

Reading Coral Reef Rings

Using X-ray pictures, marine geologists may be revealing the past lives of coral reefs, feared doomed by pollution, now thought more susceptible to death by fresh water and cold.

by Deedee Pendleton



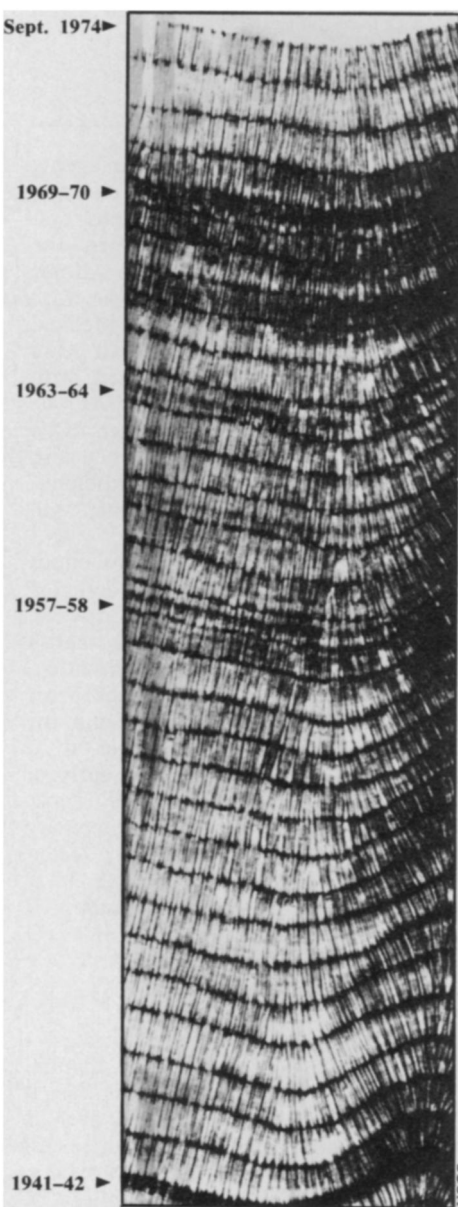
Hudson: Drilling coral cores.

While hunting for keys to a coral reef's life and death, a team of Miami geologists working for the Department of the Interior discovered that pollution isn't necessarily killing coral in Florida. Cold water is. By drilling coral cores and studying their tree-like rings, the team, under the direction of Eugene A. Shinn, concluded that distress bands began occurring long before pollution levels in the Florida reef tract (ocean side) were high enough to kill coral life there. Contrary to what East Coast Floridians have been told, dredge and filling, mosquito spray, septic tank leakage and sewage aren't the only culprits killing the coral.

More exciting is the possibility that by examining thin slices of coral cores through X-ray photographs the scientists may be able to pinpoint seasonal changes through the eons. The deeper the team drills into the coral head's growth axis, the clearer they find its life history is recorded in the fossilized remains. In short cores (16 inches) a record of the past 40 years can be seen clearly, and longer cores, to be examined as the study progresses, may show a continuous record back 200 years or more, contained within a single coral head.

By moving from live coral heads to successively older, dead coral heads, they expect to produce an "underwater climatic record" extending back 1,000 years or more. Such results would allow an assessment of events before humans began having an impact on the seas. Shinn and his colleagues have dated coral rings from Texas believed to be as old as 100 million years.

The project, less than a year old, sounds like a farmer's rhyme: It began



on a reef near Miami's Snake Creek Tidal Channel, known as Chickens Reef, then expanded to Hens Reef. The area is ideal for study—Chickens Reef lies unusually close to shore (within a mile) and its deathdate, the winter of 1969, is documented.

The geologists, who take a boat to their island office every morning, hope to discover why reefs like Chickens and Hens suddenly die, while others survive severe temperature changes. With the help of biologist James H. Hudson, the team is transplanting specimens of coral from warm Gulf Stream waters to tidal passes, to judge a coral's ability to adapt to less favorable environments. Reef coral live in waters ranging from between 20 and 30 degrees C.; living coral is only a thin veneer of the reef, representing less than 10 percent of its total mass.

While most of their research has been done on living coral reefs, the scientists are also analyzing the white skeletons most people associate with coral. Florida waterways were mechanically cut through coral beds in the late 1920's, and as sea level subsided, rainwater slowly etched even more prominent pictures of the past into the limestone graves of coral beds.

Shinn hopes to study the sedimentation-cementing process that occurs as coral is ground away by moving water. Reefs are built with the help of the encrusting, lime-secreting coralline algae, which help cement and consolidate stalks of coral. Shinn wants to know how, and when, these sediments become stone.

In subsequent research, the scientists plan to record changing thermal conditions in the area, and perhaps forecast future coral deaths. □

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241