

New Hampshire. According to FORE's president Alex, the money can be obtained under the Sea Grant Act, if Congress is persuaded to give the act "a broader interpretation."

Most of the time, representatives limit their lobbying activities to federal agencies. Jane Odle of the University of Texas said part of her job is to watch for vacancies on agency-evaluating committees and, when they occur, to recommend replacements from the University of Texas. Mrs. Odle said her efforts have not paid off as yet, but her office has been operating only since September.

Occasionally, agency policy is af-

fected by the work of a Washington representative. When several professors from midwestern colleges voiced their dissatisfaction with NSF's decisions on their proposals, Ida Wallace of the Associated Colleges of the Midwest took the complaints to NSF's director of undergraduate research, Donald McGuire. She said that all the proposals involved summer projects in field research and that their rejection seemed to indicate a pattern of response by NSF. According to McGuire, Mrs. Wallace registered the complaints at a time when NSF was considering a plan to establish a special panel on undergraduate field research. "Our final

decision to set up the panel didn't come about as a result of Mrs. Wallace's influence, but she did help convince us that such a panel was necessary," said McGuire.

Contrary to the conclusions of ACE's survey, NSF's McGuire is not opposed to talking with college representatives about proposals. "Although I make sure that the author has given written permission to the representative to discuss the proposal, I am not averse to talking to representatives. If he is well informed on the subject of the proposal, a representative can provide a timely service to the people back at the campus."—FRANK CLIFFORD

German Science Policy: Bund Shifts the Balance

Bonn. Science policy in the Federal Republic of Germany has entered a postreconstruction era. In the last few years emphasis has been shifting from the postwar tasks of restoring research institutes and building up scientific manpower to a concern—shared by other major European nations—for bringing science and technology to bear on problems of economic development and social well-being.

The background to the new departure in science policy is the 30 years of political, social, and economic upheaval which began in Germany in the late 1920's. Nazi actions such as the expulsion of 2000 teachers from German universities and the setting of arbitrary priorities on research had a disruptive long-term effect on German science. And the climax of the period, of course, came with widespread destruction and defeat in the war and partition of the country afterward.

Until 1955 Germans were prohibited from building new research institutions, although recovery in the universities was well under way. Lifting of the occupation statutes in 1955 really marked the beginning of the expansion of science into postwar forms. The organization of science, however, was decisively influenced by Allied insistence that authority over key civil functions, such as police, information (radio and tele-

vision), and education, be reserved to the Länder or state governments.

There are 11 Länder ministers of education but there is no federal minister of education. And because the Länder are responsible for financing universities and research institutions, science policy became a function of the Länder. Ironically, the universities, which emerged from the war as the least discredited of German institutions, proved also to be perhaps the least responsive to the needs of modern democratic industrial society. The unreformed university and the tradition of regional "self-responsibility" remain principal blocks to the making of science policy on a national basis.

The need for national science policy has been felt as strongly in Germany as elsewhere, however, and the federal role has expanded steadily by means of arrangements designed to meet the peculiarities of the German situation. The key federal-state agreement was the one obtained in 1957 through efforts of the newly constituted Science Council (Wissenschaftsrat) under which financing of large research organizations was to be shared by Bund and Länder governments.

The science council (WR) is probably the most important of the advisory bodies through which the two levels of government, the universities and re-

search institutions, and industry maintain a *modus vivendi*. The WR has an administrative committee made up of six federally appointed members and representatives from the 11 Länder. A parallel science committee includes 16 scientists appointed on recommendation of the West German University Rectors Conference; the German Research Association [Deutsche Forschungsgemeinschaft (DFG)], which resembles the National Science Foundation in the United States but is more "operational"; and the Max-Planck-Gesellschaft (MPG), a private research organization which operates 48 research institutes supported by federal and Länder governments and industry. Also on the science committee are six leading public figures, some of them usually drawn from industry.

The WR is charged with developing an overall plan for the promotion of science, establishing scientific priorities in research, and coordinating Bund and Länder plans for nonindustrial science. The recipient of WR advice is the Ministry for Scientific Research, which has been a cabinet-level agency since 1962.

Because of split-level government, the science ministry's freedom of action is circumscribed. Defense research (a fast-growing item) and the R&D expenditures of other departments lie outside its control. The science ministry is responsible specifically for national nuclear and space research programs and also for the more general task of the promotion of science. It is in this latter cause that the ministry provides funds for DFG, MPG, and university research and finds some elbow room for making policy.

The science ministry's authority is confined to civil science but not exclusively to basic research. The ministry oversees programs which in Britain, for example, would come under the Department of Education and Science and the Ministry of Technology.

The science ministry budget for 1968, accepted by the cabinet last autumn, called for basic expenditures of \$482.5 million, a 20.3-percent increase over last year's budget. Total federal funds for R&D would increase from \$800 million to \$925 million. The 5-year financial plan adopted in July 1967 provides for an average annual growth rate of about 16 percent, more than twice the rate of growth of total public expenditure.

Past surveys have shown Germany lagging behind its European peers in proportion of national income being spent on science and education, and the Germans have been eager to catch up. The proportion of gross national product spent on R&D rose from 1.6 percent to 1.8 percent between 1964 and 1966 and will reach 2.4 percent by 1970 if the trend continues. This would then rival the British effort, which has been consistently the highest in Europe but is not rising at a rapid rate.

The most substantial increases in the German civil science budget for the current year are in the so-called *schwerpunkt* (priority) programs—nuclear energy, data processing, marine research, and space. Research in the life sciences has priority status but has so far received modest federal support.

Oceanographic research up to now has been the responsibility of the *Länder*. This year the federal government will provide \$1.25 million, and the amount is scheduled to increase to \$6.5 million by 1971. Total funds for nuclear research and technology will rise from \$140 million in 1967 to \$166 million in 1968. Space research will go from \$68.75 million to \$81.25 million.

These sums are hardly staggering when compared with U.S. and in some cases British or French efforts, but it should be remembered that *Länder* expenditures on science are not included.

If German science remains spotty because of the turmoil of the past, nevertheless the Germans, in many ways, have made the best of things. In the postwar growth areas of nuclear energy, high-energy physics, and space research, Germany has to some extent overcome the disadvantages of a late start by wholehearted participation in such European organizations as Euratom, the

European Center for Nuclear Research, the European Space Research Organization, and the European Launcher Development Organization. In science Germany has been a "good European" to an extent that has sometimes complicated its close relations with France.

As part of the effort to catch up, it is now German policy to build up centers of excellence at selected points in the scientific spectrum, particularly where an economic payoff is hoped for. If such a policy is to succeed, it is necessary to back the right horses, and some political as well as scientific risks have to be taken.

Science minister Gerhard Stoltenberg has made himself a reputation as an administrator who is prepared to take such risks. Stoltenberg earned his doctoral degree in history at Kiel. A former manager in the Krupp empire, he is a North German Protestant who has done well in the predominantly Catholic Christian Democratic party. As a science minister he has shown the same sort of talent for mastering his subject and flair for dramatizing the importance of his ministry that Minister of Technology Anthony Wedgwood Benn has shown in Britain. Stoltenberg also seems to have been a "strong" minister, having, for example, reportedly blocked efforts to have Luftwaffe research made an item in the science ministry budget.

In championing the cause of science and technology Stoltenberg frequently raises the question of national prestige. At a time when Germany has been on probation for two decades and reunification appears not to be a burning political issue, Germans do seem to be seeking a new national identity. In view of the nation's 19th-century eminence in science and technology it is not unreasonable to suggest, as Stoltenberg often does, that the role Germany will play in the world will depend to some extent on her again being a leader in science and technology.

Within the last year the appearance of a Second Report by the German Government on Research (*Bundesbericht Forschung II*), a review and prospectus dealing with federal-government activities and aims in science, and a Middle Term Financial Plan, a forecast of federal science expenditures for the years 1967 to 1971, have given a clear view of expansionary science planning.

There are, however, some obstacles to German self-realization in science. The shortfall in tax revenues this year

could result in paring of the science budget. Policy making on a national basis is inhibited by custom and complicated by law, and, as a matter of fact, the constitutional court will probably soon decide whether present trends toward regularizing national science policy making are to continue. Also not to be ignored is the possibility that German science could again be affected by overriding political and social forces. The key problem of university reform has now become so entangled in the burgeoning student revolt in Germany that it is likely to become a national political issue with unpredictable consequences.—JOHN WALSH

APPOINTMENTS



C. Blitzer



P. C. Ritterbush

Charles Blitzer, Office of Education and Training, Smithsonian Institution, to assistant secretary for history and art at the Smithsonian; and **Philip C. Ritterbush**, special assistant to the secretary of the Smithsonian, to director of the Office of Academic Programs at the Smithsonian. . . . **William B. Weil**, A. I. duPont professor for handicapped children, University of Florida, to chairman of the newly established department of human development, Michigan State University. . . . **J. C. R. Licklider**, director for behavioral sciences and information processing research, Advanced Research Projects Agency, DOD, to professor of electrical engineering, M.I.T. . . . **Mendel Herzberg**, professor of bacteriology, University of Florida, Gainesville, to professor of microbiology, University of Hawaii, Honolulu. . . . **Donald C. Klein**, director of the Human Relations Center, and coordinator of graduate training in community psychology, Boston University, to program director in the Center for Community Affairs, NTL Institute for Applied Behavioral Science (formerly National Training Laboratories), associated with the National Education Association, Washington, D.C.