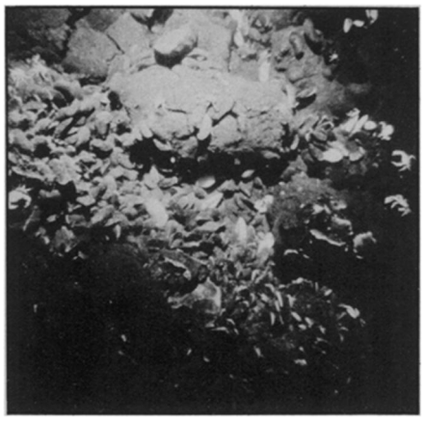
Living sea: Life on the Galapagos Rift

Photos: Woods Hole Oceanographic Institution



The research submarine Alvin recently took scientists down to the floor of the Pacific Ocean to examine geological processes on the Galapagos Rift, an active site of seafloor spreading. One of the main surprises was biological, the discovery of tight clusters of abundantly rich sea life living around vents of warm water percolating upward from beneath the ocean floor (SN: 3/19/77, p. 182). These two photos taken by scientists in Alvin at a depth of about 9,000 feet and issued this week by the Woods Hole Oceanographic Institution, show some of the best examples of that unexpectedly dense marine life. Top photo shows stalk-like tubeworms, plus limpets, crabs, seaworms and an unknown variety of fish. Marine biologists are familiar with tubeworms but usually in much smaller forms than these 14-to-18-inch-long creatures. In right photo are clusters of clams, mussels, crabs and other organisms, some still unidentified. Some of the inhabitants appear to be related to known species, though the rift animals are, in many cases, much larger. Five such vent communities, each about 50 meters across, were found on the Galapagos Rift. □

Taking the measure of Vesta

"Twinkle, twinkle, little star; how I wonder how big you are." Because stars twinkle—the earth's atmosphere distorts their images and makes them shimmer and dance—astronomers have historically been unable to get any true pictures of their sizes and shapes. The same has been true of the smaller members of the solar system, the littler asteroids especially. (The larger planets have big enough images so that atmospheric turbulence contributes only a small uncertainty to their measurement.)

By using optical image intensifiers that make quick snapshots possible where long time exposures were required before, and computer techniques to combine a multitude of images and subtract the effects of atmospheric turbulence, astronomers have succeeded in measuring the sizes of some stars. Now, according to a report last week from Kitt Peak National Observatory, it is the turn of the smaller asteroids. Using Kitt Peak equipment, S. Peter Worden of the Solar Physics Branch of the Air Force Geophysics Laboratory in Sunspot, N.M., has succeeded in determining the diameter of the asteroid Vesta to be about 513 kilometers.

Worden hopes to conduct a continuing program of measurement of small solar-system bodies using the equipment at Kitt Peak. The method should work not only for asteroids but for the smaller satellites of the outer planets, which also appear as scintillating points of light rather than disks in ordinary telescopes. Other techniques for measuring small objects in the solar system include observations of stellar occultations (used on the tiny asteroid Eros, about 15 to 20 kilometers across) and extrapolations from infrared brightness measurements and surface compositional estimates (which have been applied to objects even smaller than Eros). Stellar occultations are rare, however, and speckle interferometry now seems likely to offer a useful tool for checking the results of other techniques. □

Woods Hole's Frosch to be NASA nominee

President Carter's nominee as the new administrator of the National Aeronautics and Space Administration will be Robert A. Frosch, associate director for applied oceanography of the Woods Hole Oceanographic Institution in Massachusetts. Frosch would replace present NASA administrator James C. Fletcher, retiring from the space agency effective May 1. Washington sources suggest that it may be "several weeks" before Frosch's nomination is officially submitted to the Senate for confirmation.

Holder of a Ph.D. in physics from Columbia University, the 49-year-old Frosch was with Columbia's Hudson Laboratories from 1951 to 1963, including seven years as director. From there he went to the Pentagon's Advanced Research Projects Agency as director for nuclear test detection, becoming deputy director of ARPA in 1965. The following year he began a seven-year stint as the U.S. Navy's assistant secretary for research and development, leaving in 1973 to become assistant director of the United Nations' environmental program. He joined Woods Hole in August of 1975. In addition, Frosch has been a member of the Naval Research Advisory Commission and of the National Academy of Sciences' energy and maritime transportation research boards, and chairman of the Academy's commission on radioactive waste management.

The President made his selection from among several candidates. The new White House science adviser, Frank Press, reportedly contributed considerable input, and discussed the job of the NASA administrator in terms of possible alternative futures facing the space agency in what is felt to be a time of transition. Agency officials had privately expressed hope (prior to Carter's selection) that the appointee would be a good "fund-getter," and one source has acknowledged that the candidates were evaluated in part on their expected ability to "interface with Congress." Another criterion, however, was that the chosen nominee be a "team player" in the Carter administration. □

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