



Reports

Roslyn 1, 2 & 4

EXPLOSION AT ROSLYN MINES Nos. 1, 2, 4.
of the
NORTH WESTERN IMPROVEMENT CO.
at
ROSLYN, WASHINGTON.

1909

On Sunday, October 3rd, at about 12:45 P.M. an explosion occurred in Mines Nos. 1, 2, 4, of the Northwestern Improvement Company's Roslyn group of mines, by which ten men lost their lives.

Location of Mines:

The mines are located at Roslyn, Washington on a branch of the Northern Pacific Railway; Roslyn is three miles from the station of Cle Elum which is on the main line of the Northern Pacific Railway.

Geology:

The "Roslyn Seam" which dips at an angle of about 10 degrees at this point, is the only bed at present worked in this field. There are other beds of coal in the Roslyn formation--some of them of economic importance--but they are not being worked here at the present time. The bed makes considerable water, and in these mines nearly all of it is drained into the sump at the bottom of No. 1 slope and is pumped out through the shaft in two lifts, by electric pumps.

Character and Thickness of Bed:

The "Roslyn Seam" is from 4½ to 5 feet in thickness and, near the center, has a band of about 1 inch thickness of bone, which

changes locally to clay or to sandstone. Where hard enough to make it possible to do so, this parting is rejected in mining. There is a layer of "draw slate" from 4 inches to 4 feet in thickness (average about 1 foot) immediately above the bed, which almost always falls with the coal. The main roof consists of about 4 feet to 14 feet of arenaceous shale, above which there is said to be strongly bedded sandstone. Except in a few small areas the roof requires considerable timbering. The cleat of the coal is very pronounced, and extends in a general North-South direction--the breasts of the rooms are kept parallel to the "face" of the coal, thus causing the breasts to be at an angle of occasionally as much as 45 degrees to the direction in which the rooms are advancing.

System of Laying out Mines:

These mines, all of which are connected so as to form practically one mine, are opened by two slopes and a shaft--the slopes, the entrance to which are very near together, are driven at a horizontal angle of about thirty degrees to each other, No. 1 slope being driven straight to the dip of the bed. The shaft (known as No. 4 shaft) connects with the 8th E. level at a point near No. 1 slope. The coal mined in the workings of No. 1 slope is hauled along the levels by mules or electric motors, up the slope to the 8th level by rope, and from there hoisted up the shaft; there is no haulage on No. 1 slope between the mouth and No. 8 level. The coal mined in the workings of No. 2 slope is handled the same way except that there is no shaft, so that it is hauled all the way outside along the slope. The slopes are connected by a system of double entries or pairs of levels driven at intervals of from 300

to 500 feet(horizontal distance). From these levels, batteries of rooms are driven to the "rise"--the number of rooms in a battery (generally six double rooms) and the distance between the batteries, vary with the cover and other local conditions. Each battery is "holed through" to the aircourse above in from one to four places--generally in three places. No. 1 slope is down, past the 14th W.level; No. 2 slope is down to the tenth W. level.

Ventilation:

No. 4 shaft serves as a downcast, supplying the air for all the workings except for a small area on the No. 2 side, which is supplied from an air shaft. There is a fan at the entrance to each slope (a Robinson at No. 1) exhausting the air from the mines. These two fans are "boosted" by small disc-fans set in the air-ways (in return air) in various parts of the mines, and connected by belts to electric motors. From the evidence at the inquest the air furnished was ample. Although the mines made considerable gas, they were worked on open lights almost entirely, and no one had been burned by igniting gas for some time--probably more than two years. At the same time, the writer was informed that if one of the "booster" fans stopped, conditions were such that the men in that district had to be immediately removed until that fan was repaired and started.

Surface Phenomena Connected with Explosion:

The flames burst out of No. 4 shaft in a pillar, the height of which is variously estimated at from 150 to 400 feet, setting fire to the headframe, tippie, snow sheds etc. and com-

pletely destroying them. The power house and other structures near the shaft were fired, and in fact numerous buildings scattered about the town were set fire to, and there was considerable difficulty preventing further loss of property on the surface. No flame or smoke came out of the returns. The fans were not damaged, but they came to a stop because of the strong draft up the shaft, caused by the first outrush of flame which fired the shaft timbers and thus caused the "natural ventilation" to work against the fans. The fans were almost immediately reversed, with the idea that this would assist in getting the fire in the shaft under control and prevent it from "working into" the mine.

At the time of the explosion there were six men working on the tibble and near the headframe, at No. 4 shaft. Of these five lost their lives, the sixth escaping with slight injuries. The bodies of two were never recovered, and it is supposed that they were burned in the ruins. The remaining three were all thrown a considerable distance--two had their clothes burned off and there was considerable difficulty in identifying them.

Extent of the Explosion:

Had the explosion occurred on a work day probably between three and four hundred men would have lost their lives. At the time of the explosion five men were known to be in the mine; two trackmen, Pozavich and Tonich working in the 11^m level not far from the face; two trackmen, Hardy and Bartolero working on the 8th E. near the shaft; and one pumpman, Jones in pump room off the 12th E. near #1 Slope.

While the explosion spread into mines Nos. 1 and 2 to some extent, the evidences of greatest violence were found in No. 4

mine below the 7th level. The tremendous concussion and the subsequent burning out of the timbers, caused the shaft to collapse and probably set fire to the coal at the bottom. A large stream of water was turned down the shaft as soon after the explosion as possible and was kept running for about forty-eight hours until the smoke had subsided. Numerous caves occurred throughout No. 4 mine. No. 1 slope was completely blocked between the 7th and 8th levels and these levels themselves together with the 9th E. and W., the 11 W. and 12 E. levels were so nearly blocked in the immediate vicinity of each slope that it was not possible to find an entrance into the parts of the mine most affected by the explosion, until some days had passed. Numerous very heavy falls occurred between No. 1 slope and the shaft so that the bottom of the West side of the shaft was not reached for about a week or ten days after the explosion.

Exploration and Investigation:

On Sunday night, Oct. 3rd, a party entered the No. 1 slope and attempted to reach the shaft bottom. It was found that the slope had been blocked by a cave so the party returned to the surface and attempted to go in the No. 2 slope; when they had gone about 3000 feet, two of them were overcome by afterdamp and reinforcements were required to bring them to the surface. On Monday evening the two Draeger helmets from the A.Y.P. Exposition arrived, but since the men who brought them had never used them in the mines, the management would not permit their use here. Numerous other attempts were made to gain an entrance into the mine. By bratticing down No. 1 slope to the 5th East Level, then sealing off the slope

and sending all the air to the east side the ventilation was good enough to explore this side. Finally a route to the mule stables was found through the old works between the 5th E. and the 8th E. This route was very difficult to travel, it was supposed before the explosion the places had caved tightly and that it was impossible to get through, but at last a possible if extremely rough way was found. Many places the roof was in such shape that there was great danger of it falling, if the slightest disturbance occurred, in fact subsequently it did fall and a party was entombed for about half an hour, until they dug themselves out.

From the barn the party bratticed down the airway to the 10th East and thence out to the No. 1 slope. They had reached this point when Dr. Holmes and the writer arrived on the evening of the 8th.

On Thursday evening a party of six including: Botting (State Inspector of Coal Mines), Thomas, Corey, Hale, Morris and the writer entered the No. 1 slope equipped with three Draeger Machines (two of them with single oxygen cylinders and good for but one hour each), and Wolfe safety lamps. There were no electric lights to be had. This party proceeded by way of the old works to the mule barn on the 8th level. Here Thomas and the writer put the helmets on and went as far as possible in the direction of the shaft, were stopped by caves opposite the pump house and returned to the party without having seen any evidences of fire. The party then proceeded down the airway to the 10th East and out to the slope, where it joined the bratticing party.

Both parties followed the air down the slope to the 11 East. As the current was good at this point and part of the air was travelling down the slope a small party was sent down the slope to the 12th East

pump house, where the body of the pumpman, Jones, was found. The bratticing party started on the tortuous trip outside with the body, and the other party returned to the 11th West. Thomas and the writer put on helmets, leaving Mr. Botting with the third helmet, and followed at a distance of 50 to 100 feet by Corey and Hale without helmets went in the 11th West to a point just beyond No. 1 room of the third battery. At this point the air became bad and the men without helmets were compelled to turn back a short distance to good air and await the return of the helmeted men. The latter proceeded only four or five hundred feet when enough gas to greatly disturb the safety lamps, was encountered, and they were compelled to turn back, for fear of losing their lights. Since there was very little Oxygen left in the machines and there were no electric lights in the party they then returned to the outside. A bratticing party was sent in to take the air to the point reached by the helmetmen.

On the following evening a party of seven including Inspector Botting, Corey, and the writer went in as far as the air was good on the 11th W. aircourse (this was to a point opposite No. 1 room on the third battery). Botting, Corey, and the writer put on the helmets and went up near the face where the two track layers had been at work and found them lying in-by 30-50 feet from where they had been working. As there was a trip of cars and the entry was almost blocked by falls at several points between them and the remainder of the party, no attempt was made by the helmet party to take the bodies out. The bratticing was brought up to them and they were recovered the next morning, without the use of the helmets.

On subsequent trips into the mine, the attempt was made to cover the territory most affected by the explosion and to determine the cause and point of origin. The part of the mine below the 8th W. Level was gone through fairly systematically. One day was spent in entering the mine through the old works on the East side of No. 1 slope and returning via the 10 W. Level out the No. 2 Slope. Another day was spent in the vicinity of the No. 1 Slope dump and the lower levels turned from No. 1 Slope. Several trips were made up the No. 1 Slope from the 10 W. to the 8 W. going in each level as far as falls would permit. Two trips were made to the West side of the shaft bottom, and through the airways in the vicinity.

Cause of the Explosion:

In this as in many other similar cases the cause and the point of origin of the explosion are very obscure indeed. The time that could be spared to the examination was entirely inadequate for a thorough investigation of the area affected by the explosion, and it was possible to cover the ground, only in a very hasty manner. It was originally planned to return for further examination, but subsequent happenings prevented, so that this discussion is admittedly based on rather a meagre supply of data.

As was shown at the inquest, the regular examination of the old works had been made by fire bosses Saturday, the day before the explosion, and nothing unusual had been found. No shots had been fired since the shot lighter made his rounds on Saturday evening before the explosion. The fire bosses made their regular rounds on Sunday morning before the explosion and all was clear with the ex-

ception of the 14 W. level, where some gas was found. This gas had been cleaned out before the fire bosses left the mine as was shown by an incident brought out at the inquest--one of the fire bosses took two of the electricians into the 14 W. to show them the action of gas in a safety lamp; they could not find enough gas to give a cap in a safety lamp although they hunted for some time. So the mine atmosphere must have been in fairly good condition. Since the fire bosses on their rounds had oiled all the auxilliary fans and seen that they were in good condition, and it is known that the outside fans were all right, the ventilating current must have been normal. Hence we are justified in concluding that there was no body of gas sufficiently large to cause an explosion violent enough to cover the large area that this one did, unless coal dust carried the flame, after the ignition started. There are also other factors which will be mentioned later, that leave little room for doubt that this was essentially a dust explosion--whatever may have been its origin.

In attempting to determine the cause of the explosion, only three possibilities presented themselves, or were presented by the discussions, viz:

(1) It was purely a dust explosion, caused by a blowout shot or a badly planted shot which had "smoldered" from the time the shot-lighter made his rounds on Saturday night until about 12:45 P.M. next day when it went off causing the explosion. This seemed rather "far-fetched" and unlikely from the first and on investigation no evidences of blown-out shots could be found. Furthermore, at the inquest, the shot-lighter declared that without any question every shot that he lit that night, went off very shortly afterwards and that he returned and examined the places and found everything in good condition in every instance.

condition of men

(2) It was a dust explosion caused by a small gas explosion originated by one of the men. But all of the men were found in the immediate vicinity of their work, their hair was not singed, their faces, hands and clothes were not burned and there was no evidence of fire about them. They had no occasion to use explosives; none was found where they were working, and so far as is known they had taken none into the mine that day. So it is impossible for the writer to believe that these men had anything to do with originating the trouble. If they had started a gas explosion they would almost certainly have been burned.

Jones was found in the pump room on the floor. He had apparently fallen forward from the place where he was accustomed to sit, and was resting on his hands and knees with his face in a small stream of water which runs through the pump house. At first this seemed rather significant--as if he might have thrust his face into the water to relieve himself from the effects of the after damp--but on examination his neck was found to be broken and it was decided that he had probably been killed instantly by the concussion. His hair and clothes were not burned, there were no signs of fire in that vicinity. Although there were numerous pieces of paper, canvas that had been used as curtains, etc. in this part of the mine absolutely no signs of flame could be found--the ravelled edges of the canvas (ducking) had not been singed. On the other hand, there was abundant evidence of extreme violence in this vicinity, an eighteen inch thick concrete dam not more than 100 feet below Jones was shattered, an overcast about 200 feet above him was demolished; the booster fan, a short distance in-by on the 12th East, was broken up and distributed

along the aircourse for a distance of 50 feet or so. But the dust in this vicinity was sooty, and "greasy" as if it had been acted upon by heat.

Pozarich was found on the 11th West some 30 or 40 feet inbye from the track laying tools, at a point indicated on the map. He was lying with his head against the rib, in the crosscut, part of his body being in the crosscut and part of it in the entry. There was a piece of 8x10" timber about four feet long, lying across his neck and apparently his head had been crushed between this and the rib.

Tanich was found in the crosscut indicated on the map, nearer to the tools. He was lying face downward with his head in-bye. There were no signs of flame found in this vicinity. Neither of these men had their hair or clothes burned and the edges of the canvas near them were unburned.

Bartolero and Hardy were found under the rock at the bottom of the shaft, some months after the explosion. The details of their positions are unknown to the writer. In the vicinity of the shaft bottom there were no evidences of flame; the writer picked up a new piece of "gunny-sacking" from the floor near the shaft bottom, and on making a most careful examination was unable to find any trace of flame.

So there seems to be absolutely no ground for the belief that the trouble was originated by one of the men in the mine at the time of the explosion.

(3) The only other cause that suggested itself to the writer was "sparking" electric equipment coming into contact with a small body of gas, igniting it and thus starting a dust explosion. On further investigation this was found to be the most reasonable con-

clusion. The mines were so badly wrecked--especially that part of No. 4 already mentioned--that it was in many instances practically impossible to trace the "direction" in which the explosion had travelled. Very often, in fact probably in a majority of cases, the evidence showed that the "blast" had travelled "down and back"--in one instance in particular such evidence was unmistakable. The blades of the auxiliary fan on the 10 W. were bent in one direction, while the whole fan was moved in the other; in another instance a large piece of sheet iron and some rope-sh²⁰ieves were found blown a long way down the slope (No. 1) while some loose wires were found wrapped around bolts (on a hoist sitting near this point on the slope) in such a manner that there was no room for doubt that they were being carried up the slope at the time they caught on the bolts. In still other instances there was fairly good evidence to show that the blast had travelled along the entry three or more times. We know from past experiments on the Gallery in Pittsburg that a vacuum almost always follows a violent explosion. In other explosions it has often been noted that the blast travels down and back, so that the idea of finding the point of origin by tracing down the "directions of force" had to be abandoned. An attempt was made to plot on the accompanying map the direction of the "initial blast"--or perhaps better, the direction in which the heaviest articles had apparently been moved. But often times this was rather uncertain, so that it would not be surprising to find that there are some errors in this plotting.

In the exploration, one part of the mine--Viz: the 10th West

level and air course, from the auxiliary fan to the face, and in the rooms turned from the level between the fan and the face--was found to show much greater evidences of flame than any other. There was considerable coke on the props in the rooms, and on the timbers in the level, between the fan and a short distance in-by the No. 2 slope. On the aircourse, between the fan and the No. 2 slope, there is evidence of very great violence. The crosscuts between the level and the aircourse had been stopped with wooden stoppings^{and} piled partly full of rock; the explosion picked this material up, drove it across the level and piled it against the upper rib, overturning the track and leaving it turned on its side between the piles of rock and the rib. In some cases the writer estimates there was as much as eight or ten tons of rock from each cross-cut piled up in this manner. Out-by (toward the No. 1 slope) from the fan the disturbance was relatively rather slight on the level. The blades of the 10th. fan were bent as if they had been struck a blow from the direction of the No. 2 slope while the whole fan had been moved toward the No. 2 slope.

At the inquest it was found that the men working in the rooms of the third battery of the 11th West level, had removed their tools on the evening before the explosion, because the pillars had been drawn and it was expected that a cave would occur before they would return to get their tools. On investigation after the explosion it was found that this cave had occurred. These rooms had been holed to the tenth West Aircourse at a point some distance out-by the fan mentioned in the preceding paragraph, so that the air travelled up these rooms into the 10th W. aircourse, through the fan and on out the No. 2 slope.

Almost all the gas in these mines comes from the roof--so much so that the men know that they must be careful where the roof is bad or a fall is expected. Now it is the idea of the writer and the evidence is such that Mr. Botting, State Inspector of Coal Mines and others who investigated the explosion are agreed that the fall of roof in the rooms mentioned above must have occurred some time on the morning of the explosion, liberating a considerable quantity of gas. This gas was carried by the ventilating current, out past the 10th W. fan. After most of the gas had passed through the fan, something occurred to ignite the mixture and this was sufficient to start the dust explosion, which wrecked the mine.

There are several possibilities to consider in connection with the actual ignition point. There is little if any evidence of flame, or coking or charring of the dust at the fan or on the woodwork near it, in fact the action on the material in the crosscuts was not violent until several cross cuts in-by the fan had been passed. That it is possible that the fan could ignite the mixture and still not have the woodwork of the fan support show any evidence of flame the writer is convinced from a recent mine accident where an ignition of gas in which several men were more or less severely burned left no trace of the fact that flame had passed over the places where the men were burned. In this recent instance the flame travelled down the entry a hundred feet or more as was conclusively proved by the men who were burned; but the most careful investigation made with electric flash-lights failed to reveal any coking of dust or charring of small splinters on the timbers, anywhere along this hundred feet.

Hence the writer believes in this case, the main body of gas could have been ignited by a "streamer" of gas extending from it to the fan motor. It is equally possible, and perhaps more probable, that the gas was ignited by a short circuit on the wires which brought the current along the airway between the No. 2 slope and the fan. However there can probably never be any certainty about the exact manner of ignition; this is offered only as a possibility and further discussion would be a useless waste of time.

The disturbance along the 10th West level out-by from the fan (between the fan and No. 1 slope) was very slight indeed, there were a few small roof falls, the trolley wire was down in a place or two, and the stoppings out but otherwise things were in fair shape. Just inbye from the fan the disturbance ^{was} ~~has been~~ violent in the extreme, as already described. The only part of the mine which shows unmistakable evidence of flame is that part in the vicinity of this fan. In view of the evidence given above that the explosion did originate in the vicinity of this fan, and in the total absence of evidence that it could have started elsewhere, the writer feels that there can be no reasonable doubt that this fan or the electrical equipment in connection therewith, should properly be blamed for causing the explosion. Hence it is urgently recommended that in future, any system of ventilation which necessitates placing electrically driven "booster-fans" on return air currents, shall be unconditionally condemned, and that any mines using this system at present shall be immediately so arranged that such assistance to the outside fans shall not be necessary.

Course of Explosion:

As nearly as it can be traced the explosion travelled from

the 10 W. Fan along the 10th W. Level and aircourse to the face, at the same time spreading upward along the No. 2 slope and through the rooms off the 10th W. level between the fan and the No. 2 slope, to the 8th W. and along the 8th W. toward the No. 1 slope. Somewhere between the slopes the greater part of the explosive wave seems to have worked down onto the 9th W. level and to have travelled along it and to have emerged from it onto the No. 1 slope, as is shown by the fact that all timbers on this slope are knocked down the slope, immediately below the 9th, and up the slope immediately above it. From this point it is not very clear just what did happen, but apparently the explosive wave divided, part of it going up the slope to the 8th East and along it to the shaft and outside, the other part seems to have crossed the slope to the aircourse, travelled down the aircourse (spreading out to the faces of each of the East levels) to the sump where it crossed and came back up the slope, spreading out along the 14th, 13th, 12th and 11th W. levels. Out-by the 10 W. fan where the rooms had been holed through from the 11th W. to the 10th W. aircourse, the blast was apparently from the 10 W. aircourse toward the 11th W. level.

General Discussion:

There are nearly always some points in connection with a mine explosion, that cannot be explained; in this case there are numerous ones that the writer has not even attempted to account for, even for his own satisfaction; possibly some of these latter could have been cleared up if it had been possible to spend more time on the examination. However, some noteworthy points are already clear to the writer, and will be explained. For instance, objects on the

No. 2 slope above the 7th W. level show little evidence of violence; and it may not be evident, at first glance, why, if the explosion started at the fan on the 10th W. aircourse, it did not travel to the outside along the No. 2 slope--especially as it started in that direction and that would have been the shortest way out. But when it is mentioned that this slope is extremely wet so that there was no dust to support the combustion, and that the area of the slope had been greatly reduced by roof caves at different points above the 7th W. level this is not so surprising. Objects ^{on} ~~between~~ the 10th W. level between a point opposite the 10th W. fan and the No. 1 slope were hardly disturbed at all (they were moved in-by, or toward the fan very slightly); in this connection it is significant to mention the fact that this level had been thoroughly sprinkled on the day before the explosion.

Whether it is a mere coincidence or the fact really has some significance, it is perhaps worthy of mention that there were four water sprays on the No. 1 slope, just below the 10th W. level and the writer is informed that the slope at this point was kept quite moist, for some distance; the blast as it came down the slope from the 9th W. seems to have died out when it reached this point, and again when it came up the slope from the sump, it went in the West levels instead of going on up the slope. However, that the blast did not return up the slope past the 10th W., might of course be due (at least in part) to the fact that the oxygen had been exhausted when the flame came down the slope.

Why the 8th W. level, between the No. 2 slope and the face, escaped all disturbance, is not evident. It is as dry and dusty as

that part between the two slopes, and yet there is no evidence at all to show that the explosion travelled in there.

Another puzzling thing is why the explosion should have died out on the 10th E. before reaching the face, as it did in most of the other levels. This level was just as dry and dusty and apparently there was as much reason for the explosion to travel along it as along some of the other levels which were wrecked.

In the seventh West, near the No. 2 slope, the writer is informed the dust was banked up against stoppings and in protected places, sometimes as much as two feet ^{deep} ~~thick~~, while there are almost no other evidences of the fact that the explosion passed through this part of the mine--the door was left standing, but a board stopping, so old that it was rotten and weak, was pushed over.

The phenomena mentioned in the three preceding paragraphs might possibly be accounted for by the theory of Mr. James Ashworth, the English engineer, who believes that it is possible to "smother" a coal dust explosion by getting too much dust in suspension in the air--that there is an "explosive range" for coal dust suspended in the air, as there is for mixtures of methane and air; and that as a mixture of methane and air that is more than 20% methane will not ignite, so there may be too much dust in the atmosphere to carry the explosion.

That the explosion did not travel from the 8th W. level up the No. 1 slope to the outside is probably due to the fact that along almost the entire length of the slope, the roof has caved until the slope is entirely in rock, so there was no coal dust to feed the flame, or what there was, was so mixed with rock dust that it was harmless.

There were in the mine at the time of the explosion, five auxiliary fans belt driven by electric motors. There was one on the 8th W. aircourse between the slopes, one on the tenth W. aircourse already mentioned, one in the No. 1 slope aircourse near the shaft, one on the 12th F., and one on the 12th W. All of these except the one on the 10th W. were completely demolished. All overcasts and stoppings below the 7th W. level were wrecked, and in fact many above this level were destroyed.

That the mules in the barn on the 8th East were saved was probably due to the fact that the timber carried by the explosion was wedged into the level between the shaft and the barn in such a way as to form an almost perfect "bulkhead", this of course together with the pent up forces being released out the shaft protected the mules from the violence of the explosion; then when the air was reversed the caves on No. 1 slope caused the current to go at least in part to the East side, thus supplying the mules with fresh air and preventing the afterdamp from overcoming them. The one mule which was killed was nearest the shaft, there was a heavy block of wood in its stall and apparently this struck it on the head either killing it outright or so badly frightening it that it killed itself in its struggles.

As has already been mentioned, there was considerable very inflammable material at the bottom of the shaft, (pieces of sacking, splinters off timbers, etc.) and although the most careful search was made no evidences of flame could be found, but flame shot out the top of the shaft for a distance of more than 200 feet. It has been suggested that no flame passed the bottom of the shaft, and that the gases in passing out the shaft were ignited by the electric

wires. The writer is very doubtful on this score, but believes that there must have been sufficient combustion throughout the part of the mine most affected by the explosion, to cause considerable heat and expansion of gases; that is, that it appears incredible that the damage to the mine could have been done by the concussion from a small if very violent explosion--one in which the area of the actual explosion was very small as compared to the area of the territory that shows evidence of having been subjected to the greatest violence. For experience in previous explosions would indicate that although the concussion may be very violent in the vicinity of the explosion it is largely "cushioned" by the air at a comparatively short distance from the seat of the disturbance. So in view of the recent tests at the Pittsburgh Station--which show ^{the Roslyn} ~~this~~ dust to be as inflammable as (or possibly more so than) any so far tested in this country--it would seem more reasonable to believe that after the explosion had travelled a comparatively short distance, the action became so violent that an unusually large amount of dust was thrown into the air and that the heat generated was excessive even for a mine explosion. In consequence the distillation of gases from the coal dust was very rapid and the mixture of these combustible or explosive gases with the air was such that there was proportionately far less oxygen in the mixture than is common in such instances, and that the reaction which took place to unite the available oxygen with the explosive gases was rapid in the extreme so the flame attending the reaction must have been of very short duration. Although the heat of the explosion center, as the latter moved through the mine must have been far in excess of the kindling temperature of the inflammable objects found unscorched in its wake.

this high temperature could not have been of long duration, and as has previously been intimated, must have been applied to these inflammable objects in an atmosphere from which practically all the oxygen had been removed. Hence the absence of evidences of flame, in parts of mine so badly wrecked.

Summary:

- (1) This was a dust explosion caused by an explosion of gas.
- (2) The gas was ignited by electric equipment of an auxiliary fan, which had been placed in a return air current.
- (3) Had the explosion occurred on a working day, probably between three and four hundred men would have lost their lives.
- (4) The explosion was least violent in parts of the mine that were most moist, or where the coal dust was mixed with the largest amount of rock or shale dust.
- (5) Considerable flame may pass down an entry without leaving any trace of its having gone that way.

Recommendations:

- (1) Electric equipment should not be permitted on return air currents--particularly at a short distance from the working faces. The practice of using inside fans is to be condemned at all times; and placing such electrically driven fans in return airways, near the working faces, is not to be countenanced at any time.
- (2) In mines where the dust is explosive--and particularly where it is extremely inflammable--great precautions should be taken to keep this dust exceedingly moist, or mixed with a large amount of rock or shale dust or clay or other inert substance. In this ex-

plosion it is very significant that without exception the parts of the mine in such condition escaped serious injury.

Respectfully submitted,
H.M.W. Oglin

--:-- NOTES ON USE OF DRAEGER APPARATUS AT ROSLYN, WASHINGTON MINE DISASTER. --:--

At 12:45 P. M. on October 3, 1909, an explosion, which killed 10 men (5 on the tippie and 5 in the mine) and literally wrecked No. 1, 2 and 4 mines, occurred at Roslyn, Washington.

October 4th, ^{W.D.} Robbins of the U. S. Geological Survey and an assistant took the two Draeger helmets that had been used at the A. U. P. exposition at Seattle, to the scene of the explosion. There was also one apparatus belonging to the company at Roslyn, but because no one there had ever used them underground, the management rather discouraged their use, so that up to the evening of October 7th, when ^{Ja} Dr. Holmes and I arrived, they had not been used.

Several attempts had been made to enter the mine without apparatus. Two men had been overcome by gas (but rescued and revived). It was generally believed there was a fire on the return air side of the mine and consequently danger of another explosion if the ventilation were reestablished, so the men were very timid about going in.

October 7, 1909, entered main slope (No. 1) at 11:25 p. m. with party of six including D. C. Betting, State Mine Inspector, Thomas (now superintendent (No. 2), Tom Hale (mine foreman), Jack Carey, and others. We were equipped with Wolfe safety lamps, three Draeger apparatus, two with single oxygen cylinders and one with double cylinders, lunch, water canteens, etc., but we had no electric lights.

The party proceeded down the slope - where temporary canvas brattices had been put up - to the 5th Left (East) Level, thence along this for a considerable distance, turned down through old works to 8th East. The traveling through these old works was very rough - as may be imagined - but the ventilation had been partly reestablished and the air was good.

At the 8th, Thomas and I put on helmets and went along 8th toward the shaft, found entry completely blocked by large timbers so closely wedged as to resemble a bulk head, but there were no signs of fire. We rejoined the party, went eastward along 8th, turned down to 10th and went westward along it to main slope (No. 1). Here we found party of men building brattices. They had just completed their work at this point, and as the air was good and traveling down the slope, both parties went down to the 11th West and stopped for rest and discussion at about 12:35 a. m.

As the air was good and part of it traveling down the slope, two of the men started down carefully testing the air as they went while three of us, with the helmets, were ready to give assistance should it be necessary (Note: the object of this arrangement was to conserve the oxygen supply for we had less than one hour). The air was good to the 12th E. but when the men turned in there, it was not so good. However, the body of Jones, the pumpman, was brought out and the bratticing party started on the long trip outside with it.

Our party now divided. Thomas and I put on helmets and started W. on the 11th W. carefully testing the air. We were followed at a distance of 50 to 100 feet by Hale and Corey (without helmets), also carefully testing; the remainder stayed at the slope. The roof had fallen

in many places and progress was necessarily very slow. The men following us reached a point opposite No. 1 room of 3d battery of rooms where heavier falls and bad air were encountered and they had to turn back a few paces and wait for our return.

Thomas and I went in only about 400 feet farther when we encountered enough gas to greatly disturb our Wolfe lamps, and show that they would be extinguished if we proceeded. Our oxygen supply was getting very low so we decided to go back outside, recharge the apparatus, and rest. Went out by same route followed coming in and arrived at the slope mouth about 6 a. m. extremely tired but otherwise in good condition.

During the day the brattices on 11th W. Air course were repaired to a point not far from where we had been with the helmets.

October 8th, a party of nine of us, including Botting, Thomas and Bagley (?) entered the mine about 6 p. m. and proceeded by same route as the day before to point on 11th W. Air course, up to which the brattice had been repaired. We were supplied with three-cell electric flash lights and with Wolfe safety lamps. Here Botting, ^aCorey and I put on helmets and left Wolfe lamps; went through cross cut to 11th W. and along it about 2000 (?) feet to "rock tunnel" where we found the bodies of the two track layers. The hair and clothing was unburned but the bodies were some 30 feet from working place, badly mangled (one with head crushed between rib and 10" x 10" timber that had been blown against it). Since the entry between this point and our party was almost impassible in many places, we made no attempt to remove bodies, rejoined our party, went out-
bye a ways, meeting the new bratticing party, and gave directions to continue the bratticing along the air course. (This was done and the bodies

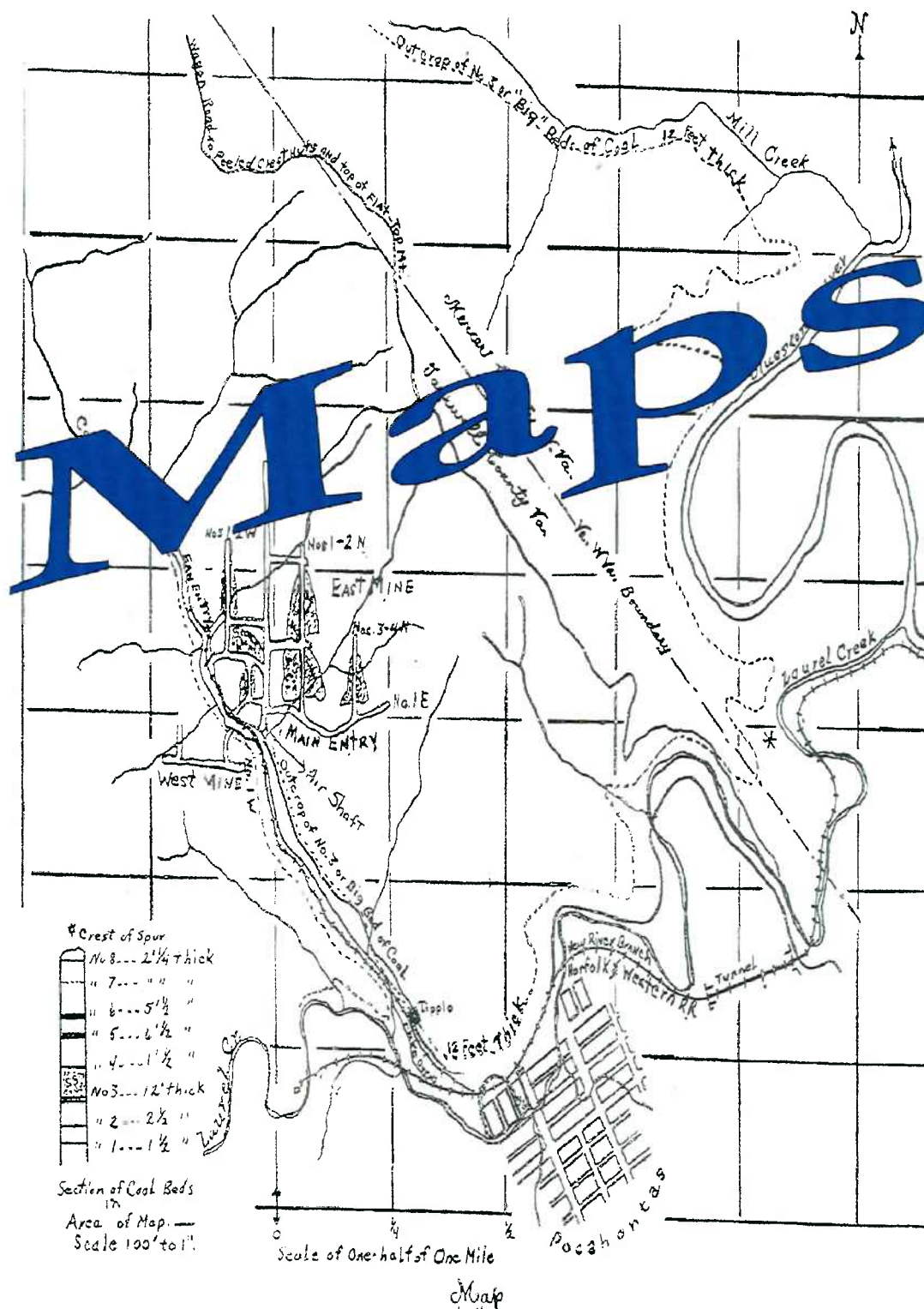
recovered without the aid of the helmets the following afternoon.

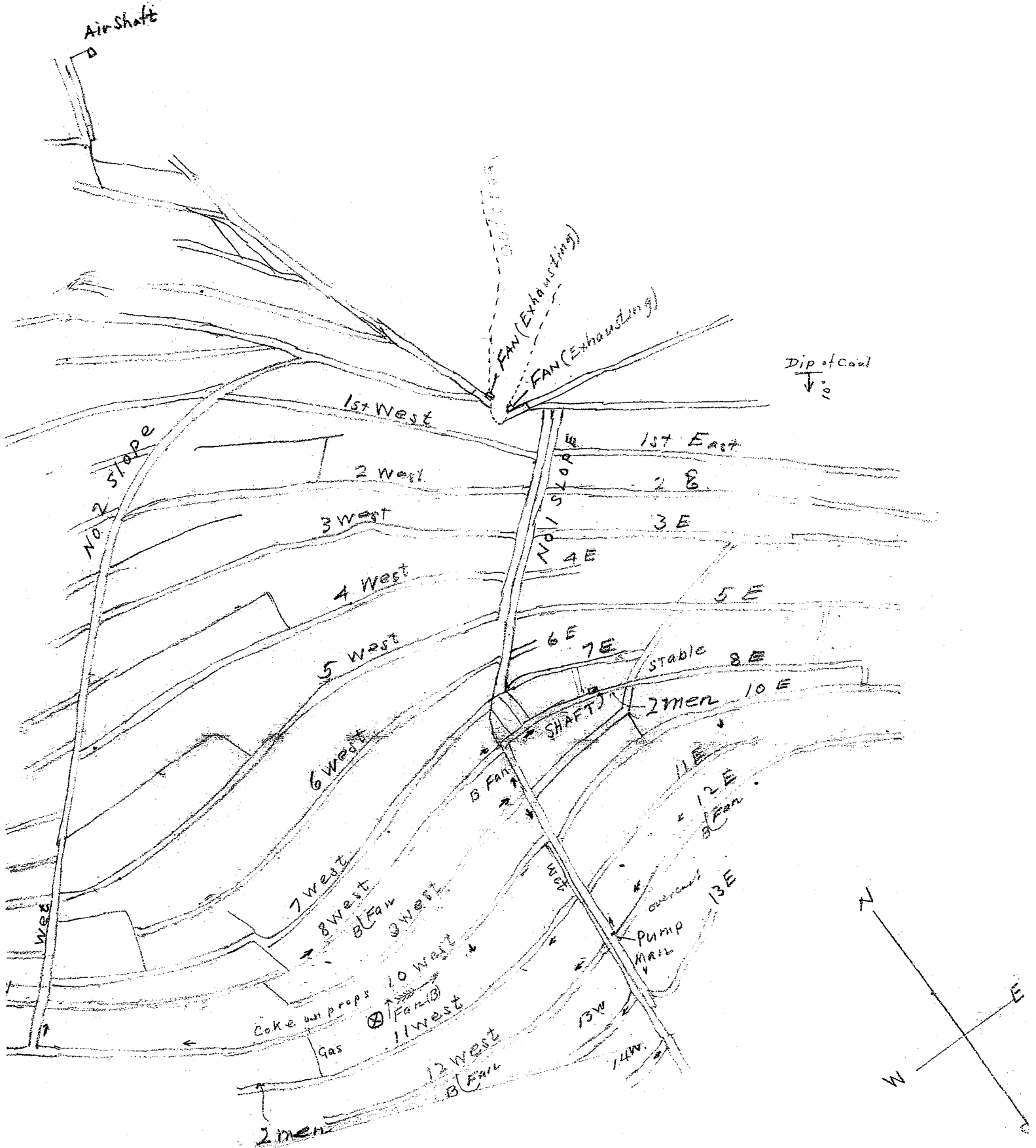
Our party returned to the slope and started the investigation to determine cause of disaster. Although the helmets were taken with us on many of the exploring trips made through the mine, they were not again used. The conditions in this regard were rather amusing. Even after the ventilation had been fairly well re-established, the men were quite timid about going into the mine unless the helmets were in the party, showing the greatest confidence in the apparatus.

Respectfully submitted,

H. M. Walflin
S

Redlands, Calif.,
January 15, 1910.





Skeleton map of
Roslyn mine
Explosion Oct 3, 1909

→ Direction of force
B Fan = Booster fan

Maps
Not
Scanned



Newspaper Accounts

THE CASCADE MINER

VOL. XXV

ROSLYN, WASHINGTON, SATURDAY, OCT. 9, 1909.

NO. 11

TEN LOSE LIVES IN EXPLOSION

The Disaster in Mine No. 4 the Worst in Many Years
Wild Scenes of Anguish Follow Explosion

Second Explosion of Coal Dust Sets Everything Ablaze Instantly—Almost Superhuman
Efforts of Firemen and Employes Saves Much Property Around Shaft.

Cause of Explosion Not Yet Explained—Bodies of Victims Are Now Being Rescued

THE DEAD:

WM. ARUNDEL, Trackman, Age 40, married.
DOMINICK BARTOLERO, Trackman, Age 38, married.
CARL BERGER, Gang Boss, Age 38, married.
JAMES GURRELL, Trackman, Age 65, married.
DAN HARDY, Trackman, Age 52, married.
AARON ISACKSON, Laborer, Age 35, married.
JOHN E. JONES, Pumpman, Age 21, single.
GEORGE TOMICH, Trackman, Age 38, married.
PHILIP POZARICH, Trackman, Age 35, married.
OTIS NEWHOUSE, Outside Foreman, Age 38, married.

THE INJURED:

JOHN X. JONES, Engineer, Age 65, married.

At exactly 12:45 o'clock last Sunday afternoon, without warning, an explosion of fire damp occurred in Mine No. 4, better known as the Shaft, of the Northwestern Improvement Company of this city, which cost the lives of ten men, all residents of this city, and the injury of another citizen, who will recover.

The explosion started a fire in the shaft almost instantly, which consumed the shaft tower and tippie and all of the railroad sheds and a number of Northern Pacific coal cars and gondolas. The fire

spread with such fearful rapidity that all the buildings were a mass of flame in less time than it takes to tell it. In fact, the flames seemed to envelop everything at once. It was practically a phenomenon. An immense ball of fire, as large as a building, shot up in the air a distance of about 400 feet above the mouth of the shaft, and, quivering there a moment seemed to envelop everything.

At this writing (Thursday morning) the bodies of five men still remain in the mine, as the rescue parties sent in have so far been unable to reach them on account of the black damp and a cave-in near the bore hole about 700 feet from the shaft. The bodies of the men in the mine are: Dan Hardy, Dominick Bartolero, Philip Pozarich, George Tomach and John E. Jones.

The scenes immediately following the disaster are almost impossible of description but the town was undoubtedly saved from disastrous fires by the cool head and presence of mind of our fire chief, Andy Attleson. Too much credit cannot be given Roslyn's noble fire laddies.

The loss to the Northwestern Improvement Company in tower, tipples and buildings above ground will amount to fully \$20,000, while the loss in the mine is impossible to calculate until an investigation is made. "It will cost fully \$50,000 to again reopen the Shaft," is the estimate of George E. Hopkins, chief accountant, "and to equip it as it was before the explosion, perhaps as much more, if our new modern pumps and other apparatus was destroyed, as we suppose now."

Flames Shoot 400 Feet.

The fire Sunday was the greatest disaster in the history of the Roslyn mines since the tragedy of May 10, 1892, when forty-five men lost their lives.

Without warning of any kind the terrific explosion shook the town and broke windows half a mile away from the mine. A sheet of flame breaking from the shaft reached the height of 400 feet and hung suspended for several seconds. There were two distinct explosions, which followed close after each other like the discharge of both barrels of a shot gun. The tipples over the shaft and the other outbuildings instantly broke into flame and were blazing furiously before the nearest spectators got to the scene. The fire department devoted its attention to the saving of nearby buildings.

The Cle Elum department, four miles away responded to an appeal for help, and were instrumental in saving property. There was but a slight wind blowing, but what there was, took the flying embers directly over the town, and had it not been for the cool head of Chief Attleson in keeping a detachment of the fire department up town the loss of property would have been great. At least eight fires started almost at once. The tower tipples and snow sheds burned to the ground by four o'clock, but debris around the shaft is still burning.

Sick Superintendent Directs.

The general superintendent of the company, J. F. Menzies, was ill at his home with typhoid fever, and gave orders for fighting the fire from a sick bed. The actual work, however, was under the direction of John G. Green, Superintendent.

The mine disaster nearly resulted in the burning of the town. The explosion was so violent that every one heard it and when the big steam siren screeched every man and woman in town hurried to the mine.

Flaming brands thrown into the air by the explosion settled on the roofs of nearby buildings and would-be rescuers had to hurry to their homes and save them from burning. Small blazes were reported all over the city, and house-

holders stood with garden hoses and pails drowned the threatening flames. In an hour danger to the town was over, and the throng of grief stricken people at the mines was doubled.

Fans Are Reversed.

The first work of saving the shaft was the reversal of the fans which supply air to the mines. Under ordinary conditions the fans exhaust the air, and Mr. Green, the superintendent, gave orders to reverse the fans and pump air into the mines. The fire in the interior could not burn against the strong air current that was forced below ground by the big fan at No. 2 plant. This would confine the fire to the region to where it started. This saved most of the N. W. I. property. All of the mines of the company were threatened when the blaze started, and only the reversal of the fans prevented this.

There were the usual scenes of grief and despair when the explosion occurred. The terror of disaster is always uppermost in the minds of the people in a mining town, and the streets were thronged by a frenzied mob of several thousand men and women who did not know who was lost or who was saved.

Scenes Are Heartrending.

Screaming and praying, they struggled to reach the burning shaft, and when the bodies of the men who were injured were picked up and assistance rendered, the scene was pathetic in the extreme. The children of James Gurrell were returning from church when the explosion occurred, and were among the first to reach the scene. They saw their father, burned and mangled, brought to the emergency hospital, and the sight of the grief stricken daughters was extremely pathetic. Even strong men could not keep back the tears and every heart was moved with grief and pity.

Until missing miners were found to be safe above ground and not in the seething pit of flame, the anxiety of mothers and wives and sisters was heartrending. Newhouse, the outside superintendent, has been in the employ of the company for about a year. He comes from Streator, Ill. His family arrived in the city only a few weeks ago. When the explosion happened

Newhouse was on tippie, laying a new floor. His clothes were ripped off his body, and when he was found all the clothing he wore was the right cuff of his shirt. His body was scorched and burned beyond recognition, and he was recognized by a missing finger on his right hand.

Brave Fight for Life.

Dr. W. H. Payne, one of the company physicians, said to him: "I am afraid you are in for it," when Newhouse regained his consciousness.

"Oh, I'll live to see other men dead," he said, and smiled bravely. He fought gamely for his life in the Roslyn emergency hospital, but in spite of his spirit he died at 4:15 o'clock Monday morning. The brave fellow had won the confidence and respect, not only of his employers but of the men who worked under him. One of them said with tears in his eyes, "He was a good boss and we all liked him."

Wm. Arundel was the first man to be brought to the emergency hospital in The Cascade Miner's daily paper rig. The poor fellow's suffering cannot be described. Strong but loving hands lifted him from the rig, and the writer adjusted his pillows and gave him a drink of water. His sufferings can never be forgotten. He must have been burned inwardly as he called pitiously for water to cool his burning throat. Burned and blackened beyond recognition he still retained consciousness for several hours until merciful death put an end to his suffering.

Jas. Gurrell was working with Newhouse on the tippie when the accident occurred. He was hurled into the air and lit in front of the timekeeper's office fifty feet from the shaft. He was stripped clean of his clothing except his shoes, and his hair was burned from his head. His face and body was burned beyond recognition and he was injured internally. His eyes were burned out, but in spite of his frightful injuries he retained consciousness for several hours before he died. He came to Roslyn about five months ago. His home was in Red Lodge, Montana. He has a wife and a large family of daughters.

Meets Death on Tippie.

Carl Berger and Aaron Isackson were on the tippie with Newhouse and Gurrell. Their bodies are believed to be burned and will never be recovered. They may have fallen back into the blazing shaft in which case they would have been consumed. Berger had been in the city for many years and came here from Streator, Ill. He leaves a wife.

Isackson had a wife and two children, Rachael, three years, old and Ralph, one year old, to mourn for a father whose remains may never be recovered. He was a young man of good habits, steady, industrious and reliable and had a large number of friends who sincerely regret his sudden taking away.

Dan Hardy, Dominick Bartolero, Philip Pozarich, John E. Jones and George Tomach were at the bottom of the 640-foot shaft at the time of the accident. Hardy and Bartolero were repairing track for the coal cars. Jones was a pumpman and was on duty at the pumps at the bottom of the shaft. These pumps were installed about a year ago at a cost of \$40,000 and were samples of the finest electric pumps in the country. It is feared they are a dead loss.

Hardy is one of the old time miners in the city, and helped to drive the shaft that is now his tomb. He returned to his home in England about eight years ago, coming back here about a month ago, and had just resumed work in the mines. His family consists of a wife, two married daughters, an unmarried daughter and a son.

Philip Pozarich, whose body is still in the mine, had a wife and three children who are left to mourn the loss of a young husband and father.

George Tomach, who was working with Pozarich repairing track, had a wife and four small children, the oldest being only five years.

Dominick Bartolero had a wife and four children. He was working with Hardy repairing track at the bottom of the shaft when the explosion occurred.

John E. Jones, the young pumpman, who lost his life at his post of duty in the shaft, was 21 years old and unmarried. He was a popular young man among his many associates, and was steady, reliable and industrious and held the confidence of his employers. It is said for some reason he did not want to go to work Sunday, but as neither he nor his father could give any particular reason for his not going he went to work without complaint. He seemed to have some intimation of danger.

Carl Berger, the gang foreman, was a popular young man with his associates and employers as well. He was of a cheerful, sunny disposition and had a kind word for everyone. He had no children but leaves a wife to mourn his untimely death, which seems more so as no hope is entertained of ever finding his remains.

Wm. Arundel was an old resident of this city and about 40 years of age. He leaves a wife and four small children. He was a good man, honest, steady and industrious, a good neighbor and excellent citizen. His death is not only mourned by his family but by the whole community. He was a member of the K. of P. Lodge and the miners' union.

Five daughters besides a wife survive James Gurrell. One of the daughters lives in Bozeman, Montana. One son, George, lost his life in a similar disaster in an Alaskan mine a year ago. When Marshall John Booth broke the news of their father's death, to the daughters, two of them, Lillie, aged 17, and Margaret, aged 21, both fainted. The names of the other daughters are Mrs. O. W. Perry, Genevieve, aged 16, and Kate, aged 13.

Second Explosion Occurs.

A scare was caused a little before 5

(Continued on Page 4.)

EXPLOSION KILLS TEN

(Continued from Page One)

o'clock Sunday evening. While hundreds were grouped around the mouth of the shaft, watching the fire fighters, the earth rumbled and shook, and a second explosion deep down under the surface occurred. The spectators scattered and ran in all directions, but there was no manifestation of force at the mouth of the shaft. The scene of the disaster was roped off. The second explosion set the building around the bore hole afire.

Miners and officials were utterly at a loss to account for the disaster. Superintendent Green says ten minutes before the explosion occurred, a force of electricians had worked at the bottom of the shaft and at the various levels testing for fire damp and they had found none. It is rumored among the men that fire damp was discovered on the fourteenth level Sunday, and that the fans were pumping it out when the explosion occurred. This blower or feeder had been attended to by one of the mine bosses, but may have broken out again.

Five Hundred Lose Work.

If the explosion was caused by fire damp, the second explosion is believed to have been caused by coal dust. This theory was held by miners, who point to the fact that buildings caught fire instantly. They say the buildings were lined with coal dust.

More than 500 men were thrown out of employment by the disaster.

C. R. Claghorn, general manager of the coal company, was notified of the accident immediately, and arrived in the city Sunday night. He will have charge of the rescue work and repair. It will be six months at the earliest before the shaft can be put in working condition again. It was said at first

the shaft was caving in, and another explosion might occur at any time.

Largest Mines in State.

The mines of the Northwestern Improvement Company in this city are the largest in the state and have a producing capacity of 8,000 tons per day and employ 2500 men, but the loss of the shaft will not materially affect the coal supply of the state. The officers of the company did everything in their power to relieve suffering and to save property, and within one minute after the explosion word was sent to General Manager Claghorn at Gig Harbor.

It seems almost providential that the explosion occurred Sunday. Had it happened on a working day perhaps hundreds of men would have been killed, and the town would now have been in ashes. In fact, it is sad to think what the consequences would have been had the explosion occurred on a working day. Between 500 and 600 men are employed in the shaft. On Sunday only fire bosses and pumpmen and stablemen are working and those employed in making necessary repairs.

Mine Reported Safe.

The editor of The Cascade Miner had an interview with Superintendent John G. Green Sunday evening when he said: "When I heard the explosion at first I supposed it was one of the boilers at the power house, but when I rushed to where I could see, I was appalled to learn it was an explosion in the shaft. Not five minutes before the fire bosses had reported everything clear and this morning a force of electricians were sent into the mine, and they had just come out and reported they could find no gas. What caused the explosion is a mystery to me. It is one of those things that just happen without any explanation. I am afraid the shaft is a total loss; at least it will be months before it can be reopened. I will send rescue parties in from No. 2 just as soon as it is safe to enter the mine. No one can regret this terrible occurrence more than I."

No Coal for Six Months.

The Northwestern Improvement Company is a subsidiary corporation of the Northern Pacific railway and produces the bulk of the engine coal used by that line, besides furnishing other roads. Officials of the company at the mine have stated that while the condition of No. 4 shaft cannot be determined until the mine can be examined, it will at least be six months before this shaft will again produce coal. No. 4 shaft had a daily production of 900 tons.

After the explosion and the danger from buildings in the city and the saw mill property taking fire, the fire department devoted its energies to flooding the shaft. All Sunday night the fire boys stuck faithfully to their task, nor was the flooding stopped until the shaft had sufficiently cooled on Wednesday. No more faithful band of workers ever fought fire than the Ros-

lyn fire department last Sunday and Sunday night and many acts of bravery and heroism were witnessed. Nor is all the praise due the Roslyn fire department for in fifteen minutes after the explosion the Cle Elum department was on their way to Roslyn and they did good and heroic work and helped save much valuable adjoining property of the company. Time and again the electric light and power plant caught fire and the flames were promptly extinguished each time by the vigilant firemen. The same was true of the sawmill property which caught fire dozens of times.

Investigation Shows Mine Is Caved In.

Veritably courting death, a rescue party of six men entered No. 1 slope entrance leading to the bottom of the shaft where it is believed the men were killed, and returned half an hour later, reporting that the concussion of the explosion had resulted in a cave in 400 feet from it. The men strung out in pairs after entering the slope, those behind being ready at any moment to advance to the rescue of the leaders, should they be overcome by the deadly afterdamp of the explosion.

After a rest of a few minutes the men entered the Dip entrance shortly after 12 o'clock Sunday night in another effort to locate the bodies, if possible.

Afterdamp Overcomes Rescuers.

Reinforcements were needed to bring Frank Good, resident engineer, and Jack Graham, foreman of mine No. 6, to the surface alive, early Monday morning. They were members of the rescue party, which after a vain attempt to reach the bottom of the shaft from the slope entrance, started in the dip entrance, accompanied by Pete Bagley, Arthur Hodder, Bill Farrington and Harry Whiting. Their conditions were good until they had gone in 3,000 feet. Good and Graham, who were in the lead, here ran into the deadly suffocating afterdamp. Good was overcome and Graham dragged him to clearer air, on the fourth level, while others got out as best they could. F. R. W. Thomas, mine inspector, with George Morris, Nat Boose, Jos Barton and John Heathcock, brought both Graham and Good to the surface. A doctor was summoned and restoratives applied. They recovered in a short time but Hodder had to be taken home in a rig. The others of the rescue party were more or less affected by the gas.

Manager Claghorn received from Tacoma on Monday afternoon a Draeger oxygen apparatus, a helmet designed especially for entering gaseous mines.

Monday afternoon State Coal Mine Inspector Botting wired to the A.-Y.-P. exposition for W. O. Robeats and W. M. Barnett, the men in charge of the Draeger oxygen machines for the geological survey of the United States, government, to come over on the first train to help in the rescue work. They arrived late Monday night and were ready to go into the mine Tuesday morning, but the mine officials and the state mine inspector did not deem it safe and the forenoon was spent in testing for fire damp at the different fans and air shafts.

Union Votes Aii.

On Monday evening Earnest Cusworth, president of District No. 10, United Mine Workers of America, and John Wallace, secretary-treasurer of the district, called a meeting of the officers of the district and voted \$6,000 for immediate relief of the explosion sufferers. While the meeting was in progress a dispatch came from the national board informing them that they were sending \$500 to add to the amount. Mr. Cusworth and Mr. Wallace have

been here all week looking after the families of the victims and assisting in every way possible.

Rumble Heard Within Mine.

Tuesday afternoon a rescue party was formed to go into No. 1 slope, but on the way to the opening of the mine a very distinct rumble was heard, so distinct that Mr. Claghorn gave orders that the party could not attempt to go in before 10 o'clock Wednesday. This rumble was so audible at the mouth of the shaft and at the power plant that all the employees in and around the plant ran quite a distance to be beyond danger in case another explosion occurred. It is supposed this rumble was caused by a series of cave-ins in mine 4. This may be caused by timbers being blown out at the time of the explosion.

There have been some who have believed John E. Jones alive ever since the explosion, but the belief was not general. Even his father stated that he did not believe even a mouse could live in the shaft after the explosion.

Cause for General Rejoicing.

Tuesday afternoon Supt. John G. Green posted notices that all men thrown out of employment at the shaft would be given employment in the other mines and no one need leave here. The bulletin caused general rejoicing as it means much to the city.

Coroner Draws Jury.

With T. B. Wright, W. R. Jones, Ed Simmons, Wm. Browitt and T. Cadwell as jurymen, a coroner's jury was impaneled Monday. The inquest was postponed until 2 p. m. next Tuesday on account of lack of evidence. Evidence of the real cause of the accident

which is still a mystery, will be better determined after the investigation parties have reported. Coroner Wasson of this county, stated that he did not wish to hold the inquest until all possible evidence on the case had been procured.

Instances of Narrow Escape.

Many stories are coming to light of hair breadth escapes and of men who would have been at work in the shaft at the time of the explosion but for something they cannot explain preventing for a few moments. Tom Whiting, who has tended the mules in the mines for many years, decided to rest a few minutes before going into the mine, and while putting on his shoes the explosion came. "That rest saved my life," said Mr. Whiting.

John X. Jones a Hero.

Though burned almost blinded, John X. Jones, crawled on his hands away from the shaft where the explosion had occurred then rose and groped his way to the whistle, and blew it long and loud summoning help.

"I tend the hoisting engine at the engine house," he said, "and had gone out to speak to Isaackson on the tippie. I was about five feet from the mouth of the shaft when the flame shot up. I was knocked down, my head struck on some object and I was blinded for a moment. I crawled toward the engine house for some distance, then got up and called to someone to tend the engine. Then I blew the whistle."

Jones' hands and forehead were severely burned.

Funerals Held Wednesday.

On Wednesday the funeral of Wm. Arundel took place at his residence at 2:30 p. m., conducted by Rev. Thos. Wilson, and was under the auspices of the K. of P. lodge. Over 2000 union miners helped form the funeral procession besides the long line of vehicles and carriages.

At 10 a. m. services were held at the morgue over the remains of Jas. Gur-

rel and Otis Newhouse. The remains of Newhouse were shipped to Moundsville, West Virginia, accompanied by his wife, while the remains of James Gurrell were shipped to Red Lodge, Montana, accompanied by his wife and four daughters.

Widow Twice Bereaved.

Of the widows of the dead men, Mrs. Jas. Gurrell's case is one of the saddest. In a similar accident, on May 21, 1908, in a mine operated by T. F. McDonald, at Katalla, Alaska, her 22 year old son was killed. Her husband was also in the accident escaping with severe burns.

General Manager's Statement.

General Manager Claghorn said to the Cascade Miner Monday morning: "It is now impossible for me to estimate the extent of the damage done or the amount of loss in dollars to the Northwestern Improvement Company. I am glad to say the damage to the shaft is not as great as I anticipated. We can reopen the shaft in about six months, but will not rebuild the tower on the same plan as the old one. Our new shaft tower will be of steel and everything in connection with it thoroughly modern.

We certainly regret this sad occurrence as it is always our aim to make the mine safe. I cannot tell you the cause of this explosion beyond a theory, nor can anyone else until the mine can be examined. We are doing all we can for the unfortunate families. We expect to settle claims as soon as possible, in order to clean up the sheet. This accident to the shaft will in no way affect the coal situation of the state."

Mules Found Alive.

Thursday afternoon two rescue parties entered the mine, one party, headed by Dr. Botting, state coal mine inspector and General Manager Claghorn, and the other by R. F. W. Thomas. There were six men in one party and nine in the other. Mr. Claghorn's party entered by way of the dip and some of the old workings, and Mr. Thomas' party by way of No. 1 slope.

(Continued on next page)

EXPLOSION KILLS TEN

(Continued from 4th Page.)

Thomas' party were able to work through the drift that had confronted them on former occasions and quickly came to the carcass of a dead mule. Going on a little farther they were soon greeted by the vigorous braying of eight almost famished mules. Imagine their surprise to find the mules alive when they arrived at the mule barn. They were still further surprised to hear the weak mewling of a very hungry little kitten—the shaft mascot. The mules were quickly watered and fed and the party pushed on to within 200 feet of the bottom of the shaft and at this point the air became bad, and they were forced to turn back until better ventilation could be gotten into the shaft by repairs to blown out stoppings. The party turned back, not forgetting to very tenderly care for the kitten and bring it to the surface, and it is now at the home of Harry Whiting, and long before this went into print its story had been telegraphed by the Associated Press and the United Press, every daily newspaper in the whole world using press dispatches, and will be printed in many languages and different tongues. Roslyn has therefore one of the most famous kittens in the whole world, its story being written and sent out to the world by the editor of this paper.

Mr. Claghorn and Dr. Botting encountered many difficulties in their circuitous route through many old abandoned entries, often crawling through small openings almost filled with rock and debris, and were several times beaten back by bad air, but they never faltered. On the seventh level they came across an almost famished mule and he was taken to the surface on their way out. He was a sorry spectacle when brought out, but after a bath in warm water and a good feed he was a happy mule once more. At last the party came to a cave in they could not cross, and bruised and worn out they returned to the surface.

Thursday evening J. A. Holmes, chief of the United States Geological Survey of this district arrived, accompanied by H. M. Wolfland, an expert in the use of the Draeger oxygen apparatus, and at 11:30 that night a party headed by Dr. Botting, H. M. Wolfland and F. R. W. Thomas with six picked men entered No. 1 slope determined to reach the body of young Jones. This they did after many obstacles had been overcome about 1 o'clock Friday morning. Jones was killed instantly by the force of the

explosion just outside the pumping station and his body was badly burned.

The force of the explosion was terrific at this point. It required about two hours to improvise a litter and to send four men back with the body of Jones. They arrived at the surface about 5 a. m. and the body was sent to the morgue.

The next task was to try if possible to reach Pozarich and Tomach. To do this it was necessary to put on the Draeger apparatus and to make a dash for the 11th west, where they were supposed to be. No time was lost and Dr. Botting, Wolfland and Thomas donned the helmets and started. Stumbling, crawling and hurrying as best they could they reached a spot within about 4000 feet of where the two men were thought to be. Here they encountered a cave in they could not cross and as two of the machines are only good for one hour they were compelled to turn back.

These machines weigh 40 pounds each and become very burdensome when worn under difficulties. Tired and worn out, but happy that they had accomplished so much, they returned to the top when another crew was immediately dispatched to make repairs by closing up old stoppings so a strong current of air can reach the 11th west.

General Manager Claghorn and Superintendent Green remained at their post of duty during the night at the office at No. 2 to get reports over the telephone occasionally from the workers and to give directions and encouragement. They have hardly slept since the explosion and have done all in their power to hasten the recovery of the bodies of the entombed men.

General Supt. Anderson of the Pacific Coast Company, has also been here to consult with and aid Mr. Claghorn in every way possible.

Will Provide for Emergencies.

General Manager Claghorn said to the Cascade Miner man Thursday evening: "I have ordered for my company six of the two hour Draeger apparatus, also a number of the latest safety lamps and all of the other life saving apparatus we think practical from actual demonstration. We will as soon as these machines arrive establish a school and train squads in the use of the Draeger apparatus. We will make them thoroughly competent to handle this splendid rescue apparatus. We will also instruct men in the use of all our life saving devices and will have lectures and demonstrations on first aid to the injured. The school will be made thoroughly practical and we hope of great value to all concerned. I hope to never see a recurrence of this terrible tragedy, but they come to the best equipped mines in the world occasionally, and we expect to be so thoroughly equipped as to be able in the future to save life and property more quickly and efficiently than it has ever been done before. I believe the Draeger apparatus is a success and the United States government is doing all it can to demonstrate it from a humane point of view."

More Bodies Discovered.

After many difficulties and vain attempts to reach the bodies of Philip Pozarich and George Tomach a rescue party headed by Dr. Botting, H. M. Wolfland and John Corey succeeded in reaching the two entombed men on the 11th west, one mile and a half from the shaft at about four o'clock this morning, but were unable to bring them out. Another party will be sent in this morning to recover the bodies and bring them to the surface. Attention will now be turned to recovering the bodies of Dan Hardy and Dominick Bartelero who are at the bottom of the shaft under an immense amount of debris. The indications were that both men were killed instantly as the force of the explosion was terrific at that point and wrought great havoc. The cause of the explosion still remains unexplained. Funeral arrangements have not as yet been made for John E. Jones.

Joe Watson of the Kittitas valley came up to attend the funeral of Mr. Arundell. Mr. Watson has many friends here who are always glad to see him.

Winyard Steel Killed in Explosion.

Winyard Steel whose home is in this city was killed by after damp in the mine explosion at Ladysmith, B. C., the first of the week. His brother, Walter, went at once to the scene of disaster and will bring the body here for burial. Winyard was twenty-six years of age, and well known in this city where he lived for years. Besides Steele there were thirty-one others killed in the explosion.

Notice to Firemen.

Every fireman in the city of Roslyn is earnestly requested to be present at the Fire Hall on Sunday at 10 o'clock for the purpose of having their pictures taken for the Seattle Post-Intelligencer and the Cascade Miner. It is earnestly desired that every one respond to this call. The firemen of this city have done such meritorious work for years that these newspapers are glad to recognize the same, and will not only get a good picture of them if they will turn out, but will give them a good write up besides.

Notice.

To Whom It May Concern:

My wife, Felicitia Christiani, having without legitimate ground left my bed and board, notice is hereby given that any one extending her credit, will do so at their own risk.

[Signed] JOSEPH CHRISTIANI.

A. D. Olmstead is down from Galena this week buying winter supplies.

This has been a trying week for Supt. John Green and he has hardly taken time to eat or sleep. The heavy load of responsibility he carried last Sunday was enough to crush an ordinary man, but through it all Mr. Green gave his orders in a quiet and composed manner and with as much coolness and forethought as on an ordinary occasion. Though his heart was heavy and his face expressed the sorrow he felt so keenly, he never shirked a duty night or day, and has been on the job all the time. It is a crisis that Mr. Green never wished to see, but when it did come he proved himself master of the situation.

Mrs. C. R. Claghorn and little daughter came over the first of the week from Tacoma to be with her husband while he is directing the work of rescue and repair in the shaft. General Manager Claghorn has been foremost in leading rescue parties into the mines and has inspired zeal and confidence everywhere. He led by example, and the men willingly served their chief in many acts of heroism.

For bargains in Furniture call on Wm. Rees. He handles a complete line at the most reasonable prices.

For Sale or Rent—House and garden on Brookside Addition. Inquire of Adam and Stoves. O2—tf

W. Hunter of Defiance, Iowa, is here the guest of Mr. and Mrs. S. R. Gray, of this city. Mr. Hunter is well pleased with the west, and we hope he will decide to make this state his home.

J. W. Reynolds, of Defiance, Iowa, is visiting at the home of Mr. and Mrs. S. R. Gray. Mr. Reynolds has been visiting the A-Y-P. exposition and is favorably impressed with this country. He thinks, however, Iowa is a mighty good state and would hate to leave there for good.

Notice—Anyone having any claims against the undersigned are notified to present them at once for immediate payment.

JOSEPH MANUEL.

Robt. Maxwell has the only official views of the fire and explosion in city. For sale only by Robt. Maxwell.

Wm. Rees handles the famous Monarch Steel Range. Every range guaranteed. Buy no other.

Wm. Rees has a beautiful line of furniture. Call and inspect the goods before buying elsewhere.