MINING

Coal Gas by Electricity

Fuel gases may now be obtained from unmined coal by sending an electric current through the coal as it lies underground.

➤ FUEL gases from coal as it lies underground in its natural seams have been successfully obtained by sending an electric current through the coal, the University of Missouri revealed in Columbia, Mo. The accomplishment was made near Hume, Mo., on property and with the cooperation of the Sinclair Coal Co.

As described by Dr. J. D. Forrester, chairman of the university's mining department, the process consists of making drill holes from the surface into a seam of coal lying below. Iron pipes are inserted into the holes to serve as electrodes. Connected with the electrodes is a series of pipes a few feet above ground through which the gas flows when it is generated.

A current of considerable voltage, controlled by a water rheostat, is sent down through the electrodes into the seam. In the process of passing through the coal and overcoming its electrical resistance, the coal is heated and begins to give off oil-saturated gas. This gas comes to the surface through the pipes that serve as electrodes. These pipes are 20 to 40 feet apart.

After the coal bed becomes sufficiently heated so that it will burn and yield other gases, the electric current is stopped and air or oxygen is pumped into the coked and porous coal seam to sustain further combustion. This continues the supply of gases from the actual gasification of the underground coal.

The gases produced by this so-called electrocarbonization process can be used as raw material from which to make synthetic gasoline, or can be converted into a heating fuel. The gas produced is similar to the coke furnace gas of surface plants. Field tests were preceded by laboratory experimentation during which it was proven that coal can be turned into gas by an electric current. Both laboratory and field work was done by Erich Sarapuu, a research fellow of the University's School of Mines and Metallurgy.

Several test runs on coal layers have been made during the past year. Some oil-tar has been collected at Hume along with the gas. In addition, laboratory investigation with oil-sand has resulted in the production of crude oil, as well as gas.

Fuel gases from underground coal are being successfully obtained by the U. S. Bureau of Mines in experimental work at Gorgas, Ala., in a joint project with the Alabama Power Company. No electric current is used, however, in the gasification process. Underground burning is employed.

Two holes are sunk into the coal seam, and fire started in one by use of an incendiary bomb. Air under pressure is forced in to feed and spread the fire, and the gases of combustion are driven by the same air pressure to the second hole from the top of which they are captured. Somewhat similar work is being done in several European countries, particularly in Russia, where the scheme is said to have originated.

Electricity is used, however, in an oil-recovery process from oil shale in Sweden. A deep hole is drilled into the underground layer of shale, and an electrical heating element is lowered into the hole. The oil from the shale is driven off by the direct heat generated.

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MEDICINE

TB Helped by New Streptomycin Treatment

A METHOD of using streptomycin that may make the mold chemical more useful in treatment of tuberculosis has been discovered by Dr. Roger S. Mitchell of the Trudeau Sanatorium.

The usefulness of streptomycin, he points out, is "seriously limited" by the fact that the TB germs often develop resistance to the drug early in the course of treatment of a patient. This makes the drug less effective as a remedy.

Doctors can avoid this, he believes, if they do not start giving the drug to patients with a cavity in the lung until the lung has been collapsed long enough to have a "satisfactory relaxing effect" on the cavity-bearing lung.

He bases this theory on the finding that streptomycin resistance rarely developed in the germs from patients who had no X-ray signs of cavities in their lungs before streptomycin treatment was started. Following this observation, a special study was made of 100 patients who still had TB germs in their sputum after the streptomycin treatment was completed. In 51 patients who had cavities and who did not get satisfactory lung collapse before streptomycin was started, 20, or 40%, had in their sputum, germs which were resistant to streptomycin at the end of the treatment.

But when no cavity was present at the start of the treatment, resistance to the drug developed in only three, or 11%, of 29 patients. And when cavity was present and satisfactory collapse of the lung established just before streptomycin was started, drug resistance developed in only two, or 10%, of 20 cases.

Although in some cases doctors may not wish to delay starting streptomycin treatment, Dr. Mitchell suggests that in the light of his observations on the patients, the value of utilizing at the same time the mechanical effects of collapse treatment with the effects of the drug on the germs "should be seriously considered."

Details of his study are reported in the NEW ENGLAND JOURNAL OF MEDICINE (Sept. 22).

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GASIFICATION TEST—Gas is escaping from the pipe sunk into the coal in the production of fuel gases from unmined coal by the use of electricity. This method eliminates the "cost of mining" factor.

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