OCEANOGRAPHY

Acorn Worm Makes Tracks

See Front Cover

➤ THE MYSTERY of what has been making spirally coiled tracks along the ocean floor has been solved by a photograph, seen on this week's front cover, of the creature in the act of making them—a "giant" enteropneust, or acorn worm.

The first deep-ocean photograph of this worm, taken on the bottom of the South Pacific Ocean 15,534 feet below the surface, was made by oceanographers from Columbia University and the University of Cambridge, England.

This is the first record of an actual acorn worm since the famed English ship Challenger in 1873 dredged up three similar but damaged specimens from the bottom of the Atlantic Ocean.

The mysterious tracks have long puzzled scientists, who often saw the tracks but not the animals that made them. A particular type of large coiled or spiral track, from one to six feet in diameter, appears in deep-sea photographs taken in most oceans.

Bruce C. Heezen, associate professor of geology and a member of the Lamont Geological Observatory staff at Columbia, and Donald W. Bourne of the department of zoology at Cambridge and of the Woods Hole Oceanographic Institution, Woods Hole, Mass., reported their findings in Science 150:60, 1965.

They said that in the surveys they conducted the spirals made by the worms appeared most often in pictures from the high southern latitudes, the southern South Pacific being a particularly good place for them.

The research was supported in part by the Office of Naval Research and the National Science Foundation.

The acorn worm has a rounded proboscis, or snout, near the front end that fits into a collar and looks much like an acorn—hence the name.

The animal uses this structure to burrow into the mud and sand. As it creeps, it swallows quantities of mud from which it digests its food, leaving the castings lined with mucus to form the odd squiggly patterns on the ocean floor.

The acorn worm is a fragile, pinkish-tan animal with a pencil-thin body that may be as short as two inches or as long as two feet.

This worm has a contractile chamber serving as a heart. The chamber draws blood from a dorsal vessel and pumps it through an organ serving for excretion, around the digestive tract and into a ventral long vessel.

For many years scientists did not know how to classify this little marine worm, for it had a structure that was found only among the chordates, as animals with backbones are called. This structure is a series of paired openings between the digestive tract and the outside of the body.

Today the acorn worms are assigned to the phylum Hemichordata, which means that they stand between animals without backbones—jellyfish, starfish, insects and worm—and those with backbones—fish, reptiles, birds and mammals.

The acorn worm is difficult to see because it seems to creep at night and burrows into the sand by day.

• Science News Letter, 88:276 October 30, 1965

BIOLOGY

Ancient Algae Found

➤ TINY FOSSILS of some of the oldest blue-green and green plants on earth were found in well-preserved condition in Bitter Springs limestone in central Australia.

The age of these prehistoric plants cannot be stated with certainty, but they probably are 700 million to 900 million years old, reported Drs. Elso S. Barghoorn and J. William Schopf of biological laboratories of the Botanical Museum at Harvard University.

The microfossils vary in color from yellow amber to brownish amber, they reported in Science, 150:337, 1965. The fossils have been divided into four distinct categories: spherical bodies, filaments without interior dividing walls, small walled filaments and large walled filaments.

The well-preserved plants, found in black, slightly waxy chert rock, probably had been growing in shallow, gently flowing, highly siliceous water.

These microorganisms are important because they may represent a transition period in the evolution of plant life on earth, at the time when the simpler green algae were developing into different forms.

Algae constitute a group of simple, chiefly aquatic plants that have chlorophyll to manufacture their own food with energy from the sun.

The seaweeds, freshwater scums and stoneworts are some of the algae growing in the world today.

The Bitter Springs fossils are among the oldest known one-celled and many-celled organisms in such good condition, the scientists reported. The fossils constitute another link in the expanding record of Precambrian life forms.

The oldest cellular microorganisms discovered are the two-billion-year-old fossils found on the Gunflint Iron formation in northern Ontario. Other algae structures, without cellular organization, were discovered in rocks of considerably greater age in Southern Rhodesia. Algal and possibly fungal remains showing rather poorly preserved but still distinct cellular detail have been isolated from shales of the one-billion-year-old Nonesuch rock formation of northern Michigan.

• Science News Letter, 88:276 October 30, 1965

Questions

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