Graduate Support: NIH Grants Threatened by Nixon Priorities

The National Institutes of Health is currently trying to convince a skeptical Nixon Administration that the $130 million per year NIH training grant program, the only remaining large program of direct government support for graduate students in science, should not be axed. But Administration policy calls for a shift toward support of students being trained to solve interdisciplinary, practical problems. And the Administration's Office of Management and Budget (OMB—formerly the Bureau of the Budget) apparently believes that all graduate study can best be financed through loans or research grants. So the convincing will be difficult, at the very least.

Whatever the fate of the NIH training grant program, the Administration is irreversibly committed, particularly in the physical sciences, to abandoning the 1960's concept of unquestioning support for science graduate students. According to Hubert Heffner, deputy director of the Office of Science and Technology, government funding of graduate students can be expected to follow the government's general drift in research and development: away from basic, and toward applied. In an interview with *Science*, Heffner questioned whether society should be supporting graduate education at all. "If the government does support graduate study," he said, "it is clear that, because of societal needs, a new type of problem-oriented training is necessary."

Although he indicated that for "psychological and sociological reasons" the degree awarded for the new type of training should still be called Doctor of Philosophy, he sees the degree as quite different from the Ph.D.'s now being awarded.

"We need people," he said, "who are not simply trained in areas such as solid state physics or molecular biology."

While he emphasized that some specialized basic researchers should still be trained, Heffner stated that the person whose education the government is interested in subsidizing would be someone "who could, for example, assess the economic as well as the technical components of a particular problem."

Financing the training of these problem-oriented pragmatists of the future will be primarily through research grants awarded to multidisciplinary, utilitarian projects. NSF's new and rapidly expanding program, entitled Interdisciplinary Research Relevant to the Problems of Our Society (IRRPOS), will play a large part in financing such projects. Thus IRRPOS grants for such projects as "Political and Scientific Effectiveness in Nuclear Materials Control" or "Land Use and Energy Flow Component of a Model of Society" are not intended just to finance research that will result in practical payoffs, but also to train people to work in these areas.

Administration science planners see graduate financing through continually renewed research grants as a means for the government to maintain control over levels of manpower in various areas and to stimulate production of trained personnel as new needs develop. Both presidential science adviser Edward David and NSF officials emphasized this type of financing in their explanations of next year's budget, which further cuts back on direct graduate student support, but adds modest increases to research support funds.

If training grants go, NSF's fellowship program, which awards grants directly to outstanding students, will be the only remaining program intended solely to support graduate training in basic research. And administration plans call for the reduction of NSF fellowships from their current level of 2500 to 500 over the next 3 years.

How much the emphasis on pragmatism will affect graduate training in the life sciences depends largely on a survey now being taken by NIH. Deans of graduate studies, chairmen of life science departments, and a sampling of both graduate and undergraduate students will all receive lengthy questionnaires from NIH next month asking about the possible effects of cuts in the training grant program. The survey, conducted by NIH, along with the National Institute of Mental Health whose training grant program is also threatened, is part of a detailed study of future manpower needs in the health sciences and the effects of graduate training funds. NIH and NIMH officials hope the study will provide a strong case for continuation of the training grant program.

A major aspect of both NIH and NIMH extramural funding programs, training grants now support more than 5000 full-time graduate students and provide at least partial support for 7000 other research personnel, including faculty. Unlike the now defunct National Science Foundation Traineeships, 50 percent of training grant funds pay for the "environment" of graduate education, which includes money for faculty, postdoctoral, and technician salaries, as well as general research funds. Thus the elimination of training grants would affect biomedical research beyond reducing the number of graduate students. But Administration officials seem more intent on reducing the output of new Ph.D.'s than the amount of research funds. OMB officials have indicated that, if training grants were eliminated, they would not oppose a shift of at least a portion of the research and faculty money now provided by the grants to other programs such as research or institutional grants.

The training grant program has led a precarious existence since the Nixon Administration assumed power. OMB intended to eliminate the program, as it eliminated NSF's traineeship program from the budget for the current fiscal year. But the then Secretary of Health, Education, and Welfare, Robert Finch, appealed to President Nixon in 1969 to ask OMB to suspend its hatchet over the training grants while NIH conducted its study of biomedical manpower needs and the effects of training grant funding. Thus OMB allowed the program to remain in last year's budget and in the just-announced budget for next year.

Finch argued that a severe cutback in the training grant program might leave the Administration's plans for expansion of medical schools short of the necessary medical school faculty. OMB based its policy of cutbacks in graduate funding on the conviction that Ph.D.'s were in vast excess and their production should not be encouraged.

But Finch's argument about medical school faculty suggested that the excess might not apply in the life sciences as it did in the physical sciences. That argument has become NIH's primary bargaining point. Just how far it can be stretched, however, remains to be seen.

The first part of the manpower study, released last October by NIH's Office for Program Planning and Evaluation, concluded that a continuing need for biomedical Ph.D.'s does indeed exist, especially in medical schools. Even if OMB officials accept the fact that such a need exists (and there is evidence that they remain skeptical of the NIH projections), they still must be convinced that the need can best be filled by direct NIH support to graduate students.

In a memo to NIH, OMB listed several alternatives to training grants that NIH should consider as possible means for filling manpower needs. These included a shift to larger teaching loads for medical school and university faculty, as opposed to hiring more faculty, and a greater reliance on loans and research grants to support graduate students. While such notions might give apoplexy to both research-oriented faculty and to graduate students accustomed to government support, they represent the Nixon Administration's hard-nosed attitude toward matters of research in general and graduate education in particular.

In its attempt to present the strongest possible case to OMB for continuation of the training grants, NIH will include the above alternatives, along with several others in its survey of institutions, departments, and students. Asking the members of a typical biochemistry department about the effects of removing lucrative training grants might be likened to querying a dog as to the ramifications of stealing its bone. But NIH officials hope to keep their survey as objective as possible in order to please OMB. Instead of conducting it themselves, as they did the projections of future manpower needs, they have contracted the survey, at a cost of $174,000, to the Bureau of Social Sciences Research, Inc., a private organization that specializes in such matters.

In the name of objectivity, questions will not simply ask, "What would happen if your training grant were cut?" Instead, the phrasing will be, "What would happen if your grant were a) increased, b) left the same, or c) decreased?" The chances of an increase in grants in the near future are somewhat less than the chances for a heatwave in Alaska this winter.

Asking the type of detailed questions that drive department chairmen and their business managers into early retirement, the survey of departments will attempt to totally assess the department's financing, not just for graduate education, but for all aspects of teaching and research. According to Einge Hollstrom, survey director for the Bureau of Social Sciences Research, such "hard" data will allow for a more

Hanford Reactors Down but Not Out

A budgetary decision to shut down two nuclear reactors at the Hanford works in Washington State has caused such a furor that the White House on 4 February ordered a temporary halt to the dismantling of one of the reactors. The proposed shutdown, according to state and local officials, would exacerbate unemployment problems in a state already suffering from aerospace layoffs and would also raise the specter of widespread power shortages throughout the Northwest.

The reactors in question are the dual purpose "N" reactor that produces plutonium and supplies steam to an 800,000-kilowatt generating plant owned by a public utility, and the "K East" reactor that produces only plutonium. Seven other reactors have been closed down at Hanford since 1964, in line with a cutback in government production of plutonium. But the sudden decision to close down the last two reactors seems to have caught all concerned by surprise. "This is unprecedented," complained Senator Henry Jackson (D–Wash.), a man close enough to the Nixon Administration to have been seriously considered for Secretary of Defense. "Never before in my 30 years in Congress have I seen such a thing. There was absolutely no prior consultation with the Washington State delegation or with the Joint Atomic Energy Committee, of which I am a member." Senator George Aiken (R–Vt.) called the shutdown "utterly senseless" in view of the limited power supply existing in the Pacific Northwest. And the Joint Committee was so concerned that it held a closed hearing on 4 February to grill government officials on the reasons for the shutdown.

The decision to close down the reactors was reportedly made by the Office of Management and Budget against the wishes of both the Atomic Energy Commission (AEC) and the Department of Defense. Budget officials apparently concluded that they could save some $45 million a year by closing the reactors and shifting all plutonium manufacture work to the Savannah River, South Carolina, nuclear installation. But a spokesman of the Department of the Interior reportedly told the Joint Committee that it might cost $20 million to replace the electric generating power that would be lost to the Bonneville Power Administration grid. Estimates of the number of jobs that would be lost range from about 2000 (the AEC's estimate) to about 12,000 (Senator Jackson's estimate, which includes private industries that would be affected).

The latest White House order puts a freeze on the closedown of the dual purpose "N" reactor but leaves in effect the shutdown of the "K" reactor, which is said to involve the greatest number of jobs. The delay will give state and local officials a chance to present their case for retaining the "N" reactor to both the White House and Congress. The Hanford area, perhaps more than any similar area in the country, has made strenuous efforts in recent years to diversify its activities and become less dependent on the military atom. Thus area leaders are understandably miffed that their dual purpose reactor, the only one in the country, is headed for mothballs. As a local newspaper editorial observed: "Oak Ridge and Savannah River made no attempt to diversify or to get away from being single purpose government installations [yet] Oak Ridge and Savannah River have prospered and we have been shoved to the brink of economic disaster."—P.M.B.

thorough understanding of the impact of training grants. Also, the "hard" data will check on the chairmen's subjective responses to questions about their department's future if training grants are cut.

The surveys of the students will investigate their auxiliary financial resources and their intentions if training grant funds were no longer available. From the graduate students, the survey will attempt to determine if there would be a mass exodus from graduate studies following cuts in training grants. From undergraduates, NIH officials hope to learn how many students are lured into graduate studies in the health sciences by stipends and free tuition.

It might be asked, particularly by those who will spend hours filling out survey questionnaires, whether the entire effort is worthwhile, in view of the Administration's obvious prejudices against expenditures for graduate training. Phillip Chen, an NIH administrator who is directing the survey, told *Science* that OMB officials have indicated that they will fully consider the results of the survey before reaching a final decision about the training grants. Also, said Chen, NIH has never fully studied the impact of the training grant program, and the results could prove useful in several ways. Even if OMB decides to cut graduate training funds, results of the survey could make a case for retaining the 50 percent research support portion of the training grants.

—ROBERT J. BAZELL

Hiroshima after 25 Years: "We Are All Survivors"

Chicago.—It seemed appropriate for scientists to gather in Chicago a quarter of a century after Hiroshima to discuss what atomic weapons had done to them and to the world. Several scientists commented about how men who worked on the Manhattan Project here at the University of Chicago in 1945 tried to visualize what an atomic bomb would do to this city, and on the basis of that vision, tried to persuade Washington not to use the atomic bomb against the Japanese. One of those who went out on the streets of Chicago to imagine what horrors an atomic bomb would bring was Eugene Rabinowitch, longtime editor in chief of the *Bulletin of the Atomic Scientists,* whose words concluded the symposium.

It was one of those many publicly unnoticed sessions which take place every year at the AAAS meeting. It was not the kind of discussion to attract much press attention and there were no disrupters to bring out the cameras. Yet, hundreds of people came to hear about Hiroshima and many stayed through the marathon session—well over 3 hours. At least a few spectators termed it their most profound experience at an AAAS meeting.

Those who might have wanted to escape having to hear some of the agony of Hiroshima would have left early. Professor Warner Lee Wells of the University of North Carolina Medical School set the most somber tone for the discussion by telling of the physical effects to humans of the dropping of the Hiroshima bomb. "It's a painful experience for me to stand here today," Wells said in a faltering and emotion-choked voice. "It's like reliving a bad dream."

The panelists agreed that scientists' feeling of responsibility for creating the atomic bomb had made them become politically involved as they never had been before World War II and had made some of them devote much of their lives to trying to curb the growth of nuclear weapons. But they did not express satisfaction at what scientists had accomplished.

"The arms race has generally gotten worse in the last 25 years," said one speaker, George Rathjens, an M.I.T. political scientist. Rathjens, a former Defense Department official and arms control expert, bemoaned what he perceived as the Nixon Administration's renewed interest in nuclear weapons and its revival of the practice of "trying to make policies out of weapons" in a manner similar to U.S. actions at the height of the Cold War in the 1950's. Rathjens spoke of the greater dangers posed by more sophisticated weapons systems; he noted that a single Polaris missile fired accidentally would now destroy a city. In the near future, an accidentally fired Poseidon missile could destroy a dozen cities. Rathjens sounded an alarm about the continued drift on policies governing the use of the many tactical nuclear weapons in Europe, a confusion which could, under the right circumstances, quickly escalate into a general nuclear war. Rathjens argued that people have failed to understand the destructiveness of nuclear weapons. While a government official in the early 1960's, Rathjens said, he looked up a Soviet city the size of Hiroshima and found that a weapon fully 200 times as powerful as the Hiroshima bomb had been targeted for the Soviet city by the Defense Department.

At the end of the speeches, a spectator asked, "Why haven't scientists been more successful in helping control the arms race?"

Gar Alperovitz, president of the Cambridge Institute, said he thought that scientists, such as the late J. Robert Oppenheimer, had been too willing to "take almost anything from political authorities on faith, to keep their lives compartmentalized between their work and politics." Alperovitz said he thought that "young scientists were facing the problem of whether they will work on weapons or not in a much tougher way." Both Alperovitz and Rathjens said that one reason they were hopeful about young scientists was the strength of the March 4th Movement (an organization which was started at M.I.T. 2 years ago).

Yale University psychiatry professor Robert J. Lifton, author of *Death in Life—Survivor of Hiroshima,* said that, like the survivors of Hiroshima and other great holocausts, men today shared to some extent in a "psychic numbing." He said that men need to believe, at the least, in some sort of social or symbolic immortality and that nuclear weapons threatened that human need since they presented "an end of the world image." He believes