
Vent fish: *Alvin's* unexpected catch

The misfortune of the white, eel-like fish that were trapped accidentally in the outer structures of the research submersible *Alvin* is science's gain. While some other forms of life such as giant tube worms found at hydrothermal vents along seafloor spreading centers have been studied (SN: 7/18/81, p. 38), the new specimens are the first fish collected from the vents. The fish hitched a ride with *Alvin* during a recent expedition of the Scripps Institution of Oceanography research vessel *Melville*. The purpose of the voyage was to trace the hydrothermal circulation at the vents at 21°N of the equator, about 120 miles south of the tip of Baja California, and to analyze the chemistry of seawater and the ocean's crust. That the fish were captured by *Alvin* was a complete, but welcome, surprise.

The first fish caught remained outside the submersible for about 12 hours and was in "pretty bad shape" when it was found, says William Smithey of Scripps. On subsequent dives the crew was alert to the possibility that fish might be captured and acted quickly to freeze two more fish that were brought to the surface when the submersible completed another of its 13 dives.

Smithey, the only biologist aboard the *Melville* during the 13-day operation, described the fish as "almost white" with a pink cast, with eye spots and prickly teeth. "It's not an unusual-looking deep sea fish," he said. The fish, still unnamed, are most similar to a fish called *Meteoria* that was found east of the Azores on the Mid-Atlantic Ridge. Smithey cautioned that the captured fish are indigenous to the 21°N vent area, and that it is coincidental, at this point, that *Meteoria* also is found near a seafloor spreading center. Such centers occur where two of the earth's plates separate, creating new seafloor.

Equipment used to sample superheated geysers called "smokers" or "chimneys" (SN: 2/9/80, p. 84) probably stirred up the fish, which usually hover near their seafloor habitat. "Then, once the submersible settled into place, it was just like any other geological feature with nooks and crannies" that the fish could hide in, Smithey explained. The fish apparently were swimming in the hatch area of the 25-foot, three-man submersible. They became trapped when the vessel began its ascent, and died from temperature change and decompression. Smithey speculated that if the biochemistry of the fish proves to be interesting, some attempt may be made to bring up live specimens during an expedition in February and March 1982 that will focus on the biology of the vent communities at the same location on the East Pacific Rise.

Scientists now are beginning to evaluate

geochemical data collected during the expedition, which ended November 23. Field surveys show that marine life at three previously known vent fields discovered in 1979 (SN: 1/12/80, p. 28) has declined. "We don't think these sites last very long. Maybe 10 years," said Harmon Craig, a Scripps geochemist and co-chief of the expedition. He said that as one vent begins to die out, marine life may move on to another vent.

The scientists located a new hydrothermal vent site four miles away at a depth of about 8,500 feet. Craig reports that the new site is lush with marine life, and is "more spectacular than any of the others previously found at 21°N."

Robert Ballard, a geologist at Woods Hole Oceanographic Institution, also was co-chief scientist on the expedition. The voyage was funded by the National Science Foundation. —C. Simon

Lung cancer cells make neuropeptide

Originally isolated from frog skin, the short polypeptide called bombesin may allow early detection of a common and virulent form of lung cancer. Cells grown from the lung cancer called small cell (or oat cell) carcinoma all contain bombesin, a group of Washington area scientists report in the Dec. 11 *SCIENCE*. Bombesin is present normally in cells of the mammalian brain, stomach and intestine and in some endocrine cells of the fetal lung. But it is not found in healthy adult lung tissue or in cells grown from other lung cancers.

The scientists found bombesin in laboratory-grown small cell carcinoma cells derived from 17 different patients. In addition they examined at autopsy cancer cells from the livers of nine victims. Bombesin concentrations were nine times higher in those who died of metastasized small cell carcinoma than of other forms of cancer. Unusually high levels of bombesin are likely to cause such physiological effects as anorexia, hypothermia and hyperglycemia.

Blood levels of bombesin may allow early detection of small cell carcinoma, the scientists suggest. Blood samples from patients contain elevated bombesin levels proportional to the extent of the disease. Because chemotherapy and radiotherapy are most likely to be successful in treating people in early stages of small cell carcinoma, it may become worthwhile to screen for bombesin in the blood of people, for example heavy smokers, who are at high risk for lung cancer.

Participating in this research are Terry W. Moody of George Washington University, Candace B. Pert of the National Institute of Mental Health and Adi F. Gazdar, Desmond N. Carney and John D. Minna of the National Cancer Institute and National Naval Medical Center. □

Creationism on trial in Arkansas

A law ordering Arkansas schools to give balanced treatment to both "creation science" and evolution went on trial this week in Little Rock, Ark. At issue in the suit, filed May 27 by the American Civil Liberties Union, is whether or not the Arkansas law represents a "dangerous" infringement of the separation of church and state guaranteed by the First Amendment to the Constitution. According to the ACLU, creation science is unscientific and actually derives from a literal interpretation of the biblical account of creation portrayed in Genesis.

Arkansas' Act 590 passed in March without much debate: The state House held fewer than 30 minutes worth of hearings on the measure, the Senate none at all. Gov. Frank White conceded ultimately that he signed it before reading it. Scheduled for enactment next fall, the law requires any public school or class that teaches the theory of evolution also to teach creationist theories. The latter suggest that all things — from the universe and the earth to living creatures, including humans — were created roughly 6,000 years ago. Though creationism's proponents, largely religious fundamentalists, generally ascribe the act of creation to God, the state law strictly prohibits use of religious writings or instruction. Ironically, it's that proviso that the law's proponents hope will protect it from this constitutional challenge.

"The concept of a creator is not necessarily inherently religious," says Arkansas Attorney General Steve Clark. In fact, defendants in the Arkansas suit say they will attempt to sidestep the religious underpinnings of creationism. This attempt to limit the suit to discussion of the law's constitutionality — and not the theory's validity — prompted Clark to try to block testimony by religious and scientific scholars on the ACLU's list of expert witnesses. The judge, however, overruled the state's objections.

Creationism was the focus of another suit, debated in California earlier this year (SN: 3/14/81, p. 165). In that case, a parent charged that because the *theory* of evolution was being treated by public schools as a *fact*, the credibility of certain religious teachings was being undermined for his child. While the court denied that the rights of creationists had been violated, it did ask textbook publishers to stress the theoretical nature of Darwinian evolution whenever it was mentioned.

Roughly 20 states are considering legislation similar to that passed by Arkansas. But the trial, expected to last two weeks, will probably be watched most closely by those in Louisiana. There a bill virtually identical to Arkansas' Act 590 has already become law. —J. Raloff