main entries. The Fraterville furnace was rebuilt and a fan put in, in 1899.

The following letter from the State was received on August 15, 1899, sent me by Major Camp. Ventilation of Fraterville was very bad, there were 160 men and 14 mules, equivalent to 244 men, requiring 16,104 cubic feet of air per minute; that there was only 7,000 cubic feet of air entering, and less than 10 percent was reaching the workings in 14 and 15 left, 20 percent leaking through the doors in Thistle inlet. To brattice off the openings to the old Knoxville Iron Company mine. Rebuild all doors and brattices throughout the mine. Furnace to be fired properly. Doors not be left open in the mine. Furnish a map of the mine.

On January 11, 1900 another letter of instructions from the State instructed me to: Fix up the airways, erect overcasts, repair the furnace. The fan was to be put in at Thistle, 16-foot diameter, to ventilate Thistle and Fraterville - that was our instructions at the time. I was asked by the State to put in a 16-foot fan at Fraterville and use the Fraterville furnace to ventilate the Thistle mine. Captain Nelson, of the Slate Stone mine, put the fan at Thistle, he advised me to use it as a force fan to ventilate Thistle.

On June 12, 1900 I received a letter from the State that the ventilation at Fraterville was far below legal requirements, that with 164 men and 11 mules, requiring by statute at least 15,200 cubic feet of air per minute, only 8,000 cubic feet per minute was entering the mine, and less than 25 percent of it was reaching the workings in the cross entries and head of the mine. This current was laden with black damp from the Knoxville Iron Company's old mine through 10 and 11 cross entries

which are used as intakes. I was told to reduce the force to 80 men inside, until ventilation was improved, that 10 and 11 entries right should be bratticed off, stoppings to be made of stone and painted. Furnace stack to be rebuilt to 60 feet. Breakthroughs between rooms should be every 80 feet instead of one for each 275- to 300-foot deep room. We built double and thrible brattices packed with dust and slate. I didn't drive 14 left entry to connect with the head of the Thistle entry.

Captain Nelson of the Knoxville Iron Company mine, told me to use our fan solely to ventilate the Thistle mine, it was never used to ventilate the Fraterville mine. The 18th left entry was driven through to the Thistle main entry, but was bratticed off by a very heavy brattice.

When I took charge of the mine, the brattices were rotted, none were in good condition, some with slate were built to the roof, but all leaked. Since then, we have put in mostly double brattices of wood, filled with slate and dust from track cleaning, 2 to 4 feet thick.

In November 1901, I receive a letter from the State instructing me to go over the brattices, re-dobbing, clean the airways, keep the furnace well fired, keep the main haulage doors closed.

In Clinton, March 31, 1902, I was instructed to clean out the dust in the Thistle and Fraterville mines, sprinkle the entries. I returned home and gave Mr. Vowell and Mr. Adkins these instructions. I know they worked at it on several occasions. He kept his parting cleaned up on every occasion, when he could get the chance on idle days and at night when they had time. I was told to go through all air courses, clean up, arrange a return airway from the head of 14th. I can't say over 1,000 feet were driven for a return airway, squeeze at 14th.

I have not formed an opinion as to what caused the explosion. No gas in Fraterville until after the explosion, found in 13th airway, I saw it. I never made an investigation for gas at Fraterville before the explosion. Mr. Adkins examined for gas with Mr. Shiflett (State Chief) never alone. I knew there was no gas in the mine by what Mr. Shiflett told me, and no one else ever said gas was found in there. During the investigation, Mr. Shiflett showed me the gas.

I was asked to purchase safety lamps to test for gas, which I did 2 years ago, to be used in gas when gas was found in the mine, to have them on hand. These lamps were not used before the explosion. Boreholes were used on the entries, but not in the rooms. The 13 entry was broken through, but first tapped with boreholes, to get into the old Knoxville Iron Company mine to locate and be governed by their workings. They encroached on Fraterville. I know the Fraterville limits, no two entries alike. They were 600 to 1,500 feet across our lines. Our 13th

entry has not been driven to the limit when it went through, not by 200 to 500 feet. I do not have an up-to-date map of the Fraterville mine; it is being made. There is no dispute between the Coal Creek Company and the Knoxville Iron Company lands.

Milton Adkins, age 50, miner, Coal Creek, Tennessee.

I have worked in the mines since I was a boy. I worked in Fraterville the Friday night before the explosion, cleaned slate after the entry men. Generally found most of the doors left open, usually standing about half open, every night. We would shut the doors going out. It was the bank boss's duty to look after the doors.

On Friday night before the explosion, my boy was with me. We were in the head loading slate and while waiting on a car I said to the boy "I want to learn you something, I want you to have it to say that your dad learned you something sometime or other. Can't you smell that bad scent," and he said, "Yes." I said, "That is bad air, black damp," and he says, "You don't know anything about it." I said, "When you sit down for a few minutes, you can't hardly keep your eyes open, can you?" He said, "I am about to go to sleep, and I am shovelling." I said, "That is bad air, that is black damp. You watch my lamp, I held it out, and it flashed high. It flashed 10 inches. I said, "That is bad air and gas." He says, "You don't know anything about it," and I said, "I know a long ways more than you do. You are a boy, and have never worked in the mines." We were working in the entry right at the far end of the bull-wheel parting.

Before leaving I told my boy, "Bob, I want to tell you something. You watch what I tell you, that this mine, unless they do something at once, they are going to get a lot of men killed here, this mine is about ready to blow up." He said, "Dad, you don't know anything about it," and I said, "I know more than that bank boss does now."

Black damp puts your light out, and fire damp pulls your light up from the lamp. There was a long keen point to the flame, spindle-like flame. When I got a car half loaded with slate the sweat would be dripping from my shirt. The flash looked like it was going to leave the lamp, then you could see it above the lamp (oil flame lamp), a blue flash at the top. We loaded dust into cars when we weren't busy loading slate. We never sprinkled the mine.

James Cryder, aged 22, miner, Briceville, Tennessee.

I was working in Fraterville the Saturday night before the explosion, handling slate. That week, we worked in 16, 15, 14 and 13 right on Friday night. Nothing but bad air, our lights didn't burn well.

No air in there all week. The furnace was not run at night. Bennett was our shift leader. I told Bennett it was awfully there. We worked in 17 and 18 left on Saturday night, our li act the same, didn't flash out, burned good on the left side We cleaned up dust when we had spare time, on Friday night we cars of dust on the main parting and left them then to be hat Saturday, didn't load dust on Saturday night.

Reuben Johnson, aged 59 (colored) blacksmith, Coal Creek, Ter

I work at the Thistle mine, as a blacksmith the pas I go to work at 6:30 a.m. I don't always observe the Thistle smoke, didn't on the morning of the explosion. Mr. Hightower always get in so early. I have never been to the furnace. F the blacksmith shop about one-third of his time, sit around u sometimes help cut a rail, or go down for picks, and sometime in the yard. Mr. Camp saw him there at different times, I do Mr. Adkins saw him. I never heard Mr. Camp talk to him, but heard Mr. Adkins tell him, "Fire more heavily, the mens' live peril, fire right along, right up to Saturday midnight. The good, I don't want you to fail." He couldn't fire the furna outside, too.

J. T. Moore, aged 60, miner, Briceville, Tennessee.

Mined coal 30 years. I also worked in England. I Fraterville 2 years ago. There was gas there then, I found g the Wallace entry, beyond the pump, waterway to the old Knoxv Company mine, ditch was 4 to 5 feet deep. The gas boiled up th water. Mr. Hightower almost lost his life, knocked a brattice driving a waterway. I told him he ought not to do it, as it v in my room too. He said he had to put the air in motion. He then. There was gas in the bottom of my room and the other ro didn't find gas anywhere else. Air was bad and hot.

J. H. Smith, aged 43, miner, Briceville, Tennessee.

I have been mining about 19 years. I worked at Frat years ago. Fired the furnace about 18 months. I need one car at Fraterville, a good big car, I could not do it with a small dug my coal from a little room nearby, a little at a time.

I was on a rescue crew. There was considerable dust it must have burned some,

William Dougherty, aged 30, miner, Briceville, Tennessee.

I worked in Fraterville the Saturday night before the explosion. The air in the mine was very hot. The mine was dry and was very dusty from the lower end of the parting. In 18 left where we were driving an entry and air course, they didn't brattice up the breakthrough behind where we made one.

G. W. Bennett, aged 50, miner, Coal Creek, Tennessee.

I have worked in the mine about 30 years, later years as a bank boss. I worked 4 shifts in the Fraterville mine after the explosion. It was a gas explosion and dust helped. Mine was badly torn up along 15 and 16 left, also in the main entry. There was a great deal of dust in the mine, in 15 left it was 18 inches deep over the track along one side, had been blown there. Didn't find much burned dust.

David Hutson, aged 42, miner, Jacksboro, Tennessee.

I have worked at Fraterville 15 years. Fraterville was very dusty, so were the other mines. We figured, in case of an explosion to come out through Thistle. Air got so bad a man could hardly live in it. About a week before the explosion, I complained to Mr. Adkins about how I felt, we walked out together. He said he thought I should quit. I told him I thought the mine was too big for one man to boss and he said there was too much. Mr. Adkins said one day where the air was pretty bad, he followed the airway to the furnace, found nothing wrong with the airway, but there was only a little handful of fire on the grates, that it was banked with ashes.

C. G. Popp, aged 35, superintendent, Royal Coal and Coke Company, Deposit, Tennessee.

I am a Civil and Mining Engineer, graduated from College 15 years ago. I was superintendent at Fraterville, for the Coal Creek Coal Company, in 1898 and 1899. I have been at the Fraterville mine from noon May 19, 1902 until now, exploring and recovering bodies, and making surveys there.

I arrived at Fraterville at noon on the day of the explosion, they told me they could get no further than the bull-wheel parting, so we went in through Thistle. We built a brattice across the Thistle mine entry throwing the full current of the Thistle fan into first right entry, then tore out the rock and clay brattice at the head of this entry, forcing the air through 14 and 15th left of the Fraterville mine. Bratticed from there to carry the air to 15th left and hung curtains at each room so we could explore.

Entry - Rooms	Number	Bodies	
		Condition	and Local Conditions
Entered Thistle to Fraterville 12 room off 15 lt.	21	Bodies scattered, 2 burned, others suffocated.	2-5 p.m. 5/19/02
16 lt.	16	2 mangled, others suffocated.	
Main entry-15 lt. to 16 rt. Main entry-16 lt. to 14 lt.	2	burned and mangled.	Explosion had come from main entry toward face of 16 lt; dust, timbers, harness, buckets, wheels blown toward face of main entry. 6:30 p.m.-10 p.m.
Main entry at 14 lt.	1	Suffocation only.	Bad air and vapors coming out of 15 rt.
Main entry at 15 lt.	1	driver, right arm off.	Safety lamp indicated large percent of carbon monoxide or white damp.
Entered mouth of Fraterville mine			4-6 a.m. 5/20/02 Explored to bull-wheel parting, air too bad met team of 5 from Thistle, came down main entry, everybody sick, all went outside. 1 p.m.-7 p.m. 5/20 Outside at Thistle 7 p.m.-11:30 p.m. 5/20
Entered Thistle to 15 lt. 15 right-500' off main entry		2 men and 1 mule badly burned.	Erected brattice across main entry to mouth of 15 right Fraterville
15 right-1,500 feet inby 15 right near head	1 26	suffocated only nearly all suffocated.	Had torn door from crosscut and placed it across 15 right entry 100 feet from face with scraps of planks. Erected brattice across airway opposite Explosion disturbances, little dust burned.

<u>Entry -- Rooms</u>	<u>Bodies</u>		<u>and Local Conditions</u>
	<u>Number</u>	<u>Condition</u>	
14 left	3	1 mule burned	Badly torn up, bodies at working faces
14 right	6	suffocated or burned	1 in No. 3 room had clothes burned or blown off.
13 right, near New haulway	6 16	burned suffocated	1 a.m.-5 a.m. 5/21 Couldn't get to bull-wheel air too bad.
Entered through Thistle			3 p.m.-7p.m. outside 5/22
15 left airway	2	suffocated	7 p.m.-3 a.m. Took down brattice put up Monday.

Survey elevations made after explosion in Fraterville.

<u>Fraterville</u>	<u>Elevation</u>
Main entry portal	961
10 rt. at main entry	937.5
Bull-wheel on main entry	962.3
200 feet in by bull-wheel	966.4
New haulway at main entry	965.9
New 13 at face	959.1
Old 13 right	960.5

Found openings to the old Knoxville mine: No. 3 room off 13 right airway (burned miner and room here) coal face very thin, could punch miner's needle through, 2 openings.

No. 5 room off 13 right airway, 1 hole  
13 right heading, 1 hole  
Old 13 right, 1 hole, large

Found no gas at these openings. Brattices, 2 brattices 5 feet apart near face of 13 right knocked toward old Knoxville Iron Company mine.

I have never found gas in Fraterville. On May 20, found several places indicating considerable carbon monoxide. I knew of 3 openings made to the old Knoxville mine: Waterway entry, 10 right (had boreholes ahead) and 13 right.

I believe this was a coal dust explosion. The seat of the explosion was near the bull-wheel. Air was not circulating, mules and men passing through double doors, air hot with miner's lamps, great amount of dust in suspension, trip coming in stirred up air and dust,

trip torch set dust off. Probable that carbon monoxide near this place. Great deal of slack and fine coal in old entries to the right, certain percent of sulphur in the coal, damp in entry below. Sulphur raised by sluggish air with enough oxygen combined with carbon liberated generated small quantities of carbon monoxide. Air being heated, a great amount would be generated near the mouth of 11 and 12 right, sudden inrush of air by incoming trip, put dust in suspension and was more easily ignited and exploded.

Dry dust caused violence at the bull-wheel. Sulphurated hydrogen is explosive, about 1 to 16 of air, especially in the presence of carbon monoxide and rising temperature can explode it. The waterway is the low part of Fraterville and old Knoxville mines. Fire damp in Knoxville mine would tend to rise toward 13 right off Fraterville, possible found in neighborhood of 13 or 15. I think the miner in No. 3 room off 13 was burned by red hot coke or coal dust. Particles of coke were deposited on the timbers and sides all the way up the new main to this point, on the side facing the bull-wheel, some timbers were slightly charred near the side track or the new haulway. Found coke on timbers between new 13 right and the side track, showed heat travelling in that direction. I examined the Thistle mine after it exploded. The upper workings of the Fraterville mine were dry and dusty.

To prevent such an explosion, the loose coal should not be allowed to lay along the entries to be crushed into dust. The entries should be cleaned and sprinkled. In approaching old workings, boreholes should be kept ahead to the right and left. Keep the airways clean, have a high velocity of air conducted to the working places, frequent and careful inspections of working places, doors, brattices, airways, and furnace.

If the furnace had been fired properly the air would have been better. Just below the parting, about 1,300 feet outby the present one, we had 18,000 cubic feet passing on the main, furnace was properly fired. On May 27, 1902 there was 10,044 feet passing in the main entry between 9 and 10th entry left, where brattices were very delapidated, furnace was properly fired.

With furnace properly fired, there should be an intake of about 28,000 cubic feet per minute; in former years, I have gotten as much as 35,000 at the furnace outlet. On May 27 at 4:40 p.m. we got 24,038 cubic feet; and should have gotten about 20,000 cubic feet at or near the main entry heading. Under favorable conditions the furnace should handle about 38,000 cubic feet. If the furnace had been fired day and night the mine would have been cooler and healthier, fine dust would have been carried off. If smoke, after blasting, is allowed to stay in the mine, and furnace is not fired at night, it would be difficult to ventilate.

It would take 2 to 3 hours to clear the mine after the furnace was started.

The chief inspector asked me to put in a fan instead of a furnace, the company would not allow it. It would take 3 tons of coal in 10 hours to properly fire the Fraterville furnace, and the furnaceman would have to stay near the furnace.

T. J. Davis, aged 59, superintendent, Minerville Coal Company, Briceville, Tennessee.

I started in mining at age of 12, last 12 years as a foreman. I have worked in Ohio, Pennsylvania anthracite and bituminous, had charge of an anthracite mine. Had charge of gassy mines. I have been in gas explosions, hundreds of them. I was in 3 explosions in one year, everyone killed but myself, in 1864. Every mine I had charge of was a gassy mine. I had one mine that discharged gas, it would throw 200 tons of coal at a time.

I recovered bodies and made an examination of the Fraterville mine after the explosion. I found no signs of gas at any time in any place with my safety lamp. I was the first man to the bull-wheel, about 10:30 a.m. We passed the bodies of Mr. Adkins and others. The explosion started a little above the bull-wheel. The force of the explosion travelled the main entry, to the 13 and 14 left. She went to the new haulway, the rest of the explosion, went up and down and a little into these cross entries. Cars were shattered along here and bodies were mangled.

I think powder or something of that kind ignited. I also examined No. 3 room 13 right, a lot of afterdamp was in there, no air to take it away. No gas in there. Found no charred timber in the new haulway. Even if gas was found in No. 3 room after the explosion, it didn't start there. Gas could find its way in there through the openings. Gas couldn't have travelled that far, from this room to the main entry and started an explosion there. Gas could have leaked into the new haulway from 10, 11, 12 or 13 right. The explosion could have started from that large trip lamp. Gas burns the body all over, dust burns in patches. Gas could have been ignited. There must be considerable dust in the atmosphere to start. I observed charred dust along the main entry.

Lon Card, aged 40, superintendent, Black Diamond Coal Company, Coal Creek, Tennessee.

I have had 22 years experience as a miner, mine boss, fire boss, and superintendent. I fire bossed at Dayton. I examined the Fraterville mine after the explosion. It would be hard to say what

caused the explosion, possibly powder ignited by the trip rider's lamp, setting off the dust. I tested for gas throughout the mine but found none. I feel the explosion started near the bull-wheel, and gas couldn't have got there. Gas in the Knoxville Iron Company mine could have made its way from the head of 13th through openings in 13, 12 or 11 right to the main heading. Fraterville is a dry mine and is very dusty.

John Dyder, recalled.

I examined the return airway in last week in April 1902. In pretty good condition. Where water stood it was 3 feet from water to roof, 42 feet wide. When air died down we slipped back to the furnace, usually 2 to 3 o'clock in the afternoons, found the fire out. When the furnace was fired properly the ventilation was good.

George Camp, recalled.

Last November the state inspector instructed Mr. Adkins and I to repair and rebuild the brattices. I do not recall anything about driving boreholes. Mr. Adkins complained of Mr. Hightower not firing the furnace properly and I told him about it. After I learned that the Knoxville Iron Company had trespassed on our property, up to 1,000 feet, I asked Mr. Murman, who is the land company's agent here, for a map, he did not furnish one even after I told him.

All of the foregoing testimony was in answer to questioning by Mr. R. A. Shiflett, and was sworn to.