

BOTANY

Trees Contain Air

The microscopic tubes in the sapwood of trees, commonly assumed to be wholly devoted to carrying water upward to the leaves, are to a large extent simply air reservoirs. Moreover, the air-containing tubes are not merely scattered at random, but have a definitely zoned arrangement which differs in different species of trees. Researches leading to these conclusions, conducted by Dr. D. T. MacDougal of the Carnegie Institution of Washington, Prof. J. B. Overton of the University of Wisconsin and Prof. G. M. Smith of Stanford University, were reported before the meeting of the Botanical Society of America in Nashville.

The three researchers investigated the way wood carries water by injecting a red dye into various kinds of trees and either letting the natural suction of the leaves pull it up, or pulling it up themselves with a vacuum pump, or else driving it up with a force pump. When the suction applied was light, the colored water travelled up the trunk in the natural way, and of course did not enter the tubes that were blocked with air. The zone of travel was thus clearly marked with red. When violent pressure or suction was applied the air was driven out, and the water traveled through the whole available space, blotting out the zonation.

By these means it was found that in willow the sap stream passes exclusively through wood formed late in the summer, in alder it is in early spring wood only, and in walnut it passes through the inner and outer face of an annual ring.

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AGRICULTURE

Paper Carpet in Gardens

Crop increases of five and six hundred per cent. following the use of a "magic carpet" of heavy waterproof paper, covering all the ground not actually occupied by the stems of the plants themselves, were reported by Dr. L. H. Flint of the U. S. Department of Agriculture, before the meeting of the Botanical Society of America, in Nashville.

The system is known as "paper mulching," and was first practiced on tropical pineapple plantations. It worked there, and the experiments were then made to see whether it might not be beneficial for various garden crops in a temperate climate. Dr. Flint carried on his researches for three years before he was ready to report on them.

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ENTOMOLOGY

Fruit Pest Eradicated

The prospects are good for ousting from the United States the Mexican fruit worm, a serious menace to the entire fruit industry of the South, according to Dr. A. C. Baker, in charge of subtropical insect investigations at the U. S. Bureau of Entomology.

This insect is one of the worst pests of tropical fruit in North and Central America, Dr. Baker stated. It was discovered in this country first in April in grapefruit in the lower Rio Grande valley in Texas. Steps were immediately taken to eradicate it and a thorough clean-up of all fruits known as hosts was instigated and carried out during the summer. A quarantine was placed on the Rio Grande valley, which was divided into inspection districts based on the areas of known infestation.

Thorough inspection of this season's crop has been made every thirty days, Dr. Baker declared, while only fruit from groves known to be free of the pest is allowed to move in interstate trade.

The results from this vigorous campaign have been very encouraging, Dr. Baker stated, in the light of the fact that whereas the infestation was distributed throughout the entire valley this spring, not a fruit worm has been found in this season's crop.

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ENTOMOLOGY

Europe's War on Insects

A new style of chemical attack on insect pests of forest and orchard trees which may partly or wholly replace the time-honored but expensive methods of spraying and dusting, is described by Dr. L. O. Howard, chief of the bureau of entomology of the U. S. Department of Agriculture. He saw it being tried out during his stay in Europe last summer.

The method was developed by chemical warfare technicians, who wished to turn their military talents to use in the arts of peace. The materials used resemble somewhat the "smoke candles" used to generate a smoke screen in wartime, except that the fumes given off by these peacetime chemical smudges contain arsenic.

In some places the arsenic smokes are set on the ground at intervals, and in others they are carried through the grove or orchard on long poles by a rank of men. In either case they fill the air with a white fog, which takes about an hour to settle. At the end of that time an examina-

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HYGIENE

World Well in 1927

The people of the United States have stayed in good health at home and have been successful in keeping out the major plagues from abroad, according to the annual report just submitted to Congress by the Surgeon General of the U. S. Public Health Service.

International public health organization now makes it practicable for different countries to keep informed of the progress of epidemics, if any, throughout the world. The increased facility of communication of modern times is of great importance in preventing the introduction of dangerous communicable diseases from abroad. No cholera, for instance, yellow fever, nor bubonic plague gained access to the United States during the current year.

Up to June 30, 1927, health conditions throughout the world were better than for any previous year on record. The influenza epidemic is considered responsible for the larger number of deaths in Europe during the latter half.

India continues to remain the principal seat of infection for bubonic plague and Asiatic cholera. The devastating epidemics of typhus fever which swept Russia after the World War seem to have definitely passed, though the disease remains endemic in that region.

Modern sanitary science has practically confined yellow fever, once the scourge of the southern states, to one section of the continent of Africa. One case at Bahia, Brazil, was reported in the Western Hemisphere this year.

"The death rate for all causes for the calendar year 1926 in 28 States," declared the Surgeon General, "was 12.1 per 1,000 population. This was slightly higher than the rate for 1925, which was 11.7. The increase was probably caused principally by the large number of deaths from respiratory diseases. This country escaped the epidemic of influenza which swept over Europe during the winter of 1926-27, and the few cases reported here were mild. Typhoid fever declined during the calendar year 1926, and the case and death rates for the year were the lowest ever recorded. This disease showed a small increase, however, during the first part of 1927. The general downward trend in diphtheria is undoubtedly the result of the use of antitoxin and toxin-antitoxin immunization.

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