Canaries to Curb the Menace of the Mines

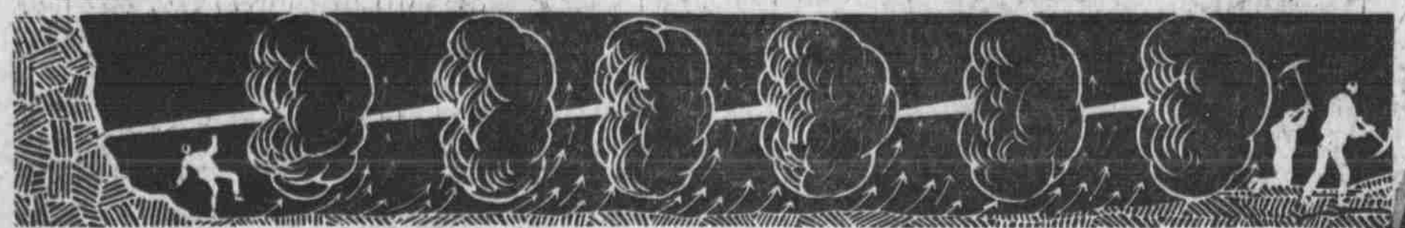
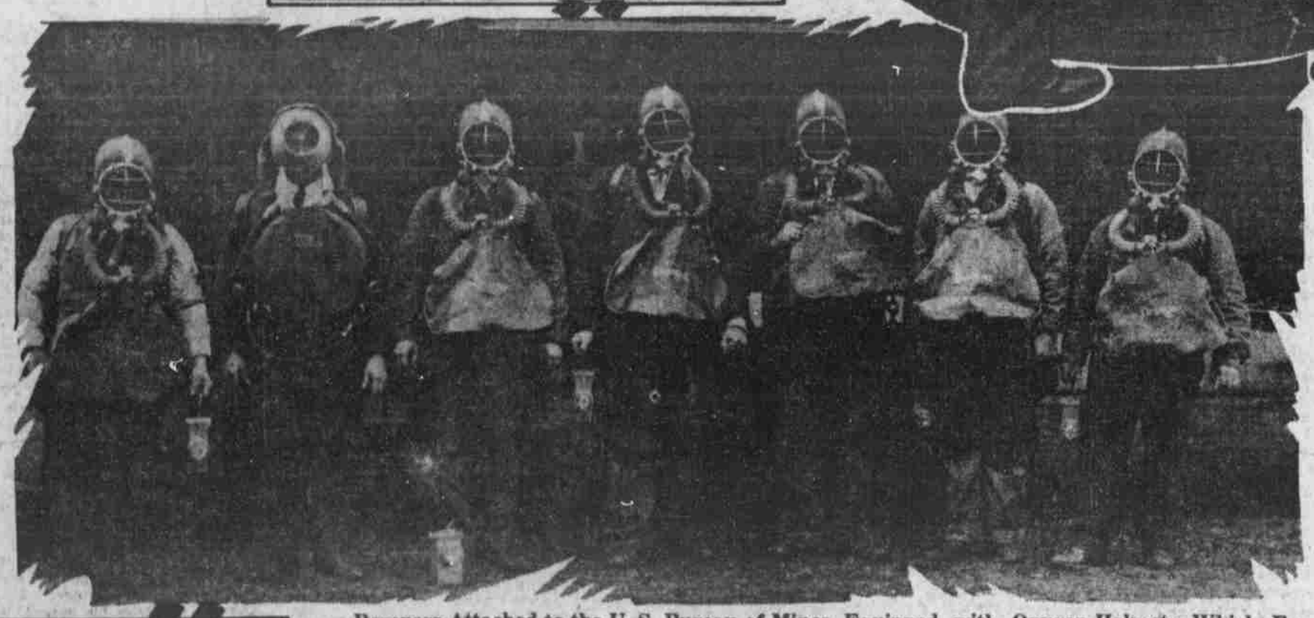


Diagram Showing Why a Mine Explosion Is in Reality a Number of Extremely Rapid, Successive Explosions. A Dynamite Charge "Backfires," Exploding the Coal Gas in the Chamber. This Explosion Creates a Violent Current of Air, Which Displaces More Coal Dust, Which Is Fired by the Preceding Explosion. This Process IsRepeated with Deadly Rapidity Throughout the Passage, Sometimes for Six and Seven Miles.

How the Little Birds Save Hundreds of Lives Each Year by Acting as Gas-Alarms in the Poisoned Underground Passage-Ways

A Canary Which Has Been Overcome by the Deadly Fumes in the Course of Rescue-Work. The Bird Is Taken Back Through the Underground Passages Until It Reaches a Spot Where It Regains Consciousness, and Thus Denotes the Safety of That Point.



Rescuers Attached to the U. S. Bureau of Mines Equipped with Oxygen-Helmets Which Enable Them to Enter Gas-Filled Mines.

Taking a Canary Life-Saver Into the Depths of a Coal-Mine. By Observing the Effect of the Atmosphere on the Canary, the Rescuers Are Enabled to Locate Havens of Safety in Which to Bring the Victims Rescued.

CANARIES save about 800 human lives a year. They are the chief reliance of the United States Bureau of Mines in the rescue of entombed coal miners whenever a mine disaster occurs. During the few years they have been used in this work more than 5,000 lives have been saved through their use.

All coal mines are full of coal dust. Dust of any character that contains carbon in certain forms will explode. Flour dust frequently causes explosions in flour mills, but the explosions caused by coal dust are perhaps the most common examples of this disastrous phenomenon.

For a long time miners refused to be convinced that coal dust would explode. The mine disasters which were costing several thousand lives every year were attributed to other causes. Since the real menace of the mines has been ascertained, however, it has been less difficult to train miners how to proceed to prevent explosions and how to act when they occur.

Only anthracite coal dust explodes. Such explosions are caused by what miners call "blowouts." A miner drills a hole in a vein of coal and tamps in the charge. The explosion which follows is expected to break up the coal, but sometimes, instead of the coal breaking, it holds firm. Then disaster follows. The plug flies out of the boring and is followed by a long tongue of flame that licks into the coal dust and causes the explosion.

If the explosion were confined to the immediate vicinity in which it occurs, the damage done might be inconsiderable, but such, unfortunately is seldom the case. The explosion usually develops a great wave of air which stirs up the coal dust throughout the mine and starts a series of explosions which may travel through the underground passages for four or five miles, carrying death to hundreds of workers and destruction to thousands of dollars' worth of property.

After an explosion comes the deadly "coal damp" or "black damp," which rapidly brings death to every living soul in the mines who escaped the force of the original explosion.

To rescue miners from the after perils of these explosions is one of the principal functions of the United States Bureau of Mines, which was organized after the terrible disaster in the Monongah mine, in West Virginia, in 1907, in which 356 men were killed.

So effectively does this bureau work that the average annual death toll in the mining industry has been cut down from some 3,000 to 2,000, or from seven men for every million tons to 4.29 men for every million tons.

Without the canaries, however, this work of rescue would be practically out of the question. At any rate, it would not be nearly as effective.

When there is an explosion or a cave-in at a coal mine and miners are entombed, word is immediately sent to the Federal Bureau to rush to the scene of the disaster one of its specially equipped life-saving railway cars. These cars are stationed at various central points throughout the country in the different coal regions. The car crew is assisted in the recue work by a mine rescue corps which is attached to every mine. Each corps consists of six men equipped with an oxygen helmet resembling that worn by deep-sea divers. This apparatus includes a tank strapped to the back of the rescuer carrying oxygen enough for two hours and a cartridge of caustic soda strapped in front to take up the poisonous gases from the breath of the wearer.

Upon arrival at the mouth of the mine where a disaster has occurred the first thing the rescue crew does is to look after the miners who have managed to crawl to the surface, injured or otherwise, and to administer first aid. A part of the life-saving crew attends to this particular line of work while the others try to penetrate the mine in an effort to reach the unfortunates buried beneath the surface, many of whom are probably overcome by the fumes of the deadly "coal damp."

It would be next to impossible for the rescuers to go into the mine and drag individually to its mouth every miner who had been caught in the rush of coal gas throughout the four five miles of passageways involved in the disaster.

As a matter of fact, there are various points in the passageways where the air is pure, and if the victims could be dargged to them there would be no necessity to carry them further. The difficulty which rescue parties invariably encountered before the Bureau of Mines used canaries was in locating these pure-air spots, their oxygen helmets which they themselves wore making it impossible for them to observe the difference in the character of the atmosphere.

The leader of the rescue party however, is now equipped with an ordinary brass bird cage in which a wide-awake canary hops.

This canary is kept in good humor during the trip to the mine and every effort is made to keep it active. The bird is taken into the mine under the ever-watchful eyes of the leader of the rescue party. As long as the bird continues to chirp and hop about in the cage the rescue party continues on its way.

Just as soon as the bird's activity begins to waver, however, the progress of the party is halted. The leader tightens his helmet to make sure that no breath of the death-carrying "coal damp" gets into his lungs. The fact that the canary begins to feel "wobbly" is an indication that the air is impure, and that such victims as they find will have to be carried to a point beyond the one in question if they are to recover.

The party retraces its steps slowly, carefully watching the physical condition of the bird in the cage, until they reach a spot where the bird revives. Here one of the rescue party is left with the bird to refresh it with his oxygen supply and to await the return of the rest of the party with such victims as they may be able to find.

The rescuers then proceed, minus the bird, penetrating into the farthest depths of the mine until they come upon entombed workers. The caught miners, usually unconscious, are carried to the point where the canary, again apparently perfectly lively, is stationed with the rescuer who had been left behind and such other volunteer rescuers who by this time have located the underground haven of safety. The victims are taken to the surface, where they are taken in charge by the doctors and first-aid corps attached to the Bureau of Mines, who apply the pulmotor, if necessary, to revive the only a few feet into the mine, although by actual experiment it was found that the atmosphere was pure. The mouse was just sulky, and its sulkiness made it useless for the purpose of the rescue party.

The canary, on the other hand, remains cheerful and active as long as his physical condition is sound. All that he requires is pure air.

Then the volunteer rescuers rush back to the spot where the canary remains stationed and haul out, one by one, the miners brought to them by the oxygen helmeted rescuers. This work is continued until the rescue crew is satisfied that all of the miners have been taken out.

If at any time in the course of the rescue work the canary again gives evidence of being affected by the atmosphere in the mine, he is moved back to a point where he revives. When the "job" is finished, the bird goes back to the mine car to be petted and kept in good physical condition until another catastrophe brings in an emergency call for his services.

Canaries were chosen for this work after other animals were found to be incapable for it. At first the bureau tried mice. It was found, however, after several experiments that the little creatures were too unreliable. They are inclined to be sulky at times, even when in good physical condition. Sometimes the life savers found their little mouse keeled over in his cage when they had penetrated When that is denied him, he quickly [illegible]s. For these reasons he was selected as the very best subject for this kind of work, and the success with which he has been used resulted in his being made a permanent and most valuable addition to the rescue staff.

There are some 750,000 coal miners engaged in the mining industry in this country. Over 500,000,000 tons of coal are produced annually. In 1907, before the Bureau of Mines took up the rescue work in mining catastrophes, some 3,197 miners were killed, and that was about the annual average. Now the annual toll seldom exceeds 2,000.

In the bituminous mines most of the disasters are caused by cave-ins and explosions of gas, but in the anthracite mines coal dust explosions are responsible for the greatest loss of life and property.

In addition to the use of the canaries, various other precautions are now taken to minimize the loss resulting from such catastrophes. There are at least two methods now being generally employed in an effort to prevent coal dust explosions.

One of them involves the use of stone dust. This dust is laid on shelves, from which it is raised by the air waves created by the explosions. Disturbed in this way it forms a sort of screen and in some degree prevents the further spread of the explosion.

The use of the "humidifier" is similarly relied upon to some extent to minimize the dangers of the mines. This apparatus consists of an electric fan which converts steam into vapor. This vapor or fog is carried into the mine by air currents and coats each particle of coal dust with dampness, making the dust less liable to explode.

But despite all that can be done in a preventive way, coal dust explosions are bound to occur from time to time, and the lives of the miners will still be dependent upon the little canaries used in the work of rescue.

Using the Pulmotor to Restore a Victim of a Coal-Mine Explosion Who Had Been Brought to the Surface Through the Use of a Canary Life-Saver.

When Ancient Greece Had the Cabaret Craze

THERE is nothing new about the "Cabaret Craze." Some ancient Greek vases now prove that so long ago as the time of Homer, one thousand years B. C., the Greeks had their cabarets and indulged in music and dancing at their meals, just like any of the most up-to-date New Yorkers.

In fact, eating played a great role in the political life of the Greeks, for it was at the table that many of the problems of the Greeks were solved, even while the more thoughtless indulged their palates or joined in the singing and dancing.

It was especially at the nuptial feasts that the cabaret feature was most in evidence. There was something of the religious and symbolic at the same time in these nuptial feasts. There was first a sacrifice to the gods and goddesses of marriage: Zeus Teleios, Hera Teleia, Aphrodite, Peitho and Artemis.

The dinner was spread in the home of the father of the bride. The tables were arranged in a special way, there being four tables for the women and six for the men. When all the guests were seated the bride was brought in, heavily veiled, and seated among the women. The father of the bride and the groom sat facing the bride's table.

During the banquet libations of wine were poured out and songs in honor of the marriage, called epithalamia, were sung. During the festivities a boy, whose parents must both be alive, circulated among the guests bearing a basket filled with bread-rolls, chanting, "I have fled all evil; I have found the best."

Towards the end of the feast the bride was unveiled, this being the first time that the young woman had exposed her face before men. Dancing and singing ended the repast, all taking part in the exercises. Even death-feasts were held by the Greeks, who celebrated the departure of a great personage for Hades by a feast, and observed the anniversaries of his death in the same way.

Cabaret Performance Shown on an Ancient Greek Vas-

Cabaret Artists at a Fashionable Greek Wedding.

Entertainers at a Stag Party in Athens.