News and Comment

Oceanography: After a Prosperous Decade, Agency Planners Agree on a Grand Design for Next 10 Years

One of the fastest growing items in the federal science budget has been appropriations for oceanography, which rose from less than $10 million in the 1953 fiscal year to about $124 million for fiscal 1963. A familiar pattern of challenge and response has been discernible, with the stimulus in the case of United States oceanography supplied by the growth of the Soviet submarine fleet and the legend that every Russian trawler has an oceanographer aboard.

While oceanography has undoubtedly profited materially because policymakers and legislators believe that Admiral Mahan was right about seapower, other factors have contributed to the recent prosperity of oceanography. The International Geophysical Year, for instance, seems to have given impetus to marine sciences in general and to programs for ocean surveys in which several nations would participate. And since World War II, interest has decidedly quickened in research which might lead to better ways to obtain food from the sea and minerals from beneath it.

Congressional generosity to oceanography may in part be explained by fragmentation of federal oceanographic activities among some 20 federal agencies which conduct or sponsor research. There is no single oceanography budget, but rather a score of items distributed over many departmental budgets and considered separately, and, until now, at least, benignly, by more than a half dozen committees of Congress.

Recently, as the individual items increased in size, Congress noticed that oceanography funds added up to an imposing sum and began to ask if the activities added up to a sound program. Within the Executive, efforts were being made at the same time to reconcile rivals and work out a way to provide fair shares for all. Last week some fruits of these efforts became visible when the House Merchant Marine and Fisheries Committee reported out a bill which puts the national program in oceanography on a formal basis and seems to be acceptable to the major interested parties, Congressional and Executive, who have by no means always agreed. Last week also, the Interagency Committee on Oceanography which coordinates agency planning in the field published a 10-year national oceanographic plan which spells out in terms of money, ships, and goals what should be done in the next decade.

Serious attempts to bring order to federal oceanographic activities and give them a grand design date back to 1959 and the appearance of the report "Oceanography 1960–70," prepared by the oceanography committee of the National Academy of Sciences. This NAS study was sponsored by a number of the agencies involved in sponsoring marine research, and it paved the way for hearings in the House Merchant Marine and Fisheries Committee, which successfully asserted its authority to legislate on oceanography policy though it had to face a challenge from the House Science and Astronautics Committee chairman, the late Overton Brooks (D.-La.), who advanced his own committee's claim to the jurisdiction.

In the Senate, initiative was taken by Senator Warren G. Magnuson (D.-Wash.), who represents a maritime state and has demonstrated a persistent interest in oceanography. Magnuson is chairman of the Commerce Committee, and chairman as well of its Merchant Marine and Fisheries subcommittee which exercises authority on oceanography policy. Magnuson is also an influential member of the Senate Appropriations Committee and is regarded as anchor man on oceanography in Congress.

In 1960 Magnuson introduced a bill which set forth a 10-year plan for oceanographic research and authorized expenditures of more than a half billion dollars over the period. The bill would have created a new division of marine sciences in the National Science Foundation to coordinate research and the programs for the construction of ships and shore facilities. The bill passed the Senate but was not acted on by the House.

In the first Kennedy Congress there appeared a new version of the oceanography bill, amended to locate general responsibility for oceanography in the newly established Office of Science and Technology, headed by Jerome B. Wiesner, and also to create in the OST a post of assistant director for oceanography.

A major question which had to be settled was whether or not it was advisable to move in the direction of greater centralization of authority over federal oceanographic activities. The idea of tying loose administrative ends together appeals to many legislators, and there was some sentiment for centering overall management of oceanography programs in one agency. The agencies, as might be expected, believed that in diversity lies strength, and they advocated better coordination.

The oceanography bill passed both House and Senate last year but died on the President's desk. The bill went to the White House shortly before Congress adjourned and by taking no action on it, the President dealt it a pocket veto.

One theory on the veto held that the President let the bill perish because he did not wish to call the attention of the public or of Congress to the extensive activity in the field of oceanography being carried on in the cause of antisubmarine warfare. But it seems more likely that the President and his science advisers were reluctant to see an oceanography "czar" installed in the OST, a small agency which has avoided undertaking operating functions and prefers to act inconspicuously.

This year the differences seem to have been thrashed out. A bill introduced by Representative Alton Lennon (D.-N.C.), chairman of the oceanography subcommittee, was reported out of the Merchant Marine and Fisheries Committee last week and on Monday was passed by the House.

This bill (H.R. 6997) authorizes no money but rather provides for a "comprehensive, long-range, and coordinated national program in oceanography." Its effect is to put Congress on record as recognizing the need for a substantial, long-term effort in oceanography and to demand that the Executive formulate a satisfactory long-

range program and keep Congress informed on progress.

The bill calls on the President to issue a statement of national goals in oceanography, to survey the oceanographic activities of federal agencies, to develop a program to be conducted or supported by federal agencies, to fix responsibility for directing oceanographic activities, and to resolve differences arising among federal agencies.

The bill writers recognized that making the President oceanographer-in-chief was a matter of form and specified that "in planning and conduct of a coordinated Federal program the President shall utilize such advisory arrangements, including the Office of Science and Technology, as he may find appropriate."

The OST, as a matter of fact, has played a leading part in attempts to get oceanography organized, acting as envoy to Congress and mediator among the agencies. It is expected, however, that as the lines of the program are established and the new machinery is broken in, the task of coordination will fall increasingly to the Interagency Committee on Oceanography (ICO).

Wakelin Chairs ICO

The ICO was formed in 1959 at the behest of President Eisenhower amid the ferment caused by the NAS report. The committee is the offspring of the Federal Council for Science and Technology which is made up of officials of policy rank of the principal agencies supporting scientific reseach. The ICO is one of several special purpose Federal Council committees—atmospheric sciences, high-energy physics, materials research and development are other examples—formed to resolve interagency problems and to carry out overall planning in their areas. Current chairman of the nine-member ICO is James H. Wakelin, Jr., assistant secretary of the Navy for research and development.

Since 1960 the ICO has been publishing a series of annual plans as well as oceanographic ship-operating schedules, a compilation of university courses in the marine sciences, and, this year, a plan for ocean surveys.

Last week the ICO made public its most ambitious effort to date, *Oceanography: the Ten Years Ahead*, subtitled A long range national oceanographic plan, 1963–1972.

According to the authors the plan is intended "neither as a rigid blue print to be followed slavishly, nor as a single master document. Rather it is a restatement of national objectives that depend on oceanography, an assignment of relative priorities expressed in terms of levels of activity associated with these different goals, a projection of the growth necessary to achieve these goals expressed in terms of required research resources—funds, manpower and facilities."

National oceanographic program budget for fiscal years 1961, 1962, and 1963 (thousands of dollars).

Agency	1961	1962	1963
	By agency		
Defense	$31,615	$ 42,081	$ 55,246
Commerce	11,400	23,567	24,024
Interior	8,658	14,252	16,102
National Science Foundation	7,883	17,321	18,160
Atomic Energy Commission	1,691	4,106	5,428
Health, Education, and Welfare	694	3,109	4,108
Treasury	133	134	511
Smithsonian Institution		217	431
Totals	$62,074	$104,787	$124,010
	By functional area		
Research	$ 30,860	$ 39,023	$ 46,955
Instrumentation	850	3,000	6,630
Ships	13,998	34,010	38,103
Surveys	14,900	17,366	18,487
Indian Ocean Expedition	760	1,974	4,002
Facilities	430	8,904	9,233
Data Center	276	510	610
Totals	$62,074	$104,787	$124,010

In effect, the 10-year plan extends the trends established in the past five years. The watershed year for the oceanography budget was 1961, when appropriations rose from $62 million to $104 million. The sharpest increases went into ship construction, with Navy funds for new ships rising from $4.2 million in fiscal '61 to $13.6 million the following year. The Coast and Geodetic Survey, lodged in the Commerce Department, saw its ship construction budget go up from $4.7 million to $14.2 million.

Over 10 years the plan calls for an increase in the number of oceanographic ships from 76 to 128 (some 30 to 40 ships would be replaced), major laboratories from about 50 to more than 70, and professional manpower from 2700 to over 6000. The annual oceanography budget in 1970 would be $350 million.

The assumptions on which the projections are based are that the oceanography budget will increase an average of 10 to 11 percent a year over the 10 years and that the growth of manpower in the field will average some 9 to 10 percent annually. The average for all fields of science and technology is 7 to 8 percent.

In respect to manpower the future is not clear. Undeniably there has been a spurt of interest in oceanography and an expansion—financed predominantly by federal funds—in university facilities for research and graduate training in oceanography. But recruits must be attracted to the eclectic field of oceanography from among students trained in such basic disciplines as physics, chemistry, biology, and geology, and, increasingly, from engineering. Competition will intensify and the goal of doubling manpower, and particularly of making more really first-rate oceanographers, will not be easily accomplished. It may be significant that the number of oceanographers in government has not increased significantly during the recent oceanography boom.

It remains to be seen, of course, whether Congress will provide the annual increments necessary to reach the level of financing advocated in the plan. Short-term prospects appear not too bright, however, since cuts now contemplated in current authorizations, mainly for ship construction, would put the 1964 budget near the $124-million level of 1963 rather than the $156-million figure requested by the President.

Congress takes uneasily to long-term commitments. The legislators are accustomed to operating within the narrow horizons of annual appropriations. And they know that fluctuations in international relations or the national economy or the outcome of elections may force changes in plans. Nevertheless, the agreement on a long-term program by agencies which are at least potential rivals for funds in a growth category of the science budget is a noteworthy step on the road to more comprehensive planning for federal science.—JOHN WALSH