ENGINEERING

New Coal Mining Machine

➤ A NEW machine, now under successful development, to cut bituminous coal in the natural layers found in mines and load it on conveyors, gives promise of revolutionizing the coal mining industry.

It is known as the continuous mining machine and is a development in Huntington, W. Va., of the Mining Development Committee of Bituminous Coal Research, Inc. The committee of engineers and scientists has been at work for two years since organized March 30, 1948. It is headed by Gerald von Stroh, and its job is to develop machinery for use in mines that will lessen the cost of mining. This continuous mining machine is its initial project.

Many machines of various types and for various uses are already in use in American coal mines. Some are undercut devices to eat a channel into the face of the coal to make blasting easier. Others are powered drills using compressed air instead of the muscles of men. Still others are loaders to pick up the coal and put it on the conveyors that take it on the initial part of its trip to the surface. It is these machines, and others, that are behind the high production rate per man per hour in American mining.

The new machine does all these things at the same time. The story of its development is included in a report issued by the responsible group. Somewhat similar machines have been developed by others and are under testing. Historically, a machine to do the same work was built and used in England for a short period about 80 years ago.

This new continuous mining machine can mine seams as low as 28 inches in thickness. It is 28 inches high, including four inches of ground clearance. Powered electrically, it employs rotors to do the cutting. Although a complicated device, with it one man can do the work which formerly required several, and safety is promoted by the elimination of explosives for blasting.

Cheaper coal should result from the use of continuous mining machines, Mr. von Stroh asserted at a recent mining meeting. If developments are maintained at the present rate, he said, cost reductions from one dollar to one and one-half dollars may be expected in the next 10 years.

Science News Letter, July 15, 1950

ENGINEERING

Safer Waterpower Project

➤ HUGE underground waterpower projects of the future will be virtually invulnerable to bombing, perhaps even to atomic attack, a U. S. engineering meeting was told in Pasadena, Calif.

It is often economically sound, even in peacetime, to build water power stations deep underground, the American Institute of Electrical Engineers heard.

Two officials of the State Power Board of Sweden, Ake Rusck and G. Westerberg, described underground hydroelectric stations already built in Sweden as the answer to power needs on rivers where high dams cannot be built.

These underground stations were built for purely economic reasons, many of them long before World War II, the Swedish engineers pointed out. Higher water pressure was achieved, while upkeep on machinery rooms set in solid bedrock is much lower than above-ground power plants, they said.

"The safety attained thereby in time of war was a welcome extra advantage," their paper pointed out. By placing the turbo-generators and other machinery into deep rock rooms (the rock blasted out was used to fill the dams) the vital heart of the power installation was made virtually immune to air attack.

In a second paper on underground power plants, Paul E. Gisiger of Sao Paulo, Brazil, described a number of other installations already built or under construction in France, Switzerland, Italy and Sweden.

Science News Letter, July 15, 1950

PHYSICS

Radio Stars Send Signals From Sky's Depths

➤ RADIO stars (not the kind that appear on radio programs) exist in interstellar clouds and are the origin of the radio signals that are known to come from the depths of the sky.

This new theory has been put forth by Drs. H. Alfven and N. Herlofson of Sweden's Royal Institute of Technology in a report to PHYSICAL REVIEW.

The probable sources of heavenly radio waves are relatively large regions around almost dark stars. One of the latest theories of cosmic rays, suggested by Drs. R. D. Richtmyer and Edward Teller of the University of Chicago, makes almost every star have a field that traps the cosmic radiation that it generates. The Swedish scientists now visualize the electrons from this cosmic radiation creating the radio emissions that get to earth.

The radio stars emit very little light and are situated in interstellar clouds. They cannot be seen with ordinary telescopes. Unlike visible stars, they consist of a broad region in which radiations are produced. A typical radio star might be so large that it would take light a tenth of a year to cross it.

Science News Letter, July 15, 1950

GEOLOGY

U. S. Uranium Sufficient For Tomorrow's Industry

➤ URANIUM for tomorrow's industrial atomic energy can come from present-day U. S. deposits of fertilizers and oil shales, an Atomic Energy Commission geologist said in Los Angeles, Calif.

Dr. Robert J. Wright, in a speech before the Southern California section of the American Institute of Mining and Metallurgical Engineers, confirmed recent hints that Government teams have found large, low grade uranium reserves in this country.

There are "abnormally high concentrations" of uranium in deposits such as Florida's rich phosphate beds and the Chattanooga oil shale of the east-central United States, Dr. Wright said.

The world's uranium supply now comes from high grade, comparatively small pitchblende veins and carnotite ores. "It is impossible to predict how long the high grade reserves of uranium will hold out," said the AEC geologist.

He indicated, however:

1. Recent Canadian discoveries of rich uranium ores point to increasing output there.

2. New discoveries of pitchblende have been made in U. S. mines operated for other metals, as in the abandoned Caribou silver mine in Colorado in 1945 and in Idaho's Coeur d'Alene district last summer.

3. In at least two places, the small town of Marysvale, Utah, and in Portugal, it has been shown that secondary uranium minerals on the surface were hints to rich veins of radioactive ores deep underground.

The profitable utilization of each of these potential uranium sources Dr. Wright termed "a challenging problem for industrial science."

Science News Letter, July 15, 1950