



Battelle Northwest

Surface ships, a mini-sub, a habitat and other gear will work a full schedule.

#### COBB SEAMOUNT

# The second step down

Leaving the diving research to others, Project Sea Use will study an entire mountain beneath the Pacific waves

by Jonathan Eberhart

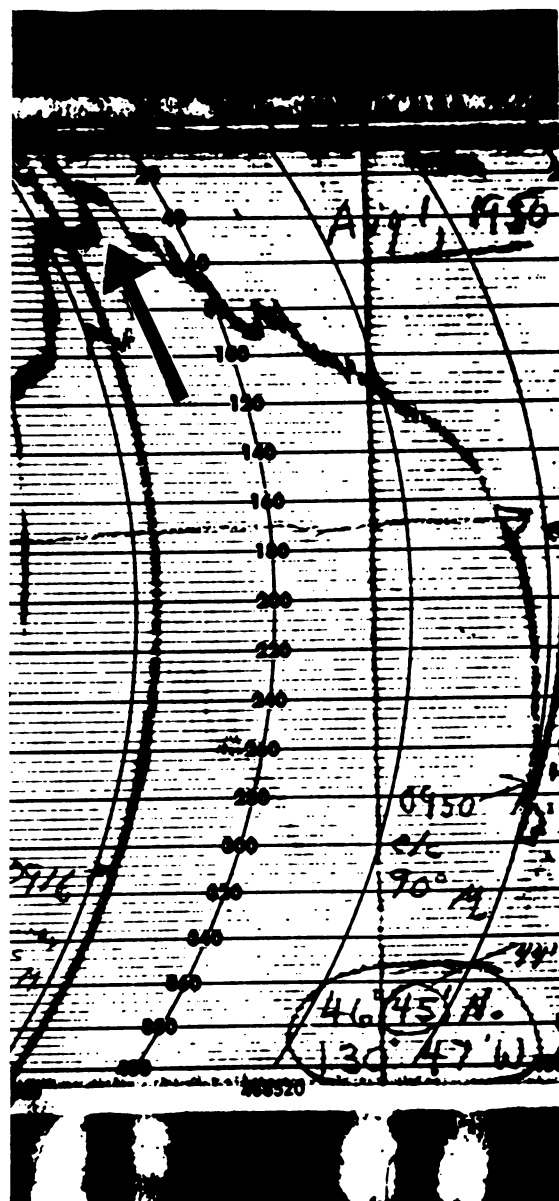
A mysterious concentration of sea birds, hunting for fish some 270 miles off the Washington coast in supposedly open ocean, startled crewmen of the U.S. oceanographic research ship John N. Cobb during a voyage in 1950. Investigation revealed a vast underwater mountain, rising steeply from the 8,500-foot-deep sea floor to a flat, 20-acre plateau only 112 feet below the surface of the northeastern Pacific Ocean and forming a shallow home for the otherwise deeper-running fish.

Tens of millions of years ago, the mountain was a thundering volcano. Today, as the Cobb Seamount, it is about to become a natural scientific laboratory, aiding in studies ranging from pesticide levels in fish to uncrackable codes for submarines.

At least three universities, two private research organizations, the Bureau of Commercial Fisheries, the Navy, the

Environmental Science Services Administration and several private companies are likely to become involved during the two or three years of a conglomerate program known as Project Sea Use. Surface ships, deep-diving research submarines, a manned bottom habitat and a towering, 150-foot equipment mast are all part of the broadly based plan.

What Project Sea Use is not, however, is almost as important as what it is. It is emphatically not a Sealab-type investigation of the problems and promises of living in the sea, says Project Coordinator Ward Swift of Battelle Memorial Institute, which has the big job of steering the many participants together into a smoothly working organization. There will be no biomedical experiments, no physiological research. The Cobb Seamount will be the whole show; its exploration and exploitation the primary goals.



Bureau of Commercial Fisheries

Seamount revealed: 1950 sounding.

There are about 100 other submerged mountains off the northwestern U.S., and many more around other parts of the coastline, but the Cobb Seamount was an almost inevitable choice. The only other one well out to sea that comes closer to the surface than about 2,400 feet, says Swift, is some 750 miles north, off Canada's Queen Charlotte Islands. It would be much more difficult to supply, as well as inhospitably cold for diving.

Other qualities make the Cobb Seamount a prime choice for research. Most of the northwestern U.S. weather passes over it, making it an ideal location for an advance monitoring station. Because it reaches high enough to absorb a substantial amount of sunlight, it is a biologist's and ecologist's paradise, teeming with marine flora and fauna, undisturbed by activity on the mainland.

21 september 1968/vol. 94/science news/293

# When you're ready to travel, you're ready for American Express. The full-service travel company.

**1 American Express Escorted Tours.** Where would you like to go this year? Surfing in Hawaii...skiing in Switzerland? Go with an American Express Escorted Tour and travel with friends. Just pick the place and pack your bags.

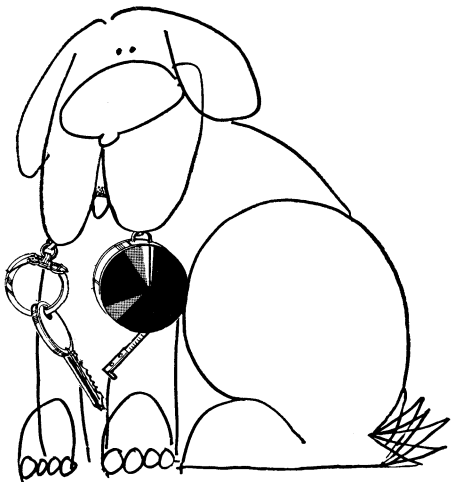
**2 Independent Travel Arrangements and Reservations.** With an American Express Independent Tour, you plan your days and nights. We take care of the tickets, the hotel, airport transportation, and a city tour and entertainment. We make these arrangements at no extra cost to you.

**3 American Express Travelers Cheques.** Could you afford to lose \$100 cash on your next trip? Or \$1,000? Not many travelers could. Next time buy American Express Travelers Cheques — spendable anywhere. If lost or stolen, these Travelers Cheques are promptly refunded wherever you go.

**4 American Express Monetic Card: The New Money Card for travel and entertainment.** Fly to California or dine elegantly in New York. Buy gifts, send flowers and pay your hotel bill, too!

**AMERICAN EXPRESS**

© 1968 American Express Co.



## Like to be friends?

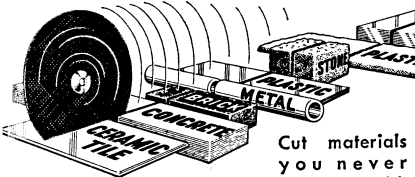
**BEFRIENDING US MAY BE REWARDING** for you if you feel that things are getting sort of drab. We modestly believe that we can add a dash of romance and a soupcon of difference to it all. **HERE'S OUR FRIENDLY OFFER.** Clip this ad and mail to us with a \$1 bill (No checks, please! It drives our bankers mad.) We'll send you an elegant, practical **TAPE MEASURE/KEYRING** like the one Henry holds here. You'll also receive "The World's Most Exciting Catalog." But then our friendship isn't over. Every month or so, we'll send you an exclusive offer of a new and exciting product, not available from anyone but us. And last, (but far from least), we'll send you a \$2 **GIFT CERTIFICATE** that may be applied to your first purchase. An unusual proposal? Sure! But Haverhill's is unusual. Be friends and see. SN-0921

584 Washington, San Francisco 94111 **haverhill's**

### BOOK ORDER SERVICE

For the convenient purchase of any U.S. book in print you may avail yourself of Science News Book Order Service, 1719 N. St., N.W., Washington, D. C. 20036. We pay postage. 25c handling charge if price is less than \$2.00. Regular retail prices on all books.

### Cut Almost Any Material With NAVAL Round Saw



Cut materials you never could cut with a circular saw

before. Brass, copper, ceramic tile, aluminum; sheet metal, slate, stone, fiberglass, brick, cement, stainless and other steels (even a file).

**ROUND SAW** has silicon carbide grains embedded in an open weave nylon mesh. No sharp teeth grab the work and throw it back at user. A great sanding disc too. Sand and shape all metals, wood, tile, glass, remove paint, rust, etc. This 7-inch saw comes with 5-in. rubber disc for sanding use, 1/2" shank arbor, 2 steel flanges.

- 1 @ \$5     3 @ \$4.50 ea. (total \$13.50)
- 6 @ \$4 ea. (total \$24)
- 24 @ \$3.50 ea. (total \$84) all ppd.

Order by Mail  
**MEREDITH SEPARATOR CO.**  
Dept. YSN  
310 West 9th St., Kansas City, Mo. 64105

## . . . seamount

**In addition,** it is clean. Aerosols and dust particles in the atmosphere can be measured with great precision, freed from the pollution of a ship's exhaust. Dissolved chemicals in the water can be similarly analyzed without the biological and industrial contamination found nearer to shore.

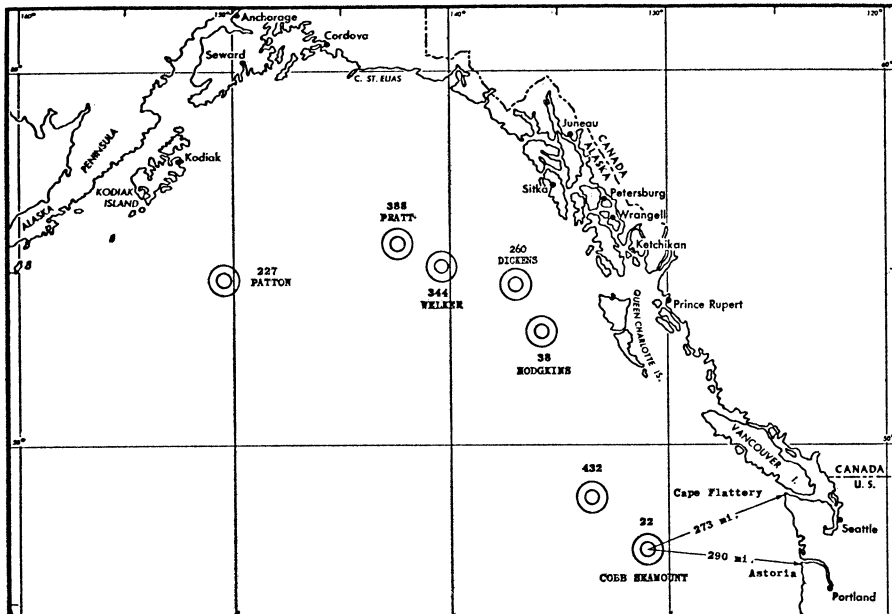
The seamount's greatest value, however, may be that it provides a stable platform for instruments. The exchange of heat, water vapor, radiation and particle motion between the sea and air can be only roughly measured from floating platforms, the researchers point out, and the problem is at its worst during violent weather when the data would be of greatest interest. The Cobb site has some of the worst weather in the northeast Pacific, says Swift, and meteorologists are looking forward to the chance for rock-steady monitoring.

Originally, Project Sea Use was to have been carried out in one glorious burst of activity in the summer of 1969. Then the financial cramps began to set in. The planners soon realized that even the program's relatively small \$2 million tab was not going to be payable all at once. The schedule was stretched to two years, then three. Even at that rate, much of the cost will be defrayed through loans of equipment and services.

**It is in just that spirit,** in fact, that the project will get going next month, when ESSA's 303-foot research vessel Oceanographer will crisscross the Cobb site taking depth readings, gathering bottom samples and generally checking out the locale for the research projects to follow. That, together with other surveys, will be Project Sea Use 1.

Sea Use 2, next summer, will include the making of detailed photo-mosaics of the entire seamount plateau, similar to the mosaic lunar maps assembled from Surveyor and Lunar Orbiter spacecraft photos. Most of the activity at the site has to take place in frenetic, 40-day spurts during July and August, because the weather simply gets too violent for precise work at other times.

The other big event of the project's second phase will be the construction of the giant equipment mast. Looking like a radio tower, the mast will be festooned like a Christmas tree with dozens of instruments to measure currents, tides, waves, sound velocity and other characteristics of the water and air. Though it will be a basically simple design, it is not being taken lightly. Oregon State University built a cylindrical buoy 180 feet high and anchored it on the wave-wracked seamount in July (SN: 7/13, p. 35). The same month a passing ship shattered the plans of the OSU oceanographers (who have since joined the Sea Use team) when it re-



Bureau of Commercial Fisheries

Besides Cobb, only Hodgkins Seamount comes near the surface.

ported seeing the top five-sixths of the mast floating on its side near the site.

The project will finally flower in the summer of 1970. The mast will be installed, along with a power supply (possibly an isotope generator) to keep its many instruments operating unattended for a year. In addition, a specially equipped support ship will lower into place a four-or-five-man habitat, now being developed by the Oceanic Foundation of Hawaii, one of Sea Use's four original collaborators. (The others, besides Battelle, are the University of Washington and Honeywell, Inc.)

Saturation diving (SN: 9/7, p. 240) will allow the divers to stay at depth for as long as desired. The present plan is for two teams to spend 20 days each on the bottom, making maximum use of the calm season. The habitat itself will be about nine feet in diameter and 40 feet long, almost exactly the same size as the Navy's Sealab I. The divers, however, will be the project scientists themselves, many of whom are already proficient, rather than borrowed Sealab aquanauts.

One of the principal concerns, says Swift, will be to keep the habitat connected to its power-providing support ship in the rough seas. In case the umbilical cables should come loose, the structure will have emergency batteries, and a duplicate set of lines will be hanging ready from a nearby buoy.

Though not yet officially involved in the project, the Navy has already shown an interest, and part of the experimental agenda calls for research into acoustic holography as a possible source of "efficient, virtually unbreakable coding techniques to transmit secure information."

Vice Admiral Turner F. Caldwell, di-

rector of the Navy's antisubmarine warfare programs, has pointed out another significance of such on-site research—perhaps its most important one. "Such a functioning laboratory," he said recently, "would furnish an excellent means for developing legal concepts of utilization and occupation of real estate at the sea floor."

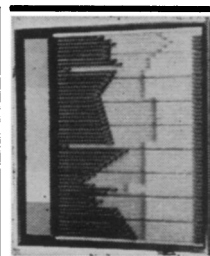
There are no legal precedents for establishing claims to the sea floor (SN: 9/7, p. 240), nor even any accepted procedures for making them. The United Nations has long been unable to agree on a unified approach for study of the problem. At least, therefore, Project Sea Use may offer a benchmark for discussion.

It is science and technology, however, not politics, which motivate the Sea Use teams. More than two dozen scientists are already involved, and more are likely to join.

Their plans include:

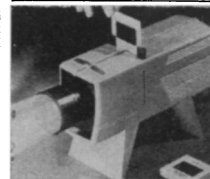
- tracking of radioisotopes to measure air and water movements.
- a study of pesticide residues in fish, which may lead to an estimate of the full worldwide load of pesticides in the atmosphere.
- analysis of what will reportedly be the first magnetically oriented rock samples ever collected from ocean-bottom basalt, with the possibility of being better able to trace the ancient wanderings of earth's magnetic poles.

This will not be the first time that scientists have visited the Cobb Seamount. Various Government agencies have sponsored expeditions there in at least half a dozen different years since its discovery. But this trip is the big one. With biomedical studies left to Sealab, it is a sign that man is ready to meet the ocean on its own terms. ◇



**SLIDERECORD** — for the budget-minded administrator. Up to 106 pairs of contrasting celluloid bands, superposed, run freely in tough, plexiglass channels. Show funds appropriated, used to date, funds available. Rugged, yet decorative. Self-contained—no supply needs ever. Free literature SL14:

**ULTRADEX DIVISION**  
Intercontinental Service, Box 615  
Washington C. H., Ohio 43160



**NEW CORDLESS SLIDE PROJECTOR**

This feather-light projector uses 3 flashlight batteries: no electricity! Now show your favorite 2"x2" slides in big, 18"x28" size, in friends' homes, at office meetings, etc. Precision lens is easy to focus. Uses any light-colored wall for a screen. Ideal for salesmen. \$8.45 post paid. (Batteries not included.)

Chespa Sales, P.O. Box 117-S9  
Barrington, N. J. 08007

**Doctors Trim 2 Inches Off Flabby Waists!**

German doctors at the famous Max-Planck Institute have discovered an instant-workout method that can reduce waistlines in 30 days. Called "Isometric Contractions," one 60-second daily workout can reduce waistline fast. 10 simple exercises can put the whole family in shape fast. No sweat, strain or tiring repetitions. Acclaimed internationally by physiologists, coaches, athletes. Results guaranteed. Free, illustrated information. Write **AWARD-WINNING ISOMETRICS**, 37 Centuck Station, Yonkers, N. Y. 10710.

**SCIENCE PROJECT MATERIALS** **EXCITING STIMULATING**

**McLEOD GAUGE**

## VACUUM KIT

Construct low priced McLeod Gauge designed for student and amateur use. Includes pyrex gauge with case, plastic tubing, hardware and seal. Directions for calibration. **\$15.00**

Experiments in Electrostatics—a book of experiments you can do . . . send 50¢. Low priced physics equipment for schools and science projects. Free catalogs—send 15¢ for postage

**MORRIS and LEE**

Dept. SN 9B68, 1685 Elmwood Ave., Buffalo, N.Y. 14207