

## MINING

# Coal Mines Can Be Safer

**Men, money, and enforcement of safety regulations can prevent mass loss of lives in mines. Falling roofs and explosions cause most fatalities.**

► THE NATION'S coal mines can be made safer, but it is a job which will need men, money and stricter enforcement of mining safety codes.

Safety in coal mining means primarily good ventilation, the prevention of mine roofs from falling, dust-laying, and the use of proper explosives, handled only by experts, in the necessary blasting to loosen the coal from its seams. There are other necessary steps, but these are the most important.

Falling roofs in coal mines cause more fatalities each year than any other type of accidents. They are prevented, or at least lessened, by what is known as timbering or shoring. This means the placement of supporting columns in newly excavated cavities as rapidly as the cavities are made. It is an expensive job, requiring much skill, labor and timber. Constant inspection must be made to see if additional timbering is needed. Even with the best of shoring some roof falls are apt to occur. Men are sometimes injured also by debris loosened from the walls or faces on which the miners are working.

## Explosions Rank Second

Explosions rank second as causes of mine fatalities. They may be of gas or of very fine coal dust. Ventilation is the method by which the explosive gases are removed, and ventilation also removes much of the coal dust that is suspended in the air. Powerful forced ventilation is required. Under the government mining safety code, giant blowers are stationed outside the mines to force fresh air down special conduits into the mine and to each group of miners. Separate conduits remove the foul air, together with any gases that have collected and with the suspended coal dust.

Settled dust, on the walls and roofs of coal mines, is often worse in an explosion than the minor amount of suspended dust in a properly ventilated mine. The shock waves that result from what might be a minor explosion drives this settled dust into the air where it in turn adds to the explosion.

Rock dusting is the best known preventive. Rock dust is a noncombustible,

specially treated pulverized limestone that is applied to the walls and roofs close behind where miners are working. It prevents the accumulation of dust on the surfaces. While limestone dust alone is sometimes used, a more modern practice is the use of a limestone dust that has been so treated that every tiny particle of it is coated with a water-resistant material. Such dust is sometimes scattered by automatic devices in the air ahead of an approaching explosion, in which case it is often effective in halting progress of the explosion.

The present federal mine safety code for bituminous coal mines, which most states now recognize, was prepared by the U. S. Bureau of Mines, representatives of the coal industry and the United Mine Workers of America headed by John Lewis. It was approved by the Secretary of the Interior on July 24, 1946. It is a code to guide mine operators; its enforcement ordinarily rests with state and local authorities.

While the coal mines are under federal administration, the head of this ad-

ministration probably has the necessary authority to enforce compliance with the code, but does not have the necessary staff. The functions of the Bureau of Mines cover inspection and the reporting of code violations only, and it needs a staff of 250 men, compared with 167 last year and additional inspectors called for in appropriations for the fiscal years 1946 and 1947. The job of this staff: inspecting the 7,000 regularly producing coal mines in the United States.

*Science News Letter, April 12, 1947*

## PATHOLOGY

## Atomic Fission Products Damage Brain Tissues

► BETA RAYS, which are among the products of atomic fission, can do serious damage to the tissues of the brain, Dr. Rosalind Novick of the University of Minnesota School of Medicine reported before the meeting in Montreal of the American Association of Anatomists.

She had made a close examination of injuries done to the brains of cats by beta rays given off by radium. The injuries were in sharply limited spots, with zones of decreasing severity as the distance from the ray sources increased. At the center there was dead tissue, then a zone of shrunken and darkened nerve cells, then cells that were acutely swollen, and finally uninjured tissue.

*Science News Letter, April 12, 1947*



**MECHANIZED MINING**—American coal miners use machinery electrically operated such as the machine cutter shown in the picture. Loosened electrical connections, or sparking caused by dust collection in the machine may cause explosions.