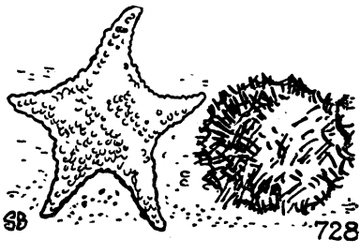
BIOLOGY

NATURE RAMBLINGS

By FRANK THONE



Starfish and Sea-Urchins

Seashore vacations yield many treasures that delight the children and may well be of much interest to their elders. And of all the creatures cast by the sea upon the sand none are more strange or fascinating than the starfish and its cousin the sea-urchin.

They belong to an animate world that is basically alien to us. We can get used to the idea of a fish, or a salamander, or even an insect, for in all these the legs and wings and fins and eyes and other organs are like our own; either in pairs, strung along a central body-axis or, like mouths and noses, are balanced evenly on both sides of the center line. But starfish and sea-urchins have their most prominent body-parts set like wheelspokes around a central point, and such bilateral arrangements as they have are obscured by the more obvious plan. Such a wheelspoke arrangement is called "radial symmetry," and these animals used to be known as "radiates."

A newer name, however, has taken its place: "echinoderms," which means "spiny-skins." The spininess of the sea-urchin's integument requires no comment, particularly if you happen inadvertently to step on one of them. It is less obvious on the starfish, but there is at least an armature of decided prickles and little hard knobs.

Starfish and sea-urchins are stiff, almost stony things as we get them at curio shops or see them in museums. That is because of the numberless bits of limy material that form their outer crust. But when they are alive, they have a considerable degree of flexibility, and starfish especially can move over the rocks and sand with considerable rapidity. Starfish are hated by oystermen, because their favorite food is oysters and other shellfish. They kill them by wrapping themselves about their shells, until the poor smothered mollusc is forced to open up, even to certain death.

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PALEONTOLOGY

Fossils Found in Asphalt

Bones that tell what kind of animals roamed the valleys of California a hundred thousand years ago, while eastern America was buried under the great glacial ice sheet, have been discovered in an asphalt bed in Carpinteria, in the southern part of Santa Barbara County. Sealed for ages against decay in the germ-excluding bitumen, they are only now being brought to light and are finding their way to the Santa Barbara Museum of Natural History, where a group of specialists have been studying them.

The report of these scientists tells a dramatic story of beasts and birds now extinct, but resembling existing forms and in some cases practically duplicating them. They have found bones of deer, horses, rabbits and even of skunks. Beasts of prey were represented by three species of the fox-wolf group. There were fifteen species of birds, including a kind of wild peacock, a species of duck, and a pair of very modern crows.

"For wheresoever the carcase is, there will the eagles be gathered together." This text receives startling illustration in the makeup of the group of birds whose bones were discovered in the asphalt pits. There were 28 specimens of one kind of eagle, 15 of hawks, and several of owls, vultures and condor-like birds. Among the latter was one giant, known as *Teratornis,* which was at least as large as the modern condors, the largest birds that fly.

The usually accepted theory is that herbivorous animals trying to cross the treacherous sticky tar-like stuff were entangled and killed, and that the predatory animals and birds, coming to feast on their bodies, were in their turn caught.

In addition to the animal bones there were many pieces of wood, pine cones, and other plant remains. These tell a fascinating story of their own. At the present time there exists on the shores of Monterey Bay, 200 miles to the north, a group of trees found nowhere else on earth. The outstanding trees are two species of pine and two of cypress. Of these peculiar plants, specimens of both of the pines and one of the cypresses have been found embedded in the asphalt here at this distant point, together with fragments of other plants now characteristic of the Monterey region. This indicates clearly that the present Monterey flora is the last remnant of a plant community that once had a far wider range. These living trees may well be looked upon almost as living fossils, that have survived from an earlier age, while the animals that once roamed beneath them and the birds that nested in their branches have long since vanished.

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HORTICULTURE

Copper Improves Muck Land

What is one plant's poison is another plant's medicine. Copper, long regarded as an element not friendly to plant growth, has been used to increase the productivity of certain muck lands used for vegetable growing in western New York by E. L. Felix of Cornell University.

"The productive and unproductive muck look just alike and no biological, physical or chemical differences have been found between them, except in the response to copper treatment," Mr. Felix says. "With copper, lettuce and onions grow normally; without it they do little or nothing. Applications of 100 to 200 pounds of pulverized copper sulfate crystals prevented the occurrence of unproductive muck symptoms. Dusting or spraying affected lettuce with small quantities of copper sulfate caused the plants already affected to become healthy in appearance."

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HYGIENE

Life Extension Valuable

Behold the cash value of living longer than our grandfathers did! The increase in earning power of our population in this generation for men alone amounts to $2,300,000,000 per year. Accurate data on the earning capacity for women is lacking, but estimates made by statistical experts of the Metropolitan Life Insurance Company put the total increase in earning power since 1901 at $3,500,000,000.

This gain in ability to earn money has come about as the result of the recent improvement in extension of life, the experts declare. In 1901 a male at birth was considered to have a potential worth of $7,553, but in 1924 the value of the average baby boy was calculated at $9,333. The gain of $1,780 potential value at birth is due to the longer life an individual can now be expected to live with a consequent longer period of earning capacity.

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The U. S. Burreau of Entomology is investigating the fondness of insects for various kinds of vegetable fiber used in upholstering furniture.