

BOTANY

Plants Filter Radiation

Tests with cheesecloth and metal screens suggest how plant fibers may act as screen to take up particles. Must determine whether action is harmful or helpful to man.

► TREES, grass and growing crops extract radioactive particles from the air. But whether this natural filtering process is helpful or harmful to man is not yet known.

Evidence that vegetation collects radioactive particles was found at the Naval Research Laboratory in Washington in tests with cheesecloth and metal screens used to catch radioactive particles. Both the cloth and metal filters did pick up radioactive particles by a simple impact process whereby the radioactive particles in the atmosphere, along with other particles, strike the filter's small fibers and stick.

Scientists now believe that this is the same process occurring in nature, where the fibers of plants pick up radioactivity from the air streams.

This plant filtering process presents scientists with an as yet unsolved paradox.

On the one hand, it is thought by some that any elimination of radiation from the atmosphere, no matter how slight, is beneficial to man. If trees and plants are filtering out radioactive particles, then they are protecting man.

On the other hand, by picking up radioactive particles, grains used to make bread might carry over some of the radioactivity and end up on the dinner table, or by the same token, grass eaten by cows may transfer some of its picked-up radioactive particles to milk that ends up in baby's bottle.

One of the problems faced by scientists in determining whether natural radiation filtering is harmful or helpful is the difficulty in measuring the amount of radioactivity that remains in a plant. The test screens, for example, proved to be only one percent efficient. Just how efficient plants are has to be determined.

The scientists who reported their work with screens in the journal *Science* (June 22), Dr. L. B. Lockhart Jr., I. H. Blifford Jr., and R. A. Baus, state that "natural filters such as grass or trees may behave like many layers of filter fibers in removing activity carried by surface winds. In this case, the removal of particulates is fairly efficient and may account for a large fraction of the fission-product activity deposited on vegetation, particularly in the absence of precipitation."

It has been found that the leaves of many plants are more radioactive than the rest of the plant. Part of this is due to radiostrontium falling with rain onto the leaves. However, the natural filtering process may prove to be another reason why foliage has more radioactivity than other parts of the plant.

In addition to their value in studying plant radioactivity, the screens used by the Navy scientists may be excellent tools for studying radioactivity in the atmosphere. It is thought, too, that they will play an important role in studying air masses.

Resembling weather vanes, the screen filters are being used along the 80th meridian in South America to gain more knowledge of radioactivity and the effectiveness of the screens themselves.

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TECHNOLOGY

Rotation Unnecessary For Television Antennas

► THE DAY when television antennas can pick up any station within range without need of rotation is foreseen by two Michigan State University scientists.

Dr. Charles P. Wells, mathematics professor, and Dr. Alfred Leitner, physics pro-

fessor, have found that, at least in theory, antenna pick-up can be altered by feeding power to points other than the center as is now done.

Changing the power feed point should set up reception waves simultaneously in from two to several directions, they have calculated. Possible practical applications of their mathematics are being left to the U. S. Army's Office of Ordnance Research, which supports the project.

The study was initiated because, when the first artificial satellite is launched during the International Geophysical Year that starts July 1, 1957, communication between it and the earth is important. Drs. Wells and Leitner are attempting to solve the mathematical equations governing operation of antennas, about which much is still unknown.

"Rockets or satellites could not use clumsy outside antennas like the television ones that perch on roofs," Dr. Leitner said. "They would slow down travel speed and break off."

The scientists, therefore, investigated the possibilities of cigar-shaped antennas. It would be theoretically possible, they found, to treat the rocket itself as an antenna by applying electrical charges to various parts of the rocket.

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Hobart, Okla., a city of 5,380 population, has never had a traffic death since its incorporation in 1901.



ANTARCTIC INSTRUMENT—This looks like an ordinary block of glass, but actually the surface has been cut with minute lines, 15,000 to the inch and each line is exactly 20 millionths of an inch deep. The diffraction grating, produced by Bausch and Lomb Optical Co., will play a key role in France's participation in the International Geophysical Year. It is being examined by S. W. Steensma and David Richardson of B & L.