ing hiring an attorney to work full time on freedom of information suits. And the threat of being taken to court has some moderating influence on the natural secrecy of bureaucrats. The meat inspection case, Welford says, "really scared the hell out of the USDA when they lost, and has clearly made a difference to our relationships over there."

Public interest groups and others might have less reason to be disappointed with the way the act is working if Congress had taken a closer interest in it. "They should be very interested in the act," says Schuck. "After all, a lot of groups like us are doing the jobs that Congress should be doing, and we are after the same kind of information that Congress needs to perform its oversight function." Representative Moorhead's subcommittee is now preparing to hold hearings on the act, the first since it was passed. But unless Congress decides to give it some teeth, the Freedom of Information Act will continue to guarantee the public's right to know only what government officials don't mind revealing.

—NICHOLAS WADE

National Science Foundation: The House That McElroy Built

When William D. McElroy took over as director of the National Science Foundation, he said he hoped NSF's annual budget would rise to $1 billion in 3 years. McElroy has departed before the 3 years were out, and the budget still falls far shy of the billion-dollar mark. But McElroy, now chancellor of the University of California, San Diego, left NSF with a materially increased budget,* a revamped management structure, and flourishing relations with Congress.

The consensus seems to be that McElroy is one of those more fortunate public servants who quit while he was ahead, but that he also left his successor, H. Guyford Stever, former president of Carnegie-Mellon University, in charge of an agency that faces substantially increased risks.

The new risks as well as new opportunities are centered in NSF efforts to mount a campaign of research on the nation's social and economic problems. These efforts are concentrated in the RANN (Research Applied to National Needs) program and an Experimental R & D Incentives Program proposed in the President's new budget (*Science*, 28 January).

To award sole credit or blame to McElroy for NSF's new departures would be to take a one-dimensional view. When McElroy took office in the summer of 1969, an NSF reorganization measure sponsored by former Representative Emilio Q. Daddario had been enacted but not really implemented. The reorganization bill, among other things, gave NSF the option of supporting applied research. Previously, in principle and practice, NSF confined itself to supporting basic research. And that, in fact, was the way the scientific community preferred it. Congress, however, was sending strong signals that it wished NSF to exercise the option given it in the reorganization bill and to begin to move ahead on "relevant" research. In addition, the Nixon Administration had come into office declaring its interest in increasing practical payoffs from domestic R & D.

Coincidentally, NSF became the chief legatee of the Mansfield amendment to a defense procurement bill that restricted mission-oriented federal agencies to supporting only that basic research which could be shown to contribute directly to the agency's mission. The Mansfield amendment had a rather short, turbulent, legislative history, but the chief practical effect for NSF was that some fairly large research programs were shifted from the Department of Defense to NSF, with all the financial and management consequences that entailed.

All this was happening at a time when public concern over the environment was becoming acute, and it was natural to ask what NSF could do about such things as pollution, population pressure, and poverty. Collaterally, it was a period of disillusionment with science, when to many people the scientist had assumed the image of a wayward sorcerer's apprentice.

Most important, McElroy arrived at NSF when the federal science budget was being subjected to the most severe squeeze since NSF had been established after World War II. The costs of the Vietnam war and the accompanying inflation had begun the recession in science during the Johnson Administration, and there was widespread apprehension in the scientific community that the Nixon Administration might lean particularly hard on NSF and its basic research programs. As it turned out, the worst fears were not realized, but it became increasingly clear that the Foundation was in for some changes that would be far more than cosmetic.

During the 1950's NSF had assumed the form its influential godfathers had contemplated—an agency that received research proposals from university scientists, judged them on merit with the help of university scientists, and awarded research grants accordingly. Especially after Sputnik, NSF broadened its activities in science education and in creating new "centers of excellence" in universities, but it continued to act essentially on the assumption that the curiosity of the individual scientist was the best guide to science policy. It should be noted that while, nominally, NSF was the premier federal agency for support of fundamental research, for two decades NSF lagged behind the Defense Department, National Institutes of Health, and even NASA and the Atomic Energy Commission as a patron of basic research. Nevertheless, NSF managed its basic research program with a skill and fairness that was never seriously questioned, and the foundation enjoyed generally warm relations with its clients in the universities.

Perhaps in large part because of its special style of operation, NSF was administratively underpowered. The agency was regarded as weak in planning and particularly deficient in man-

* In 1969 when McElroy took over, the NSF budget was about $440 million; the budget request for the agency for the coming year is $653 million.

aging large projects. This point was made at great embarrassment to the foundation in the mid-1960's by Project Mohole. A technically grandiose scheme to penetrate the Mohorovicic discontinuity by deep ocean drilling, Mohole soon developed costs and management and technical complexities that made it clear that its backers inside and outside the foundation should have known better. It has been argued that the Mohole fiasco damaged congressional confidence in NSF to an extent that retarded support for basic research, but, at a minimum, it made the foundation chary of large technical undertakings.

By the later 1960's, however, NSF was responsible for several major installations and was administering big national and international programs. The Daddario reorganization bill represented de facto recognition that NSF had to come to grips managerially with a more diverse mission and complicated program structure.

To strengthen foundation management, the reorganization act provided for the creation of five upper-level posts to be filled by presidential appointment—a deputy directorship and four assistant directorships. Salaries in the higher-thirties range and the prestige of the presidential imprimatur were designed as inducements to capable prospects. There was some ambiguity about whether those in the new statutory jobs would fill staff or line functions—whether they were to administer subdivisions of the foundation or provide staff support to the director. This ambiguity actually increased McElroy's opportunity to leave his imprint on the foundation, since he would not only fill the five posts with his own selections, but, inevitably, influence the way the agency would operate in the future by the duties he assigned the new officials.

In the event, McElroy steered a middle course on the line-staff question, giving each of the new appointees a major area of NSF activities to oversee, but also using them to form an executive council to deal with planning and policy decisons.

The four assistant directors' names were announced in March 1970 (*Science*, 3 April 1970). Edward C. Creutz, then vice president in charge of research for Gulf General Atomic, became assistant director for research, which means he administers the traditional basic research programs of the foundation. Thomas B. Owens, a Navy rear admiral who was chief of naval research, became assistant director for national and international programs, which involves administering research facilities now under NSF's wing and handling the logistical and other problems of the international programs in which the United States participates. Lloyd G. Humphries, a former head of the psychology department at the University of Illinois, became assistant director for education, and Louis Levin, a veteran NSF staff member, became assistant director for institutional programs. A deputy director was not named until August 1970, when the post went to Raymond Bisplinghoff, a NASA administrator during the space agency's expansionary days who came to NSF from M.I.T., where he had been dean of engineering. As No. 2 man at NSF, Bisplinghoff has been playing a key role in the innovative programs—for example, the start-up phase of the new R & D incentives program, which is designed to stimulate private industry investment in R & D.

The lag time in appointments to top posts contributed to the growth at NSF of some uncertainty, frustration, and personal bitterness during a period that would have been difficult enough anyway. McElroy himself did not arrive until a half year after the Administration took office. The 11th-hour Administration shift away from the appointment of Franklin Long to the NSF directorship (*Science*, 18 and 25 April 1969) delayed the process. When McElroy did take over the job, he was faced with the task of deciding how to carry out the reorganization, recruiting men for new top jobs, and then getting

Briefing

Tough Talk on NSF

Word has it that Senator Edward M. Kennedy (D–Mass.) is unhappy about three aspects of the present operation of the National Science Foundation (NSF). He plans to do something about it—perhaps spurring major changes —when his special subcommittee on NSF holds hearings on its budget authorization this spring.

Kennedy is worried about NSF's ability to conduct goal-directed, problem-oriented, and socially relevant research, and his first area of concern is the RANN program (Research Applied to National Needs), which is the NSF's major effort in doing just that. Kennedy has doubts about how well RANN is working and plans to scrutinize the program closely in the hearings of his subcommittee, which is a part of the Senate Committee on Labor and Public Welfare.

Second, Kennedy favors increasing NSF's capacity to award research contracts and grants to industrial firms. At present, NSF interprets its founding act as requiring disbursements primarily to universities and other educational institutions. Kennedy is considering amending the act so that a larger slice of the NSF pie can go to industry. The theory behind the move is that many industrial R & D firms are better equipped than universities to take on technical and social problems, such as crime control, which are typically interdisciplinary and relatively unstructured.

A third plan now brewing in Kennedy's office would force structural changes in the organization of NSF. Kennedy is considering writing into the language of the Senate authorization bill explicit requirements that NSF spend specific sums on particular national problems, such as health care services, education technology, transportation, and public safety (the latter including such goals as crime control, fire prevention and suppression) as well as further development of nonlethal weapons.

However, an attempt by the Kennedy subcommittee to force NSF to spend money on itemized projects could backfire. The House Committee on Science and Astronautics used a similar tactic last year when it switched money from the RANN program to the popular institutional support program and compartmentalized the NSF budget so that the Foundation could not switch the money back. All that happened was that the Office of Management and Budget, which opposed the move, withheld the money earmarked for institutions, and NSF was ultimately $30 million the poorer.—D.S.

White House clearances for them.

During the initial period when NSF was being shaken up, some of the resulting angst was directed not at McElroy, but at Bernard Sisco, assistant director for administration, whom McElroy brought into the foundation in October 1969, 6 months before the assistant directors came aboard. Sisco's post was not included in the reorganization legislation, so he did not require presidential appointment or Senate confirmation. A veteran of the federal bureaucracy, he had held responsible administrative posts at NASA and, just before joining NSF, at the Department of Health, Education, and Welfare.

The mood in the upper echelons at NSF at the time was fairly tense. Many senior NSF officials were alumni of the Office of Naval Research and had figured prominently in the original cadre that formed NSF or had joined the foundation in its early days. The word on the Washington grapevine was that McElroy had made clear that most of the NSF old-timers were out of the running for the new statutory posts and that, therefore, a vacuum had been created and into this vacuum moved Sisco.

McElroy was faced with multiple problems. Not only did he have to carry out the reorganization and recruit a new group of top administrators, but also in a very short time had to see the Administration's philosophy and his own incorporated into policy, programs, and budget.

Since Sisco occupied a pivotal position because of the role of his office in budget and personnel matters, it was logical for him to be the one to break the eggs to make the new NSF omelet.

Under the circumstances, it is not surprising that he raised some hackles. What seems to have caused the most general resentment, however, was Sisco's alleged tendency to withold information from other NSF officials. (He is also accused of insulating members of the National Science Board, the NSF's top policy-making body, which is made up of distinguished outsiders, from important details of NSF operations; but board members questioned about this by *Science* say they felt this was not the case.) Sisco's critics say he had established himself so firmly that by the time the new statutory officials took office, he had preempted some of their authority. On the other hand, an official favorable to Sisco noted that Sisco bore the brunt of resentment for some actions that had to be taken and thereby spared the new men some scars.

It is doubtful that anyone could have spearheaded the changes at NSF without raising the ire of some people. Since Sisco has just left the foundation to take over key administrative responsibilities at San Diego under McElroy, it is clear that McElroy came to value Sisco's abilities highly.

As a footnote to his service at NSF, some of Sisco's former colleagues have observed that he left the foundation under an arrangement that will enable him to start collecting a federal pension at the age of 45. As Dan Greenberg first noted last week in *Science and Government Report*, Sisco became eligible for early retirement by shifting from his assistant director's post to a job of special assistant to the director, which was to be abolished on McElroy's departure; thus Sisco became eligible for a reduced annuity of about $12,000 a year. Civil servants are normally eligible to retire after 30 years of service at age 55 at the earliest. Sisco is something of a special case, since he has worked for the government continuously since he was 16. There is a provision that permits retirement at any age after 25 years of service, but it stipulates that this must be "involuntary, without cause." This translates, in effect, to a civil servant's having his job abolished from under him. According to NSF officials, other retirement options were open in Sisco's case, since NSF, like other federal agencies, is currently under orders to reduce their work force. To avoid undue harshness in cases like this, the Civil Service Commission has made possible early retirements on a "discontinued service annuity." The Sisco arrangement appears to be technically justifiable in several ways, but hardly to be what the Civil Service Commission intended; as one Civil Service employee who was asked about the Sisco case said, "It does sound a little unusual."

Budgetary Ceilings

The budgetary and manpower ceilings' effects on NSF go far beyond the impact on one individual. At the end of 1969, NSF was authorized 943 full-time staff, and at the end of 1971, a maximum of 1045, or an increase of 10 percent. While the Office of Management and Budget had been more generous to NSF than to many agencies, the effects of the Mansfield amendment, the new applied research programs, and the heightened competition for research funds had sharply increased the workload of the NSF staff. The acting assistant director for administration, Thomas E. Jenkins, says that applications for research grants alone increased by about 50 percent.

The NSF had actually been granted a raise in its personnel ceiling to 1100 this year, but the cutbacks ordered as part of the President's economy measures last summer resulted in a 5 percent reduction in the number of staff allowed the agency. In addition, the foundation was told to roll back the average Civil Service grade level by about 1.5 grades, not an easy task in an agency where turnover is relatively low, particularly in the professional categories. Jenkins says that strenuous measures had to be taken to meet the requirement, including offering some long-service senior staff incentives to retire and a holding down on the grade levels of people being hired. A 90-day freeze was put on promotions this August, in line with the wage-price freeze, and this, according to Jenkins, has meant the loss of some good people. Before McElroy left, the freeze was eased to the extent of 50 promotions in what were judged to be especially deserving cases and which were approved by McElroy before he left.

In terms of personnel, McElroy's successor is left little room to maneuver. The abrupt resignation of Assistant Director Lloyd G. Humphries in September, in part at least because of scheduled cuts in education funds, leaves that post open. Because of the decline in support of institutional programs, there has been some speculation about the future of the assistant director's post now held by Levin. And there is the larger question of whether all the new statutory positions should be held by the appointees in their own right, so to speak, or should be subject to the wishes of the director.

Stever's major challenge, almost everyone agrees, however, is to make RANN and the new R & D incentives program work. Funds for support of basic research still dominate the NSF budget, but the new programs in "relevant" research are the most visible and the most controversial. There are frictions between traditionalist NSF old hands and newer "NASA types" within the agency, and there are potential critics on Capitol Hill; these and other problems will be discussed in a second article on NSF efforts at successfully developing its new split personality.

—JOHN WALSH