



Winter Sleep

WHAT miracles of physiology must be performed every winter, that we may at last see what the poets call the awakening of spring!

For by far the greater part of living things cannot face winter. Either they die, as annual plants do, or they become dormant, as do biennial and perennial plants, all kinds of seeds, many kinds of eggs, and not a few adult animals of the lower orders, or they pass into the deep and deathlike sleep called hibernation. In one way or another they

evade winter by partly yielding and partly enduring.

Overwintering plants, dormant seeds and animal eggs, and many of the cold-blooded animals are often said to freeze up solid during the severe weather of January and February, and yet thaw out in spring none the worse for the experience. This is not strictly true. Such organisms do undergo temperature drops to freezing point or many degrees below it. Yet in the strict sense of the word they do not freeze.

Freezing involves the formation of ice crystals. If such crystals form within the tissues of a tree bud, or a seed in the ground, or an overwintering spore of fungus or bacterium or worm of insect or egg, that particular individual is most probably done for. The crystals expand as they freeze, and when they thaw they expand again, and the mechanical injuries they cause to the delicate cell structures are alone able to bring about death. So these manifold forms of overwintering life get rid of much water by one device or another, and by the time hard freezing comes they face it with their protoplasm dehydrated to the consistency of cheese, or perhaps even of horn. Such cell units must be highly resistant to freezing.

To get rid of water in this way of course involves a good deal of evaporation. But evaporation can easily be carried too far, especially in the case of plants that live through the winter with green leaves on them. The dry, cold winds suck moisture out and the roots are unable to put any back in. Hence the importance of varnish-like coverings on tree buds, of snow blankets over winter wheat fields.

Hibernating animals like bears and groundhogs resist cold by keeping just enough of the vital fires going to avoid freezing. Their pulse and breathing rates

slow down to an almost deathlike stillness, and their body temperatures drop far below normal for warm-blooded animals, yet they do manage to keep circulation and breath going, and slowly feed their accumulated fat into the slow fires of winter oxidation.

Science News Letter, January 23, 1937

SEISMOLOGY

Earthquake Study Has Its Economic Cash Value

KNOWLEDGE of earthquake conditions and possibilities in a given region has tremendous economic significance, in the insurance sense, Capt. N. H. Heck of the U. S. Coast and Geodetic Survey indicated. Because of the growing realization of this, material support for the rapid development of seismology, the science of earthquakes, has come more from those interested in safe building design than from geology.

Southern California, where progressive business leaders have come to face the earthquake problem courageously and with their eyes open, is now one of the foremost regions in the world in the understanding of earthquakes. The great Rocky Mountain region, definitely known to be seismic, is in at least equal need of intensive study, Capt. Heck declared. At present there are only six seismological observatories in the whole vast area, a totally inadequate number, the speaker said. However, new installations of instruments are in prospect, and some are already being made.

Science News Letter, January 23, 1937

Forest fires are not much of a problem in the Caribbean National Forest in Puerto Rico, where the rainfall is over 150 inches a year.

Road magnets, used to pick up nails and other metal on highways, have been known to collect as much as 13 pounds per mile.

● RADIO

January 26, 5:15 p.m., E.S.T.

PHYSICS AT WORK—Prof. George B. Pegram of Columbia University.

Feb. 2, 5:15 p.m., E.S.T.

QUEER FOODS OR QUEER PEOPLES—Matthew W. Stirling, Chief of the Bureau of American Ethnology.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

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