

The Pacific's drift . . .

Geological findings over the past few years have given rise to a picture of the earth's crust as a mammoth mosaic in which continents and ocean basins shift around in changing patterns.

Magnetic studies of submerged mountains in the Pacific have suggested that the Central Pacific crust had moved as much as 1,800 miles over the past 100 million years. Scientists on Leg 17 of the Deep Sea Drilling Project returned to Honolulu May 25 with evidence confirming this observation.

Previous studies had found a region of high biological productivity along the Pacific equator. Sediments in this area are thick and rich in remains of microscopic plants and animals. The Leg 17 scientists, led by Dr. Edward L. Winterer of Scripps Institution of Oceanography and John I. Ewing of Lamont-Doherty Geological Observatory, found equatorial-type sediments north of the present region. This is evidence that the Pacific sea floor has been moving northward across the equator. Earlier legs had shown that this motion has persisted for at least the last 30 million years.

The researchers also found evidence of a period of great volcanic activity from about 110 million to 80 million years ago. This volcanism, the scientists said, obscures any pattern of crustal ages in the area between the Hawaiian Islands and the Marshall Islands. Near the equator, ages increase regularly to the west, in accordance with a pattern predicted by sea-floor spreading. But farther north, the re-



Winterer and Edgar: More to come?

searchers found crustal ages too young to fit this pattern. Whether the old pattern was covered in this area by the volcanism or there was an actual change in the pattern itself is not yet clear.

The Central Pacific floor is dotted with long mountains, some submerged and some breaking the surface to form islands. The concentration of these features in one area of the ocean has puzzled scientists. The Leg 17 team drilled into the Horizon Guyot, a flat-topped submerged mountain about 620 miles west of Honolulu. The cores recovered from this curious feature show that it was formerly at or above sea level and has since subsided to its present depth of about 5,000 feet. □

SOYUZ 11 COSMONAUTS

Manning the orbital lab

The Soviet Union launched its 11th Soyuz spacecraft this week. The next day, on June 7, the roomy Soyuz did what Soyuz 10 had done (in some fashion) on April 24; it docked with the orbiting science laboratory, Salyut (SN: 5/1/71, p. 298). But then, Cosmonauts Georgi Dobrovolsky, Vladislav Volkov and Viktor Patsayev crawled from Soyuz 11 into Salyut to establish what the Russian physicist Nikolai Sirota describes as "the first space house."

The docked craft form a station about 60 feet long and 12 feet in diameter and weighing 25 tons (Apollo 14 weighed 35 tons). The Soviets have not announced how long the three men will stay in their space laboratory, but it was assumed that they will try to break their own duration record of 18 days for Soyuz 9.

In addition to the routine work of

checking out and monitoring spacecraft systems, the cosmonauts were to study the earth's surface, atmosphere and outer space from an orbit of about 164 by 148 miles. By use of ultraviolet and infrared as well as multispectral photography, they could make an inventory of the earth's resources—the areas covered by forest, fresh water and snow as well as mineral deposits, faults and diseased versus healthy plant life. Tass announced that the men would also conduct "medicobiological studies to determine the possibilities of performing various jobs by the cosmonauts in the station and to study the influence of space flight factors on the human organism."

This published agenda for the station is not unlike that planned for the first laboratory to be manned by American astronauts. The difference is Skylab will not be aloft until 1972. □

. . . Extension through 1975

The Deep Sea Drilling Project has been one of the most successful large scientific endeavors of all time. Among its many achievements is evidence that the ocean basins are much younger than the continents—a discovery that has had profound scientific repercussion. The project's findings have also provided convincing evidence in support of sea-floor spreading and continental drift and have filled in many details of these processes. Technologically, the project has developed a core reentry technique that will be invaluable not only to future scientific investigations but also in efforts to add to available petroleum resources.

The original project, first funded in June of 1966 with a \$12.6 million National Science Foundation grant, was to extend for 18 months. On Oct. 28, 1969, NSF awarded Scripps Institution of Oceanography, the managing institution, an additional \$22.2 million to extend the project to June 30, 1973. Drilling would continue through August 1972.

Now, at NSF's request, Scripps has prepared a proposal requesting \$35 million more for another three-year extension. The proposal is now being considered by University of California Regents, who will then forward it to the NSF. Dr. Melvin N. A. Peterson, co-principal investigator of the project, thinks the chances for NSF approval are very good.

One of the scientific objectives for the extended period, said Dr. N. Terence Edgar, chief scientist for the project, would be extensive coring of the Antarctic and Arctic sea beds for information on the onset and history of ice ages. Samples of the ocean floor and continental margins of Antarctica would be taken in the area between a point in the Ross Sea south of Cape Horn to a point south of New Zealand. The researchers want to drill in the Arctic between Greenland and Norway.

Project scientists also hope to penetrate deep into the basement material underlying ocean sediments. So far the maximum penetration of these rocks has been less than 100 feet. The drilling ship *Glomar Challenger* would be modified to extend the maximum length of its drill stem from 22,500 feet to 28,000 feet. "With modifications of the ship and drilling equipment we think it will be possible to drill a kilometer or more into the basement," said Dr. Edgar.

Recent expeditions to the Mediterranean showed basin to be more complex than expected. The researchers want to return to the Mediterranean, and start studies in the Black Sea. □