

Valley of Death in the Sea

An underwater dead sea lies just off Long Beach.

by John Ludwigson

The San Pedro Basin is a 270 square mile area of Pacific Ocean bottom that lies between Santa Catalina Island and the sunny southern California mainland.

Its largely level floor lies about 3,000 feet beneath the pleasure boats and sport fishermen that ply the surface of the San Pedro channel. Steep escarpments, rising from the floor to the north and south mark the edges of the island and mainland. To the east and west, gentler rises complete the valley's isolation from the open sea floor.

Into this quiet oceanic backwater, on December 4, 1966, came three Navy researchers in the tiny submarine Deepstar. They were there to measure heat flow through the ocean bottom and collect deep-sea water samples.

As they dropped through the water, they took pictures of the ocean life outside the portholes—but only down to 2,500 feet. From there on they found no life at all.

On the bottom, just north of Catalina Island, they found a layer of fine brown flocculent material. It covered the normal ocean sediments about a centimeter deep for as far as they could see.

As they cruised along, occasional dead squid and fish came into view, lying in the brown material. Worm tubes dotted the basin floor, but not one worm appeared anywhere. Nothing moved outside the three-man sub.

On a second dive a half mile away the bottom 500 feet of water again proved to be an underwater dead sea.

Chemical analysis of the near-bottom water samples showed why. Less than one-tenth of a milliliter of oxygen was dissolved in each liter . . . too little to support any kind of life.

That is because of the very poor water circulation within the basin, believes Dr. Eugene C. LaFond, head of the Navy Electronics Laboratory's Environment Division and one of the crew on the dive.

Observations from the Deepstar showed a current speed of only one-half centimeter per second—insufficient even to stir up the apparently decomposed material on the bottom.

"In summer there is a lot of life such as plankton, in the upper part of the ocean there," Dr. LaFond notes. "In the fall, a lot of this material dies and will settle through the water . . . to the bottom where it decomposes. In

this process, it uses up the oxygen in the water."

"The water itself has so little oxygen in it, it would take very little decomposition to use it up," he concludes. "Of course, you can't tell whether the fish were killed by swimming in there or if they died and sank to the bottom."

Dr. LaFond points out that he dived in the San Pedro Basin on only one day of the year. At other times, he suggests, ocean currents may sweep through the area, flushing it out.

An ominous challenge to his explanation has been voiced by Dr. Bruce W. Halstead, a marine biotoxicologist and director of the World Life Research Institute.

"I think a lot of this is due to contamination," Dr. Halstead asserts. ". . . Chemical agents have been dumped in there by government and industry."

"I do know a whole list of cyanides that have been dumped," he says.

"I can't believe these fish unconsciously swam into an anaerobic area and died. I believe it (their death) is due to toxic agents."

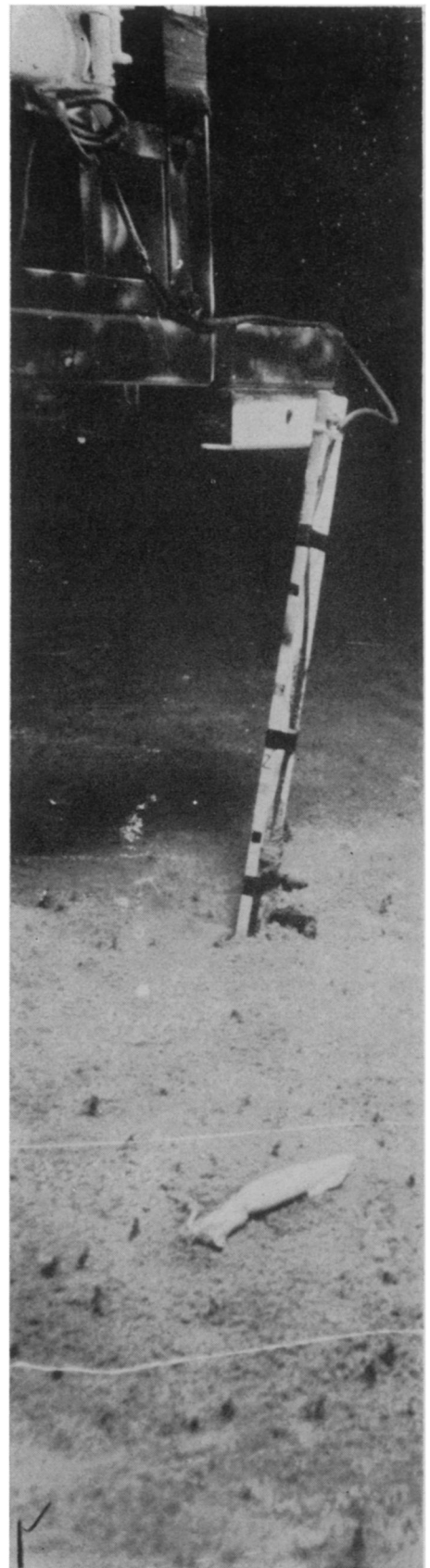
"Our government knows about San Pedro Basin," he says, "and is pushing hard to do something." The problem is that no one apparently knows for sure what effects any particular contaminant may have on ocean life—or on the people who get their food from the sea.

It is perfectly possible, the toxicologist points out, that a contaminant, dumped into the sea in relatively small amounts, might affect the marine food chain enough to make normal food fish temporarily poisonous to humans.

Just such a poison killed a number of Japanese living around Minamata Bay in southwestern Kyushu between 1953 and 1960, he notes. The strange disease, which damaged the brains of those not killed outright, was finally traced to shellfish growing in the bay. The shellfish, though apparently healthy, had absorbed mercury compounds dumped in the bay by a factory, concentrating the deadly compounds in their bodies.

"I think this points up a very deadly example of what can happen in contamination of the marine environment," Dr. Halstead warns.

It is not, however, the most likely explanation of the lifeless waters of the San Pedro Basin, according to Dr. LaFond.



U.S. Navy

Dead squid and temperature probe.

More information on the San Pedro Basin may become available this fall, when he returns for more dives in the Deepstar. Dives will also be made in the adjoining Santa Monica and Santa Barbara Basins.