



Life at the Tips

LIFE IN PLANTS as a rule has its most active manifestations at branch-tips and root-tips!

The parts of a plant that are most concerned with growth, and those that most vigorously carry on the business of extracting the means for a living from the outer world, are those nearest the outside. Roots do most of their growing in a little zone, perhaps half an inch long in the most active of them, right behind the tiniest tips of the tiniest rootlets. In most roots the growing zone is not even so long as that.

Immediately back of the growing zone is another, not much more extensive, provided with extremely thin-walled hair-like cells. This is the active zone of absorption, which takes in most of the water and salts dissolved in it that the plant uses in life processes.

Growth at the branch-tips also is the most active in adding new substance to the overground parts of the plant, and in increasing its height. Here the branches are lengthened, including the central sprout, or "leader" that increases the length of the main stem, or in trees the trunk. Once hardened into wood, or even toughened into mature herb-fiber, the trunk does not add even a fraction of a cubit to its stature.

At the branch-tips also the leaves are formed, which are the plant's indispensable food-factories. In them the water from the soil and carbon dioxide from the air are combined into sugars and starches, and these in turn receive the addition of nitrates that also came up with the water taken in by the active region at the remote root-tips, to form proteins and the very stuff of life itself, protoplasm.

Branch-tips of most woody plants leave behind them, as they grow ever

outward, a sort of cometary trail, a sheath of living cells that covers the plant's whole body immediately under the bark. This is the cambium layer. Thin as it is, it is the only really thoroughly alive part of a tree trunk or mature woody branch.

This heritage of the living tips builds

BIOLOGY

Strange Creatures Sought In Far Corners of the Earth

IN FAR Tibet, Alaska, Siam, Bolivia and other corners of the earth, a dozen scientific expeditions are working to bring back to Philadelphia's Academy of Natural Sciences exhibits and specimens ranging from minute mollusks to huge moose.

Africa—Seeking the bongo, okapi, giant eland, addax, scimitar-horned oryx and dwarf buffalo, George Vanderbilt of New York is heading an expedition from Nairobi to Timbuctoo, thence across the Sahara to Algiers.

China and Tibet—A caravan of yaks and coolies at Chungking is about to carry a party headed by Brooke Dolan, II, of Philadelphia, 500 miles overland to Batang to spend a year in Tibetan borderland wilds collecting birds, mammals, fishes and plants.

Bolivia—M. A. Carriker, Jr., and son are studying birds in the Bolivian Andes just below the snowline.

Wyoming—To secure wapiti or American elk and pronghorn antelope groups, Prentiss N. Gray of New York and R. R. M. Carpenter of Wilmington, Del., and their sons, together with C. Clarke Rosenkranz, artist, will base at Jackson's Hole.

Siam—A field staff with headquarters in Bangkok is collecting birds, fishes, reptiles, insects and mammals.

Alaska—A bull moose of unusual size will be hunted by Frank B. Foster in Kenai Peninsula.

Southwestern U. S.—Plants of remote mountain regions of Texas, Arizona, New Mexico, California and Colorado are being hunted by Dr. W. M. Benner.

Mexico—Mollusks and plants are being sought by Drs. Henry A. Pilsbry, Francis W. Pennell and Cyril H. Harvey.

Greenland—In Capt. Bob Bartlett's schooner *Morrissey*, a party headed by William K. duPont Carpenter is col-

lecting birds, fishes and animals of land and sea.

New Mexico—More evidence that man lived in America 15,000 years ago is being sought by Edgar B. Howard in excavations near Clovis and Carlsbad.

West Indies—James Bond sought birds.

Louisiana—Edward Woolman and Wharton Huber took movies of blue geese and collected mammals and birds.

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PHYSICS

Find Another Way To Make Radioactive Nitrogen

STILL another way of making radioactive nitrogen is reported by the Soviet scientists A. J. Alichanow, A. J. Alichanian and B. S. Dzelepov to the British scientific journal, *Nature*.

In the experiments atomic "bullets" consisting of alpha particles, the nuclei of helium atoms, were shot at the element boron.

The supposed reaction was that an atom of helium (mass 4) plus an atom of boron (mass 10) produced an atom of radioactive nitrogen (mass 13) plus a neutron (mass 1).

In comparable American experiments Dr. R. Crane and Prof. C. C. Lauritsen of California Institute of Technology have produced radioactive nitrogen, possibly in the following way: an atom of carbon (mass 12) plus a deuteron (mass 2) produces radioactive nitrogen (mass 13) plus a neutron (mass 1). Thus starting from either carbon or boron—two entirely different elements—radioactive nitrogen was created by the impact of the right sort of bombarding particles.

This article corrects a previous report. (*See SNL July 7, 1934, p. 3*).

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