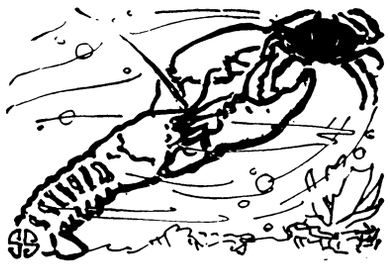
MARINE BIOLOGY

NATURE RAMBLINGS

by Frank Thone



Plankton, Nekton, Benthos

"IF IT SWIMS, crawls, or clings, we have it," boasts a fish market sign quoted by *The New Yorker,* which brightly adds its acceptance of the challenge: "All right, send us a beaver, two caterpillars and a sloth."

Yet in spite of the naivete that exposed it to this wisecrack, the fish market sign is a fairly good job of marine ecological classification. It should add just one word, to read, "If it drifts, swims, crawls or clings. . . ." For then it would include the three great groups into which water-dwelling organisms are divided by biologists: plankton, nekton, and benthos.

If it drifts, it is plankton. We often see this word, but may not have a very good idea what it means. Plankton includes all the floating, unanchored forms of animal and plant life, large or small, that either have no directive swimming powers at all, or at most possess swimming powers so feeble that the real determining forces in their movement are the water currents themselves.

Plankton is predominantly microscopic, including both one-celled plants and animals. It also includes tiny creatures of the water-flea class. There are, however, some large plankton animals, like jellyfish and the pearly nautilus.

Nekton is made up of animals that know where they want to go and have the means for getting there. Most nekton organisms are fish and fish-shaped mammals like whales and seals, but the classification also takes in some of the larger invertebrates like the squid.

Benthos is like the plankton in that it includes plants as well as animals. But it is unlike both plankton and nekton in that it does not move about; it is fixed to the bottom. Seaweed, eel-grass, oysters, clams, rock barnacles, sponges, sea-squirts, limpets, corals, crinoids, and burrowing things like marine worms and teredos, all classify as benthos. They are things that "cling," in the fish market sign's classification.

But how about things that "crawl"? There is a whole host of bottom-dwelling forms that can move about with more or less freedom when they choose, but that usually don't choose. They include such familiar things as flounders, skates, rays, lobsters, crabs, octopuses, starfish, abalones and snails. Are they lazy nekton? Are they occasionally active benthos?

Whatever they are, at least this can be said of them: that rigid lines of definition are hard to fasten on living things, and that attempts to do so must inevitably end in fussy and rather futile logic-chopping.

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GEOLOGY

Ancient Dunes No Index To Ice Age Desert State

DUNES formed of drifting sand many thousands of years ago, at the close of the latest Ice Age, are fairly common in the upper Mississippi Valley and elsewhere in the glaciated parts of this country, as well as in comparable locations in northern Europe. They are usually so well covered with vegetation that no one but a scientist would suspect them of being sand hills.

This widespread evidence of drifting sand left in the wake of the retreating ice sheets has been taken by some European geologists as evidence for a period of desert-like climate immediately following the close of the last glacial period.

With this opinion, however, Dr. William S. Cooper, professor of botany at the University of Minnesota, does not wholly agree. Admitting that these post-glacial dunes may have been formed under desert climatic conditions, he points out that this is not the only way they could have been formed.

Dr. Cooper has made a special study of the "fossil dunes" in his own state, and has found evidence that they were formed during a relatively brief geological interlude, when a rapid sinking in the general water level following the melting back of the last ice lobes exposed bottom and shore sands to wind action. Even under humid climatic conditions, dunes thus formed will remain naked sand so long as the wind can get at them and keep them on the move, as

is well shown in the well-rained Atlantic and northern Pacific coasts of the United States, not to mention the famous dunes on the southern and eastern shores of Lake Michigan.

Dr. Cooper also points out present-day Ice Age conditions which he has studied personally in Alaska. There, around the ends of retreating glaciers, thick vegetation grows up, and even dense forests of conifers push to within a few yards of the melting blocks of ice.

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AERONAUTICS

Going Up

● "Most flying takes place in the thick of the weather at levels ranging approximately from 2000 to 14,000 feet. The reasons for this low altitude flying are the physical discomfort from lack of oxygen experienced at higher levels and the fact that at present most planes and engines perform best within these limits. But the day is coming when non-stop flights of over 3000 miles will be common, and when cruising altitudes will be raised to substratospheres or even stratosphere levels — say, about 35,000 feet."—Assen Jordanoff in THROUGH THE OVERCAST (*Funk & Wagnalls*).

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There are only two specimens of *Conus sozoni* known. Of a related rare species, *Conus gloria-maris,* there are some 22 specimens, which have a market value among collectors of $600 to $800 each. There is no way of estimating the cash value of the two specimens of *C. sozoni.* One is jealously guarded in the U. S. National Museum and the other is treasured by Mrs. Vatikiotis. Nobody could possibly buy either one of them.

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FORESTRY

Foreign Fungus Foes Menace American Trees

FOREIGN enemies are entrenched in America on a dozen fronts. Their destructive activities are directed not at cities and the people who dwell therein but at our wealth of trees. Their havoc has already run into the hundreds of millions, and the end is not yet in sight. Against some of the worst attacks scientists have thus far been unable to find adequate defense.

Newest outbreaks are of diseases that threaten two favorite street trees, the American elm and the London plane or sycamore. Elms, already losers from the fungus-caused Dutch elm disease in the region around New York, are now suffering from a killing virus in the Ohio valley. At first thought to be a "town" ailment, the disease has now been found in forest elms in West Virginia.

The London plane tree, a hybrid between European and American sycamores, is particularly valued for street plantings because it can endure city smoke. The fungus that is killing it in Philadelphia and Baltimore, and that threatens to spread to other cities, is therefore a particular foe of city foresters and park commissioners.

Two other new diseases are menacing forest trees that are valuable alike for their wood and as sources of food for wildlife, states G. F. Gravatt, plant pathologist in the U. S. Department of Agriculture. One is a virus that has been found attacking oaks in Wisconsin. Although its distribution is limited as yet, foresters and wildlife administrators are alarmed over the possibility of its spread.

The other disease threatens to wipe out the American persimmon, valued as a source of hard wood for golf clubs and of food for wild birds and mammals, as well as a soil-binder in erosion control. It first appeared near Nashville, Tenn., in the summer of 1937. Last summer, R. Kent Beattie of the U. S. Department of Agriculture found it all the way from South Carolina to Mississippi. It kills the trees in a few weeks, and spreads with explosive rapidity.

As if the plague of chestnut blight that started something over a generation ago and has practically wiped out the American chestnut were not enough, a new enemy is attacking the few remaining chestnut trees in the South that the wilt has not yet reached. It is a root rot fungus, and it kills not only the chestnut trees but their smaller-fruited relatives, the chinquapins, which are an even more important source of food for game.

A deadly combination of a scale insect and a fungus is killing beech trees in New England. It got started in Nova Scotia or New Brunswick, and presently crossed the Maine boundary. Beechnuts are an important wildlife food, and the probable replacement of dead beeches by maples will make the forest a decidedly leaner larder for game.

A double invasion, one disease from Europe and one from Asia, has converged upon certain species of willow, and is killing the trees in great numbers. Willows are irreplaceable in certain types of soil conservation plantings, and they are also favored browse for deer and other game animals.

Against all these enemies of our trees scientists are struggling valiantly, though it is an uphill fight all along the line. The persimmon blight has spread so rapidly that there is no use trying to get rid of it by destroying infected trees, as is being done in the battle against the Dutch elm disease. The attack on the chestnut ended in disaster long ago. Whether the new root rot that is killing chinquapins will wipe them out also is still uncertain, but the prospects are not bright.

In some cases, doomed native species can be replaced with resistant trees brought from other countries. Mr. Beattie spent several years in the Orient, seeking suitable chestnuts, and brought back a number of promising varieties. The same may be done in the case of the persimmon, for Chinese and Japanese persimmons have been found to be immune to the fungus. Hybrids between susceptible native trees and resistant foreign species are sometimes resistant.

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●RADIO

Dr. Otto Struve, director of Yerkes Observatory of the University of Chicago and of the McDonald Observatory of the University of Texas-University of Chicago, will be guest scientist on "Adventures in Science" with Watson Davis, Director, Science Service, over the coast to coast network of the Columbia Broadcasting System, Thursday, March 9, 7:15 p. m. EST, 6:15 p. m. CST, 5:15 p. m. MST, 4:15 p. m. PST. Listen in to your local station. Listen in each Thursday.