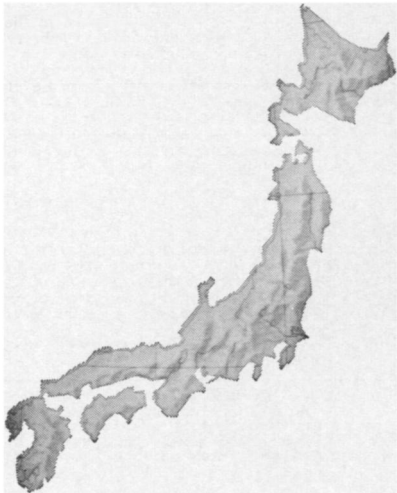


LETTER FROM TOKYO



Briskly and broadly

**Japan's ocean sciences
are meagerly funded, but
officials are optimistic**

by Stuart Griffin

Despite a budget that is dwarfed by those of other countries, Japan's oceanographers are looking forward to better times and more ambitious programs.

A long-range undersea development plan, developed by the Oceanographic Science Technology Council as advisers to Prime Minister Eisaku Sato, is centered on four fields: mineral resources, biological resources, oceanographic environment and technology.

It will be fleshed out and promulgated later this year. The draft outline concerns the development of facilities and technology within the next 5 to 10 years.

Among the projects outlined in the plan are:

- A bathyscaphe capable of diving to 10,000 feet, and an improved model able to descend 16,000 feet.
- A seabed drilling device that will work while completely submerged in deep water, replacing the conventional floating drilling stations which are subject to waves and currents.
- An undersea base capable of accommodating 10 aquanauts about 750 feet below the surface for a month.

The undersea development program will also establish an oceanographic information center for weather forecasting. Surface temperatures, saline currents, speed of sea currents, atmospheric pressures and clouds, and other oceanographic data will be collected by robot buoys and survey vessels.

The data accumulated will be processed through computers and supplied along with meteorological data and findings to various organizations interested in such information.

The council, headed by Prof. Shoi-chiro Hayami of Kyoto University, has been at work since last October, and has commissioned specialists from both academic and industrial circles to formulate the long-range plan.

The report is also expected eventually to cover information distribution, manpower requirements and training curricula, and establishment of a body to promote international cooperation.

The continental shelf around Japan accounts for 76 percent of the area of Japan proper. Given the capacity of developing the sea down to the envisioned depth of 650, 700 or 750 feet, Japan would be in a position of virtually doubling its territory available for development by entirely peaceful means and without stirring any international commotion or opposition.

Compared to other countries, Japan's appropriated funds, for the budget which went into effect on April 1, are small, a mere \$8.5 million, about the same level as Germany's (SN: 4/26, p. 414). But the Japanese amount represents an increase of approximately 87 percent over the budget for the just-concluded 1968-69 fiscal period.

"It will be a matter of time," Prof. Hayami emphasizes, "before our marine science budget will be comparable in scale to expenditures for atomic energy and space, but we envision the gap as being bridged within the next several years."

The Japanese marine science and technology budget is divided among six ministries and Government agencies, and the work is varied. Besides the construction of the underwater habitat, the operation of two bathyscaphes and the seabed drilling device, there are basic surveys on resources existing on the continental shelf, experiments for desalting and for utilization of its by-products, the preparation of ocean-bottom topographic charts, the construction of underwater parks, the building of a weather observation vessel and the establishment of an aquaculture center.

There is the fear that the budget is still too small to permit really detailed work, and there is anxiety lest squabbles develop among rival agencies. There is also worry lest Government agencies lock horns with private industries.

But council scientists hope the work will be begun on the "briskest, broadest basis," because of its manifest importance.

They believe it is perhaps most advisable, at this stage, "to place emphasis," Dr. Hayami says, "on the development and the securing of shelf resources."

This shelf area is relatively easy to approach, down to at least a 650-foot depth, or better, by means of conventional diving or digging techniques modified according to depth. With newly developing submersible digging equipment, further deeper probes are inevitable.

The shelf's topographic and geological features are generally identical with those of land. But much more significant, according to the council, is the fact that the shelf is "a treasure-house of fishery and mineral resources," with confirmed existence of petroleum, coal, natural gas, iron sand and manganese.