Frederick Seitz, the committee's goal is to "develop guidelines and suggest measures that will enable this vital supply of specialized manpower to work most creatively and productively."

Represented on the committee are the three sectors of national life which have direct and sometimes conflicting interests in the production and utilization of specialized manpower—government, industry, the universities. The design of the study has not yet been fully developed but it appears that the committee will examine the allocations of scientific manpower with a view to judging how effectively the present stock is being utilized. The committee is also expected to consider such matters as whether federal contracting procedures and management practices in both government and industry are wasteful of scarce talents.

Despite the leisurely start and the complexities of the questions confronting it, the committee apparently hopes to make some preliminary observations by summer and to start delivering substantive recommendations by the end of the year.

The major purpose of studies such as the NAS committee's work on manpower utilization is to provide a firmer foundation for policy decisions. But even if the present supply of, and future need for, specialized manpower could be established with perfect accuracy, there are severe limits to what the government can do to meet the needs.

The assumption is that if Congress is shown statistics clearly stating future needs for professional manpower in industry, government, and the universities, legislation to help meet these needs will be forthcoming. Manpower statistics of another kind have been published to assist in the process of informing and persuading: statistics on the education and use of scientists, engineers, and technicians in the Soviet Union.

It was no accident that the President's mention of the NAS manpower study and his instructions to a panel of the President's Science Advisory Committee to recommend ways to increase the supply of scientists and engineers coincided with the publication of the second edition of a study of Soviet professional manpower financed by NSF.

The book, *Education and Professional Employment in the Soviet Union,* by Nicholas DeWitt, a Harvard-trained researcher now at Indiana University, can be fairly said to have had at least as much impact on the United States policy makers as any study on American manpower.

DeWitt's book exhaustively documents the Soviet's heavy investment in science and engineering education and bears evidence that the Soviets are outproducing us in engineering graduates, though many questions of comparative quality and utilization are left hanging.

The Russian education system is directly geared to the Soviet central planning effort, and the concentration on educating scientists and engineers reflects Soviet theories on how to insure their own national security and economic growth.

What Government Does

Those responsible for American manpower policy cannot utilize the machinery of central planning and are thus limited in power and protected from the mistakes of rigid manpower planning. Industry and professional associations have done much in this country to call attention to manpower needs and to provide positive programs to fill them, but if current projections of manpower needs are correct, it is clear that the problem is not self-adjusting.

Direct federal measures to increase the number of scientifically and technically trained persons and to raise the quality of their training are limited largely to providing support to graduate education through research grants and fellowships and to financing projects for curriculum improvement, such as the NSF-financed project to revise the high school physics curriculum. The National Defense Education Act provides loans for undergraduates and a variety of programs to upgrade the teaching of science, mathematics, and foreign languages in the schools.

Political roadblocks have kept other avenues closed. For example, scholarship assistance to undergraduates is opposed by a majority of Republicans and Southern Democrats in the House. No major school-aid legislation will be passed unless a formula can be found to neutralize the church-state issue. Federal support for medical students is not given a chance while the present opposition of the medical associations continues.

For the immediate future, therefore, it appears that the federal investment in human beings will be concentrated on those at the extremes of the manpower spectrum—the low-skilled unemployed and those seeking advanced scientific and technical education.

—JOHN WALSH

Congress and Science: Senate Seeks Review of Government's Program in Fields of Science and Technology

The Senate, long uneasy about the rapid expansion of federal programs in science and technology, and about its failure to equip itself for a role in this field, has once again been offered legislation for reform.

The proposal (S. 816) originating in the Senate Committee on Government Operations, calls for the appointment of a "Hoover-type" commission to review the whole spectrum of federal involvement in the sciences. The commission would consider whether a federal department of science is advisable, and if so, what its function and structure might be. The fact that the committee's proposals have become, over the years, both more sophisticated and more modest—in earlier years they called for the outright establishment of such a department—has not increased the chance that anything will come of them. It is expected that the Senate's newest plan will follow the path of its predecessors from passage on the Senate floor to extinction in the House Committee on Science and Astronautics, which has its own reasons for sitting tight.

Last year the Senate Committee heard testimony from ten witnesses. Eight of these concurred with its belief that, at the very least, as Senator Javits (Rep.-N.Y.) said, "the boat needs a little rocking"—that federal science programs have been too much insulated from public discussion. While withholding advance commitment to the idea of a federal department, this strong majority welcomed an impartial study.

The remaining two witnesses, however, the Deputy Director of the Bureau of the Budget and the Director of the National Science Foundation, opposed the creation of such a commission. They argued that the newly-created Office of Science and Technology in the Executive Office would soon be able to cope with what the committee called the "disorganized Federal science programs," and that within 2 or 3 years the need for either an additional agency or an investigation would have vanished. These same witnesses, appearing before the committee in 1959, had testified in a similar way, maintaining then that the President's Science Advisor, the Federal Council on Science and Technology, and the President's Ad-

visory Committee on Science and Technology would soon be able to promote harmony in the government's programs.

What really motivates the Senators, however, is not a sense of disorder but a sense of exclusion. They feel that too often they are asked to act on faith in appropriating funds for scientific programs and that, as the committee stated in 1959, "unless legislative action is taken by the Congress to establish some medium through which reliable information and supporting technical data is made available to Congress by officials who are responsive to its needs, the committees of Congress will continue to be denied access to facts and reliable information necessary to the legislative process in establishing policies in the fields of science and technology."

The creation of the Office of Science and Technology has not lessened the Senators' anxieties on this score, and their concern has generated concern of a different sort within OST. Although Senator McClellan, in introducing the legislation again last week, took pains to cite recent testimony of Jerome Wiesner, Director of the Office of Science and Technology, that "the OST is neither a substitute for nor in competition with a Federal Department of Science," executive reaction to the Senate's proposal is somewhat ambivalent. While agreeing that Congress is inadequately organized to deal with the government's scientific programs and that an effective congressional operation would be desirable, presidential advisors nonetheless fear the possibly damaging recommendations that might issue from a hastily convoked, inadequately staffed, or insufficiently talented investigating commission. Reports from such commissions have plagued the executive too often in the past for them to welcome another unequivocally.

The real brake on action in Congress, however, will be the House Committee on Science and Astronautics, which shares none of the Senate's modesty about its own abilities. This committee, under its chairman, Representative George P. Miller (Dem., Calif.), has been embarked since 1961 on an ambitious campaign both to strengthen its hold over the scientific agencies specifically within its jurisdiction (National Aeronautics and Space Administration, National Bureau of Standards, and National Science Foundation) and to implement the "across the board jurisdiction over basic science research and science scholarships" to which it is formally entitled. Already impeded in this latter effort by other committees with conflicting specific jurisdictions [such as Representative John Fogarty's (Dem.-R.I.) Appropriations Committee Subcommittee for Medical Research] the House Committee on Science and Astronautics has been in no mood to undercut its authority any further by sanctioning an outside investigation into the government's scientific affairs.—ELINOR LANGER

Fellowships: White House Prods Federal Agencies to Increase, and Harmonize Graduate Support

When a student looks into federally financed fellowships for graduate science study, he finds a fairly bewildering array. For example, an unmarried student taking a first-year predoctoral chemistry course could receive $1800 annually under one National Science Foundation program, or $2400 under another. A fellow student of the same marital status might receive up to $3500 a year under the new fellowship program of the National Aeronautics and Space Administration, but he would receive $2000 under the National Defense Education Act, whose stipends are the only ones specifically set by Congress. The others are set at the discretion of the agencies, although NSF and the National Institutes of Health have an informal agreement to maintain similar stipend levels.

Until recently, it was generally felt that these variations did violence to nothing but an urge for consistency, but now that the administration is acutely interested in expanding and accelerating graduate training, it is beginning to suspect that the stipend market may be having a significant effect on the flow of students into specific fields and the pace of their studies.

NASA fellowships, which are about the most lucrative, are for studies in the "space-oriented" sciences, and since all the agencies are fishing in the same manpower pool, it is not unlikely that NASA's buying power is going to attract students who might otherwise have looked to other fields. In addition, stipend disparities on the same campus tend to create ill will, and for those receiving the smaller stipends, the difference may create the need for a part-time job that results in stretched-out training time. Accordingly, the White House's Office of Science and Technology is now prodding federal agencies to (i) raise their stipends to encourage more students to undertake graduate study, and (ii) arrive at some generally agreed-upon figures which would eliminate wide disparities. Though no figure has been decided upon yet, it appears that NASA's program, which provides a $2400 stipend, with another $1000 available at the discretion of the institution, is in the range that the administration thinks desirable.

On the face of it, the problem would seem to be a fairly easy one, but OST officials have noted that the agencies that have long-standing relationships with universities are reluctant to rush into setting new stipend levels. Some universities are not eager to see any substantial increase in the size of stipends: the smaller the stipends, the larger the pool of teaching assistants, or "slave laborers," as they have come to be known.

At present, following OST's urgings, NSF and NIH are reviewing stipends, and it is expected that they will announce increases, although there is no certainty that they will come up to NASA's level. OST is in a position to cajole and suggest, but the major fellowship-awarding agencies, particularly NIH, are so well established with the congressional committees that vote their funds that OST is in no position to dictate to them on matters that they consider critical to their operations. —D.S.G.

Announcements

The Smithsonian Institution, in Washington, D.C., last month opened a new hall, **Life in the Sea.** It includes exhibits showing the physical characteristics of marine life, and their adaptations for survival, protection, and reproduction. The hall features a 92-foot, 4-ton fiberglass reproduction of a blue whale, suspended 30 feet above the floor.

The U.S. Department of the Interior has established a new field office at Flagstaff, Arizona. The station will be the headquarters for training astronauts in field **geology** and for testing instruments for use in lunar exploration. The station will also be used by the U.S. Geological Survey in its lunar investigation and geological mapping program.