



#### CLUES TO THE PAST

*These giant horsetails, now growing in Guatemalan forests, are similar in appearance to those of the Oregon forests 200,000,000 years ago.*

#### MEDICINE

### Neutron Rays Harnessed By Dyes for Cancer Attack

**A** MORE powerful attack on cancer than is possible with present methods of treatment may come from harnessing fast neutron rays with dyes containing lithium or boron, Dr. Paul A. Zahl, of Memorial Hospital, and Dr. Franklin S. Cooper, of the Haskins Laboratories, found in experiments. (*Science*, Jan. 17)

Mice were the patients in the studies of this method of using neutron rays to treat cancer. The dyes containing lithium or the boron were injected first. The dyes, when injected into the blood, accumulate in cancer tissue in greater concentrations than in normal tissue, and the lithium they contain, like boron, captures the neutron rays and concentrates their cancer-killing action on the tumors. At the same time the normal tissues are spared from the destructive effect of the rays.

A maximum gain of 43% in ray dosage of the tumor over that of other tissues in the same mouse was achieved, the New York scientists report. This could be increased further, it is stated, if lithium or boron isotopes were available in pure form.

*Science News Letter, February 1, 1941*

#### ASTRONOMY

## Plenty of "Lebensraum" in Other Parts of Universe

### In a Galaxy With 150,000,000,000 Stars There Must Be a Large Number of Planetary Systems for Life

**P**LENTY of living space exists in the universe elsewhere than on earth, and the chances are that life exists there. This is the conclusion of Laurence J. Lafleur, of Brooklyn College, stated in the current leaflet of the Astronomical Society of the Pacific.

Writing on what he calls "astrobiology," Mr. Lafleur states as a possible solution to the problem "the assumption that life comes only from life and never arises either by evolution or emergence from the inanimate, or by special creation. This philosophy avoids the difficulties of origin, and it is possible to assume either that life existed eternally in the past along with an eternal physical universe, or that both had an origin, possibly by divine creation, at some specific era of past time. In any case, the doctrine of Pan-Vitalism implies that life on earth must have arrived here from some other region, possibly on meteorites from another life-bearing planet.

"The whole universe may thus be filled with seeds of life which settle now and then on planetary bodies and grow into life on these planets where conditions are favorable. Conditions in the universe would then be analogous to conditions on earth, where any particular area may for the moment support no vegetation, but where each area is constantly seeded by the wind, and, when conditions become favorable, burgeons with life and becomes in its turn a source of insemination for neighboring land."

Adaptability of life is such that, even under widely different conditions from those which prevail on earth, it might be possible, believes Mr. Lafleur.

"In another world," he says, "a different quantitative distribution of chemicals might leave life possible even to organisms based on the carbon-oxygen-nitrogen-hydrogen compounds with which we are familiar. If nitrogen were rare instead of common and the other elements proportionately commoner, we might very well have organisms that obtain all other elements by a simple process of breathing or absorbing them from the environment, but which are

especially adapted to the pursuit of nitrogen. Or, if oxygen were the rare element we might have organisms that breathe methane and nitrogen, and seek and eat silicates to obtain the oxygen content."

Even if the process of formation of planetary system is very rare, he states, "in a galaxy containing approximately one hundred and fifty thousand million stars, there must be at the lowest estimate a very large number of planetary systems, and in a universe containing many galaxies, a correspondingly greater number."

Philosophical considerations, he suggests, make the possibility of extra-terrestrial life quite likely. With this, in addition to the slight observational evidence, such as the observations which indicate the presence of vegetation on Mars, he writes, "we may conclude, with a fair degree of assurance, that life in the universe is not confined to our planet."

*Science News Letter, February 1, 1941*



#### TREE FERNS

*These great plants are growing in the rain forest of western Guatemala.*