

More young ocean crust

When the scientific drilling ship *Glomar Challenger* journeyed to the northwestern Pacific this summer on Leg 6 of its mission, it found unexpected evidence of a young ocean floor beneath the Philippine Sea and the region of the Caroline Islands (SN: 9/13, p. 197). This seemed to indicate that there may be means for formation of new ocean floor far from the mid-ocean ridges.

Leg 7 of the drilling project is now completed, and it too has found areas of young ocean floor, in the adjacent tropical western Pacific.

In the area north of New Guinea and south of the Caroline Islands the crust beneath the sediments was found to be only 25 million to 30 million years old. The crust in much of the rest of the western Pacific is three to five times as old.

The finding greatly extends the region of mid-Tertiary (about 30 million years old) basement found on the Caroline Ridge on Leg 6.

The cause of the activity that formed the younger crust is not at all clear, say Leg 7's chief scientists, Dr. Edward L. Winterer and William R. Riedel of the Scripps Institution of Oceanography.

Two other findings of Leg 7 also point to the need for future investigations of the western tropical Pacific, say the scientists:

- Findings indicated that the large deep basin between the Gilbert and Line Islands had been deep for the past 80 million years. But previous work near the islands shows that some seamounts have subsided more than a mile since they were formed. The scientists suggest that perhaps some segments of the sea floor move up and down more or less independently and are not susceptible to any simple, large-scale explanation.

- In the region south of the Caroline Islands, drilling uncovered evidence that the warm equatorial current system was diverted for a time about 5 million years ago. This allowed abnormally cool waters to flow across the area, bringing in characteristic cool-water microscopic plants and animals whose fossil remains were found in the sediments recovered. It is not clear, they say, whether this change was due to a different arrangement of island barriers, or to a change in other conditions, such as climate.

SEISMOLOGY

Earthquakes in Antarctica

Small earthquakes have been known for some time to occur on Antarctica, but never have they been recorded by more than one station. Many of them were attributed to the birth of icebergs off the Ross Ice Shelf. Early this year a seismograph was installed 120 kilometers from an existing seismic station at Scott Base, making it possible for the first time to locate the positions of earthquakes. A New Zealand scientist, Dr. R. D. Adams of the DSIR Seismological Observatory, reports in the Oct. 18 *NATURE* that he has been able to give rough locations for nine small earthquakes recorded in a 38-day period before winter began this year.

Their positions, near the coast of Victoria Land, indi-

cate that there was a localized source of seismic energy about 250 kilometers north of McMurdo Sound, with lesser activity extending to the south about 100 kilometers.

The earthquakes could have been caused by ice movements, says Dr. Adams. If that is not the case, they probably are an earthquake swarm, composed of many small quakes of the same magnitude.

A temporary third station is being installed, and monitoring during the 1969-70 season should throw more light on the nature of the quakes. Dr. Adams emphasizes that the existence of small natural earthquakes does not alter the fact that Antarctica is substantially less seismically active than any other continent.

GEOLOGY

Effects of Amchitka test

The Atomic Energy Commission's preliminary report on the effects of the Milrow underground nuclear test on Amchitka Island Oct. 2 (SN: 10/11, p. 323) says seismic activity appeared to be about normal for the region in the several days following the blast. The only activity was confined close to the detonation point, "where hundreds of tiny tremors, mostly associated with cavity collapse, were recorded during the first several hours after the event." This stopped when broken rock above the blast cavity apparently collapsed about 37 hours after the explosion.

Natural earthquake patterns will be given further study. The AEC says tremors measured seemed to follow the pattern of pre-detonation activity, believed to be related to normal stress release in the region. There apparently was no appreciable surface movement along the Rifle Range fault, the closest known fault to ground zero. Final determination of geological effects must await evaluation of detailed field observations and surveys, says the AEC.

GEOCHEMISTRY

Transient carbon monoxide

Carbon monoxide was first reported to be a minor constituent of the atmosphere in 1949. In today's industrialized society, it is estimated that the gas is being produced at the rate of 210 billion kilograms per year and that the average atmospheric concentration, though urban concentrations are higher, is 0.1 part per million.

One of the major considerations then is whether the gas is accumulating in the atmosphere, and this in turn is related to how long on the average it resides there before being removed by natural processes.

One early estimate for the gas' lifetime in the atmosphere was less than 4 years; another was 2.7 years. Now a study based on radiocarbon dating by Bernard Weinstock of the Ford Motor Co. scientific research staff has established a lower limit of 0.1 year for the residence time.

This additional support for a short lifetime for carbon monoxide in the atmosphere should help to dispel concern that it is accumulating and that it represents a long-time hazard to human health, he says in the Oct. 10 *SCIENCE*.