

Thrilling Rescue Fourteen Days after Mine Cave-in

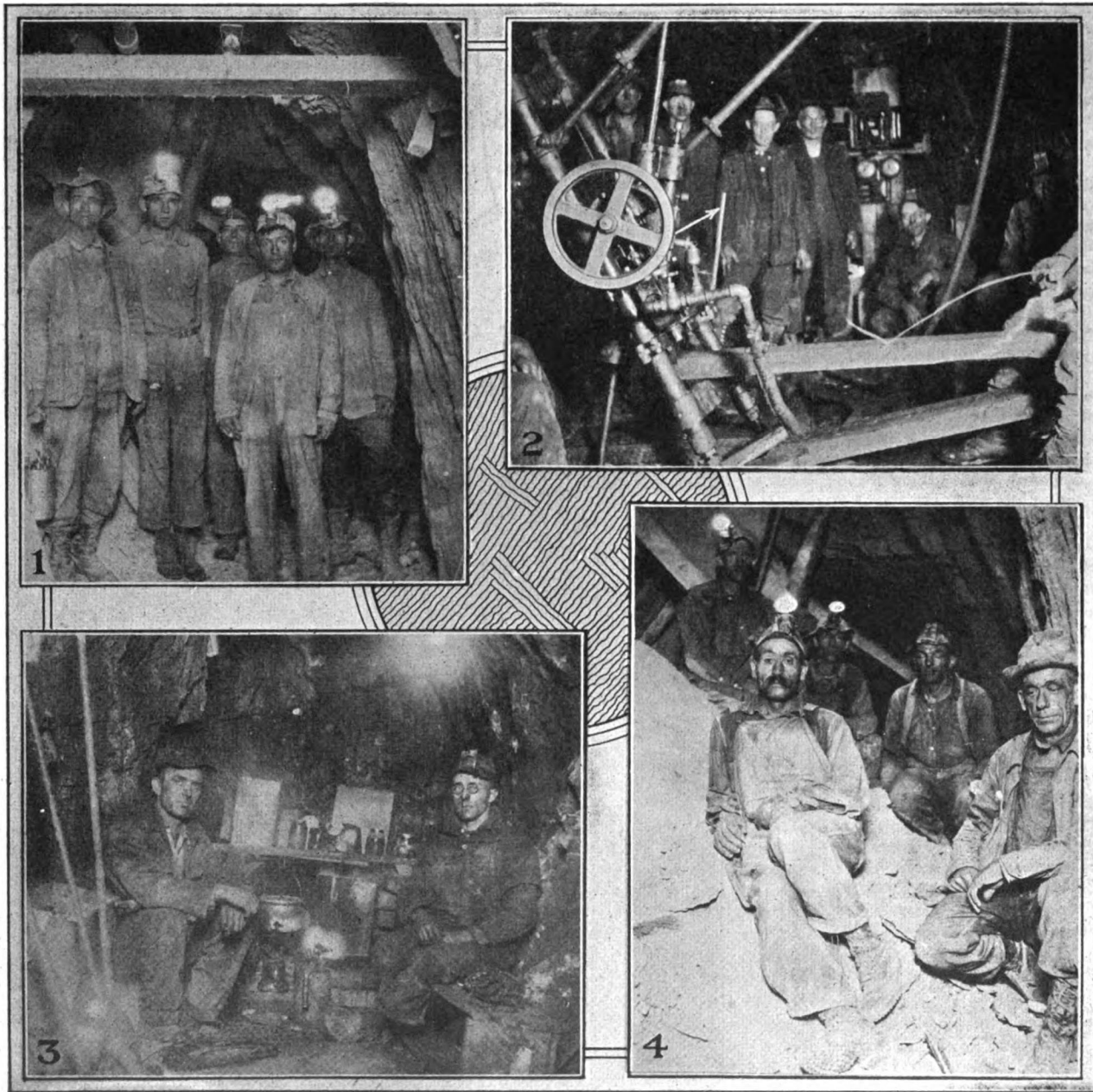


Fig. 1 shows part of the mine rescue crew. Fig. 2 shows the drilling equipment, the arrow indicating the pipe through which the soup was poured. Fig. 3 is a view of an underground kitchen where food was kept warm. Fig. 4 shows five more members of the rescue crew.

By WALTER E. CARR

ON NOVEMBER 15, 1919, Peter Grant and Emil Sayko went to their work in the Gold Hunter Mine, situated in the suburbs of Mullan, Idaho. They were cleaning up in what is termed the Northwest stope, preparatory to taking a contract. The Northwest stope is an extension of the old Ryan workings, which had caved in, in 1913, and were filled with broken rock and timbers to the 33d floor. There was, however, a chamber between the top of the muck pile and the roof, there being about 60 feet of solid rock be-

THE FOLLOWING NARRATIVE of how two men, Peter Grant and Emil Sayko, were buried alive for two weeks in a cave-in in a mine in the Coeur d'Alene district of Idaho presents a striking and realistic picture of a heroic effort on the part of the mine crews to reach their imprisoned comrades by several attempts to drive a raise through from the lower levels. It also serves to show the successful application of modern mine rescue methods which must have had for their inspiration the old proverb, "While there's life, there's hope."

tween the roof and the level above. The extension had not been worked for some time and these men were up on the top of this stope arranging to drive a raise 110 feet through hard rock to the level above.

The extension stope was timbered with square sets, one above the other, for 35 floors above the level. The timbers were carried close up to the back of the stope and the stope was filled with broken rock (excepting the space necessary for the rock chute, manway and timber chute) from the 3d to the 22d floor,

this being done as a safety precaution to hold the walls apart. From the 28th floor there was practically no stopping done, this part of the stope being more in the form of a raise. Running out from the 26th floor was a cross-cut in solid rock 48 feet long, which had been run to prospect the ground.

The men had finished their temporary work and were descending when they heard a sharp crack and felt the timbers give. Sayko returned for his carbide, which he had left above a short distance and when he returned to where Grant was waiting the timbers again began to move and crack and both men made a rush for the solid rock crosscut, which ran out 48 feet from the 26th floor, where they felt reasonably sure they would be safe. They barely had time to reach the crosscut, when down came many tons of rock, crushing the timbers of the extension or Northwest stope and blocking every exit and the men realized they were absolutely locked in from the outer world.

Every means was exhausted by rescue crews to reach them through the old workings, and every effort was in vain, as all openings were blocked with great masses of loose rock and timbers. A raise was started from a point which seemed to be a safe place and was headed towards a narrow part of the extension stope, but was soon abandoned, owing to every movement being hampered by loose rock. Another raise was started in another section which was also loose muck, but proved to be very discouraging.

In the meantime a diamond drill had been rigged up and a contracting firm in Spokane furnished the crews, the men arriving in the shortest possible time. The diamond drill was started on November 21, directly above the old Ryan stope and a hole was put through the 60 feet of solid rock in fifteen hours.

The men were alive, as those listening and carrying on signals, could hear faint replies from time to time.

About this time, the Bureau of Mines, at Washington, was requested to furnish a new device for detecting sound underground, known as the geophone. The department immediately made reply and sent two men as well as the apparatus for the work and they arrived as quickly as steam could bring them. This was indeed encouraging to the management and the tireless crews of men struggling to reach the entombed miners through the raise in the muck. This raise was continued for six days, reaching about the 24th floor, when the whole muck pile moved, closing in two men, Jack Delmarh and James Collins, of the raise crew.

It was hardly reasonable to expect that these men would remain alive, in view of the fact that they were caught in such a great mass of material, but such was the case and they were rescued after about fifteen hours' imprisonment.

It was necessary, of course, to abandon this work, but in the meantime, the diamond drill had broken through into the old Ryan stope and communication had been established with the entombed men and water and hot soup had been given them. All this time, however, they

were exposed to the dangers of caving ground in the old Ryan workings.

The entombed men afterward stated that they heard a dripping of the seepage from the drill hole, and hastened in the direction of the sound and caught the water in their lunch buckets—the first water they had tasted in four days.

When the hole was drilled, the drillers pushed a $\frac{1}{2}$ -inch galvanized pipe through the hole which struck Grant on the head. He immediately grabbed the pipe and gave it a hard shake, which conveyed to those on the surface the information that they had reached the entombed miners. To give an idea of the careful method of procedure, a whistle had been attached to the end of the pipe to signal the men, in the event they had not been attracted by the sound of breaking through the drill hole. This was removed and parties above and below soon were in communication.

The first request made was for a light and a wire was passed down on the outside of the pipe, with a two-candle power lamp attached, the lighting power being furnished by a storage battery. Hot water was poured through the pipe to warm it, and then soup, milk, and other supplies, were delivered to the hungry men. Many yards of a fine silk fabric was passed through the hole for the men to use in wrapping their bodies to keep them warm. Soon another hole was drilled and reamed out to two inches. Metal receptacles were made $1\frac{1}{2}$ -in. in diameter and 24 inches long, which were filled with chopped vegetables, meat and fruit. These receptacles were pointed on one end, with a screw eye soldered into the point, the other end having a loop of wire soldered on in the form of a bucket bail. Under this bail-like loop was the stopper, which sealed the hole through which the receptacle was filled. After being filled they were tied together by means of fine wire being run through the screw-eye of one and through the wire loop of another and fastened until a long chain of these receptacles was formed and then this chain was lowered through the hole.

The reason for pointing the tins was to avoid any wedging in the hole, which might occur, if the lower end had been left square. The square end would hang up much more readily, on rough points of rock in the drill hole, should there be any broken up ground encountered when drilling the hole. A large number of these receptacles and long, round loaves of bread, which had been wrapped in waxed paper, were lowered through the large hole. Fearing the caving condition of the ground, enough food and water were lowered through the holes to last the men two weeks and they were instructed to carry the food back into the rock crosscut on the 26th floor of the extension stope. With a sufficient quantity of provisions, candles, and other supplies, the men were made quite comfortable.

By this time, another raise was progressing rapidly through hard rock, the rescue crews using the most powerful and latest type of stopping drills and it was advisable for the entombed men to remain where there was little danger of the ground caving, owing to the frequent blasting in the rock raise.

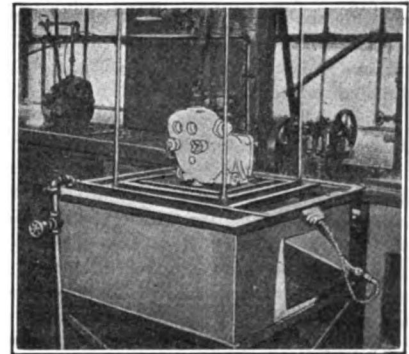
This work continued with the greatest efforts being made for speed, both day and night, by six-hour shifts, until on November 29, at three o'clock in the afternoon, the raise was finished, 90 feet having been driven through hard rock in seven days. The men were rescued, after being entombed for 14 days and four hours.

Before being taken above ground, their eyes were bandaged and then they were rushed to the hospital at Wallace, where were facilities to permit every attention being given to the two men. They were apparently feeling quite well, considering their experience. The wives of these men, it should be noted, deserve much credit for the encouragement they provided their husbands after communication had been established.

It is gratifying to note how the entire resources of the district were thrown open to assist in the rescue, and how the tireless crews were always ready to take their shift.

AIR-TESTING AUTOMOBILE ENGINE CYLINDERS

Mr. Fred H. Colvin in *American Machinist* describes with careful detail the various special equipment and the operations involved in the manufacture of automobile engine cylinders.



The testing tank

When the work upon a cylinder is approaching completion, the extraneous metal having been removed and the surfaces made ready for the finishing, it is necessary to make sure of the air-tightness of the casting as a whole by subjecting it to a sufficient internal pressure, and for this purpose special arrangements have been devised as here shown.

There is here seen a tank filled with water with a vertically movable horizontal rack upon which is placed the cylinder to be tested. The various openings of the cylinder are properly capped and an air hose is connected which applies the necessary pressure. The rack being counter-balanced to compensate for the weight of the cylinder it is easily lowered into the tank until the cylinder is entirely submerged when if there are any leaks they will be immediately revealed by the escape of bubbles of air up through the racks. At the side of the tank is a carefully hooded incandescent light which shines through a glass plate in the side of the tank so that the smallest bubbles are instantly revealed. It is not stated how many air leaks are thus discovered, but certainly enough to make the test indispensable.