GEOLOGY

Bacteria May Have Helped In Formation of Anthracite

German Scientist Speeds up Geologic Process and Produces Coal in Laboratory in Little Over Two Years

MICROSCOPIC "bugs" are working more than three thousand feet deep in the earth to revise those parts of the schoolboy's textbooks that tell how coal was formed, while up on the surface cousins of the deep-dwelling bacteria, also new to science, are being made to take the poison out of illuminating gas, change hydrogen and carbon monoxide into acetic acid and the acid into methane gas, and to do for the research chemist many other strange tasks that may grow into important industrial processes. Thus may be summarized reports of some of the latest scientific investigations presented at Pittsburgh before the Third International Conference on Bituminous Coal, by prominent scientists from Germany, one of whom is Dr. Franz Fischer, director of the Kaiser Wilhelm Institute for Coal Research in Berlin.

Old Idea Crumbling

The widely held belief that coal was formed from ancient plants which, during geologic periods of time, first turned to peat, then to brown coal, then to soft coal and finally to hard coal under the pressure of thick strata of rock, is crumbling, according to Dr. Fischer. Coal was made from ancient plants, all right, but scientists have overlooked the part that bacteria had in its formation, he holds.

According to this view, which has been shaping itself for a number of years, hard coal did not necessarily have to become consecutively peat, brown coal and soft coal before assuming its final form. It might have been made in this fashion and probably often was, but if the right plant substances and the proper kind of bacteria were present the plant matter, with the help of the microorganisms, could have turned into hard coal, or any other kind except peat, by a short-cut method.

"Living bacteria may be found not only in brown coal deposited at shallow depths, but even in bituminous coal at depths of more than three thousand feet," Dr. Fischer said. "Whether these bacteria are still causing a further change in the coal cannot be answered immediately. However, since they are living they must acquire energy for certain processes of metabolism . . ."

By way of studying further the new theory of coal formation, Dr. Ernst Terres of the Institute of Chemical Technology at Charlottenburg speeded up in his laboratory the geologic age-long process of making coal to just a little more than two years. Dr. Terres said that he fermented peat moss and then heated it under pressure to make artificial brown coal. He agrees with Dr. Fischer in part, concluding that the plant substance lignin, not cellulose as is generally believed, is the material from which peat, brown coal and some bituminous coals are made.

Inspired by experiments with bacteria from coal mines, Dr. Fischer put some of their cousins from sewage sludge into an atmosphere of hydrogen and the poisonous gas carbon monoxide. Later he found that the carbon monoxide and hydrogen had disappeared, to be replaced by water and methane, an illuminating gas. Dr. Fischer noticed that in changing the poison, the bacteria formed an intermediate product, acetic acid, which is the stuff that makes vinegar sour.

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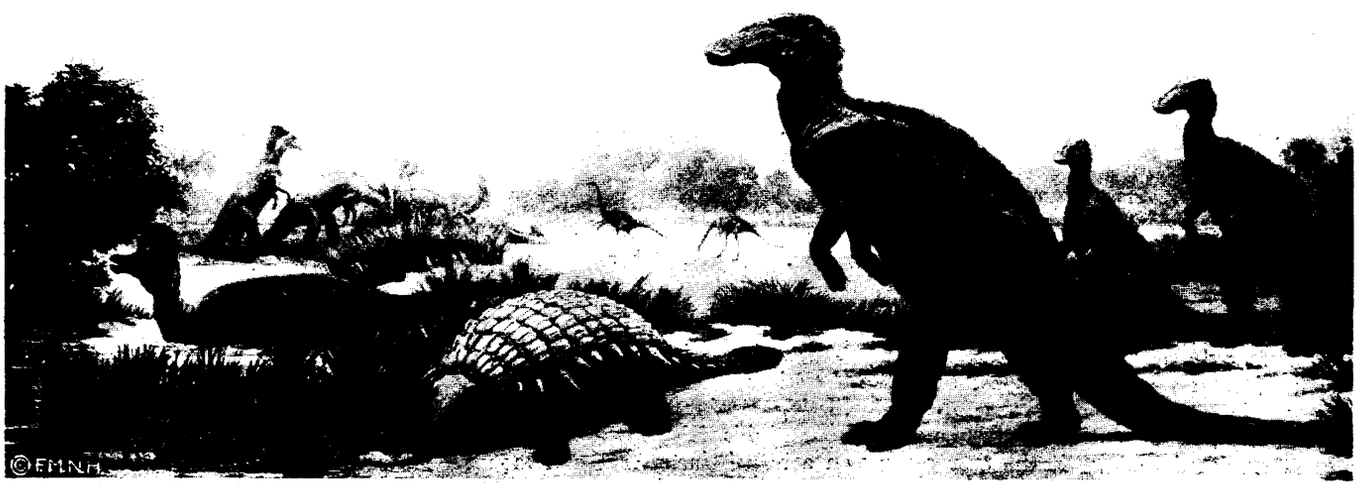
PUBLIC HEALTH

Public May be Misled By Vitamin Advertising

HALF-TRUTHS in the advertising of vitamin content of foods are very likely to mislead the public, Prof. H. C. Sherman, of Columbia University, authority on vitamins, warned in an address before the Association of Official Agricultural Chemists at Washington.

So-called "vitamin rich" foods, said Prof. Sherman, may actually be grossly lacking in the vitamins A, C and G, necessary to maintaining a buoyant state of health, though containing enough of vitamins B, E and D. Official chemists, he said, must tackle the problem of



ROCKY MOUNTAIN REPTILES OF SIXTY MILLION YEARS AGO

At left and right are seen three species of duck-billed dinosaurs: hooded, crested, and common. In the foreground is an armored dinosaur, and in the middle distance are seen a pair of bird-like dinosaurs. This restoration, a mural painting, is on exhibition at the Field Museum of Natural History. It is a gift from Charles R. Knight.