

PALEONTOLOGY

Discover Oldest Fossil

Five types of plants, with an age estimated at nearly two billion years, have so far been identified in rocks taken from northern shore of Lake Superior.

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► **PRIMITIVE PLANT** fossils nearly two billion years old, the oldest organisms ever found, have been discovered on the northern shore of Lake Superior. The age of the earth's crust is estimated at 3,500,000,000 years.

First report of the discovery was made by Dr. Elso S. Barghoorn, Harvard University botanist, and Dr. Stanley A. Tyler, head of the department of geology at the University of Wisconsin, who collaborated in research on the fossils.

The plants were blue-green algae and simple forms of fungi. They were found embedded in a pre-Cambrian deposit of flint rock, or chert, taken from an iron formation near Schreiber, Ont.

Magnified approximately 1,250 times, the photograph of the nearly two-billion-year-old algal fossil on the cover of this week's SCIENCE NEWS LETTER shows a filament, the black mass at the center, surrounded by a gelatinous (jelly) sheath. Other material in the picture is a part of the surrounding sediment from which the plant fossil was taken.

Both the algae and the fungi are important in the early stage of evolution

because of their differing functions. The algae contain chlorophyll, which enables plants to produce carbohydrates using the sun's energy. The fungi are molds that promote decay, taking food produced by other plants.

The two scientists have so far identified five types of plants in the rocks. Two are blue-green algae, two are fungal and one is a unicellular type that may be a calcium-containing flagellate.

Dr. Barghoorn explained that the determination of the color of the algae was made by comparison with living forms. No colors are present in the fossils. Blue-green algae are regarded by botanists as the most primitive of the algae. Their cells do not possess the organized nucleus and distinct chromosomes in all higher plants.

Age calculations were deduced by Dr. Patrick Hurley of the Massachusetts Institute of Technology from helium measurements on magnetite taken from iron formations in the area. The magnetite averaged 1,300,000,000 years.

Since the flint containing the plant fossils was found below the magnetite formation, it was estimated that the plants were probably nearly two billion years old.

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ANTHROPOLOGY

People Smaller in Tropics

► **PEOPLE TEND** to be bigger the farther away from the tropics they live, Dr. Marshall T. Newman, anthropologist at the Smithsonian Institution, has found.

Dr. Newman has made an exhaustive tabulation of the body size of the aboriginal inhabitants of North and South America. He reported to the American Association of Physical Anthropologists that his maps show conclusively that men and women tend to increase in size both northward and southward from the tropics.

He pointed out that large individuals have less skin surface in proportion to body volume and, consequently, a low heat loss. This would be a decided advantage to persons living under primitive conditions in a cold climate. The reverse would be true in hot climates.

Dr. Newman holds that these differences in body size can be explained without genetic or hereditary factors. Over a long period of time, perhaps hundreds of generations, these factors might become fixed genetically through natural selection, he said.

Man is not a precisely determined organism at birth, Dr. Newman continued, and each individual has a considerable physical leeway for adaptation to the environment in which he finds himself.

Similar differences in size have previously been noted among other widespread animals. Pumas, or wild cats, have almost the same distribution, with respect to body size, as man, Dr. Newman said. The biggest pumas are near the Arctic, the smallest in the tropics, though all are of the same species.

A notable phenomenon in the United States has been the considerable increase in body size of children of European immigrants over their parents. A reverse situation has been reported from U. S. citizens living in Panama where children tend to be smaller than their classmates raised in the United States. No difference in diet and general living conditions is present.

Dr. Newman's evidence for direct effect of environment on the physical characters of mammals, and especially man, helps to explain some apparent contradictions to the

Darwinian theory of evolution through natural selection.

The French biologist Lamarck about a century ago advanced the evolutionary theory that acquired characters were, or could be, inherited. The most recent flare-up of this kind has been that led by the Russian geneticist, Trofim Lysenko, whose doctrines have been approved officially by the U.S.S.R.

Lysenko has based his position of alleged accomplishments in changing the hereditary constitution of plants by subjecting them to different environments.

Another line of evidence presented by Dr. Newman is a variation, which hardly can be considered as wholly fixed in heredity, of the size of arms and legs with differences in climate. Many other lines probably can be found, he believes.

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BACTERIOLOGY

Discover Bacteria and Fungus Killer in Coal

► **A REMEDY** for plant diseases and possibly even some human diseases may come from a substance in coal.

Discovery that the substance can stop and even kill fungi that attack trees and other plants is announced by Drs. Norman C. Schenck and J. C. Carter of the Illinois State Natural History Survey in *Science* (Feb. 12). At the same time the discovery, originally made by a British scientist, that the coal stuff can stop a bacillus is confirmed in studies reported by Dr. Robert M. Kosanke of the Illinois State Geological Survey.

The new potential plant and human disease remedy was extracted from vitrain, one of the bright bands of banded bituminous coal.

The fungus-checking material was found in No. 2 coal, C rank, from Kankakee County in northern Illinois, No. 6 coal, B rank, from Franklin County in southern Illinois, and a Hanna Basin coal from Wyoming. The material from Hanna Basin vitrain coal was tested against eight fungi, including one that causes bitter rot of apples, one that causes anthracnose of clover, and two that are highly virulent disease causers among oak and elm trees and a third that destroys various trees, shrubs and herbs.

The existence of a bacteria-checking substance in English coals was reported by Dr. W. D. Evans in 1951. He named the substance vitricin because he found it in the vitrainous parts of coal seams. He showed, and Dr. Kosanke has confirmed, that it could check the growth of a test organism, *Bacillus subtilis*.

Dr. Evans attributed the differences in presence of pneumoconiosis among mine workers to differences in the amount of vitrain coal in different mines. The higher the percentage of vitrain, the lower the amount of pneumoconiosis among the miners.

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