BOTANY

Nature Ramblings

By FRANK THONE

Winter Rosettes

PLANTS have a double problem to face in regions, misnamed "temperate," where there is an alteration between a tropic summer and an arctic winter. During the growing season their task is to become as tall as possible, reaching upward toward the sun for the vital rays indispensable to food-making. During the winter the job is to keep away from exposure to sleet and frost and from the arid cold winds and too sudden thaws. The winter task is by far the more difficult, and annual plants sidestep it altogether by dying and entrusting the future of their several species to weatherproof seeds. Tougher woody plants either shed their leaves or reduce them to mere needles, and store next year's vegetative parts inside buds protected with jackets of varnished scales. Perennial herbs simply hide underground.

A fourth solution of the winter problem is presented by the so-called rosette plants, such as dandelion, mullein and wild lettuce. These plants are usually biennials, starting from seed during the summer, wintering over as flat circles of leaves on the ground, and in spring enjoying a considerable start over their annual neighbors, which have to begin from seeds, and over the perennial herbs, which have to come up from beneath the ground. The rosettes hug the ground so closely that they receive shelter from the first half-inch of snow that falls, or from the first few chance leaves. They are thus about as well off, so far as protection goes, as the varnished buds of trees, and they are there, already unrolled and ready for business, while other plants are struggling to get out of their wrappers.

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PHYSIOLOGY

Special Capillaries Protect Extremities Against Frostbite

DISCOVERY of a mechanism which protects the toes, fingers, ears and similar extremities of the body against frostbite and injury due to extreme falls in temperature was made public by Sir Thomas Lewis, editor of the British medical publication, *Heart*, at the Graduate Fortnight of the New York Academy of Medicine.

This mechanism is concerned with a hitherto unknown function of the special capillaries found only in the portions of the body affected by cold, according to Sir Thomas' announcement.

These special capillaries are direct connecting vessels between the smallest arteries and the smallest veins of the fingers, toes and similar parts of the body. They were discovered more than ten years ago, but have remained in comparative obscurity because their function was not known. They are distinct from the well-known capillaries of the circulatory system and seem to have a different structure. For instance, the special capillaries have muscles, which the ordinary capillaries lack.

The nerves of the special capillaries, microscopic in size, act entirely independently so as to cause the flow of blood necessary to raise the temperature of the fingers or toes and so protect them against the cold, Sir Thomas explained. By means of a nerve reflex arc the stimuli are transmitted from the cold finger or toe to the tiny vessels whose muscles expand to admit large amounts of warm blood to flow through the chilled exposed parts.

Sir Thomas produced evidence to prove that the nerve fibers of these special capillaries in the finger tips will produce a heating effect even when the nerve trunks connecting the fibers to the spinal cord and brain have been cut.

"The action," he said, "is independent of the sympathetic nervous system and is dependent upon the sensory nerves in the skin of the fingers."

Five Years' Research

The discovery of this mechanism for protecting fingers and toes against frostbite is the result of five years of research by Sir Thomas Lewis and his colleagues of the University College Hospital Medical School, London. It was undertaken to explain why temperature rises in a finger or toe when exposed to snow or cold and no similar rise occurs in unexposed extremities.

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