ECOLOGY

NATURE RAMBLINGS
by Frank Thone

Evergreen Ecology

➤ EVERGREENS, it hardly needs to be re-emphasized, include many plants besides the needle-leaved conifers: all palms and cycads, many ferns, most magnolias, bays and laurels, the Christmas hollies, arid-land succulents as diverse as century plants, yuccas and aloes—all these and many more are evergreens. An evergreen, briefly, is a plant that retains its foliage during seasons when food manufacture and growth are suspended, whether it be during winter storms or summer drought.

Evergreenness has its advantages. It enables the plants to get into action immediately upon the return of favorable weather, without waiting to unfold and expand leaves that have been stored in buds or hidden underground. This is particularly helpful in the far north and at high altitudes, where the growing season is short, and also in deserts where rains may be brief and unpredictably irregular in their occurrence.

But there are drawbacks, too. Because of the great expanse of surface which leaves have to present to the sun in order to carry on their food-manufacturing business, leaves are great evaporators. And when water is lacking, as in the desert, or frozen into unavailability, as in arctic and temperate-zone winters, evergreen leaves are under really critical stress.

Apparently in response to these recurring water crises, a number of interesting water-saving devices have been developed in evergreen leaves. Their surfaces are sometimes greatly reduced, as in conifer needles and the "mouse-ear" leaves of some desert plants; they may have thick, waxy or horny skins, as on holly and magnolia leaves; there are often hairy, scaly or light-reflecting coverings that protect against excessive sunshine; the microscopic stomata or "breathing-pores" frequently are sunk in pits or grooves. As an extreme development, leaves may be omitted altogether and the green food-making surface confined to modified stems, as in cacti and similar succulents, or in such "switch-plants" as Australia's casuarina tree and the ephedras of China and our own Great Basin area.

There are also internal protections against excessive evaporation. These usually take the form of a concentrated or thickened sap, containing high percentages of mucilage-like polysaccharides or sometimes of mineral salts. As is well known, it is easy to evaporate water out of a very thin syrup, but as the syrup becomes thicker evaporation becomes slower and slower. The sap of some evergreen plants seems to work on the same principle, saving at least the minimum of water necessary for survival.

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PHYSIOLOGY

Aging Traced to Brain

➤ WE grow old because our brains grow old, and our brains grow old because they cannot keep themselves young by dividing.

This theory of aging is proposed by a German husband-and-wife research team, Drs. Oskar and Cecilie Vogt of Neustadt in the Black Forest. They built their own private laboratory there when the Nazis deprived them of their jobs before the war.

The Doctors Vogt point out that one-celled animals remain immortally young, unless accidentally killed, because they are constantly dividing to form new individuals. Other cells remain young so long as they are actively dividing, and grow old as they shape up into mature form. To divide, cells must first pull in all projections and extensions of their protoplasm.

In the human brain, practically all cell divisions have been accomplished several months before birth; after that, only increase in size and complexity is possible. Furthermore, all brain and nerve cells have extremely long processes or extensions. These are essential, for it is through these that they carry on the body's communication.

However, these extensions cannot be drawn back, partly because they are so long and partly because they are firmly embedded in each other and in other kinds of tissues. So brain cells are unable to divide, and can only grow old.

The two researchers, incidentally, deny emphatically that over-use will hasten the brain's aging process. On the contrary, aging is likely to be faster in a little-used brain.

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ARCHAEOLOGY

Ancient Bronze Shield Found in Danish Peat Bed

➤ ONE of the most beautifully ornamented bronze shields ever uncovered north of the Alps has been added to the collection of the Danish National Museum. The shield is of hammered bronze, with hundreds of various-sized indentations forming 21 systems of ornamentation.

Only 15 bronze shields are known on the European continent away from the Mediterranean, although about 30 of this period but of a different type are known from the British Isles. Archaeologists have fixed the age as 2700 years and the place of original manufacture as northern Italy.

Of four Danish bronze shields about which the places of discovery are known, three, including the last one, have been uncovered within a radius of six miles on the island of Falster. Since they were all found in peat beds that were lakes in the Bronze Age it is considered probable the shields were deliberately placed in the water as an offering to the gods of the lakes.

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