

and others to consider the problems in question and to advise with you in the near future. A wise governmental policy relating to these matters is essential if a wholesome environment is to be assured for the furtherance of science and our national welfare. Accordingly, the Academy welcomes the opportunity to aid in the resolution of these troublesome issues."

Fourth NSF Report

PROGRAM activities of the National Science Foundation during the past several fiscal years have been increased as rapidly as congressional appropriations have permitted. The Foundation's annual report for the year ending June 30, 1954, which the President sent to Congress on January 14th, shows that of the \$8 million appropriated for 1954 something more than \$6.7 million was spent on fellowships, research grants, and the exchange of scientific information. Most of the remainder supported studies aimed at developing "an appropriate and effective" national science policy. During fiscal 1954 the Foundation made 374 grants for the support of basic research in the natural sciences to 170 institutions in 43 states, the District of Columbia, Hawaii, and Bermuda, as compared with only 269 such grants made during the previous two years. In addition, NSF sponsored and provided partial support for 19 conferences in specialized areas of science, awarded 657 predoctoral and 79 postdoctoral fellowships, and provided support for an experimental institute for secondary school science teachers and four summer institutes for college teachers. Physics was the subject of 41 of the grants and 155 of the fellowships.

In reviewing the scientific manpower situation, the NSF report stressed the "critical current shortage" of trained science and mathematics teachers in secondary schools, a shortage which is expected to become still worse in the next few years and to extend to the colleges as the population bulge advances to that point. "Between 1950 and 1954," the report stated, "the total number of bachelors' degrees granted dropped by 34 percent. During this same period, according to the National Education Association, the number of college graduates meeting certification requirements to teach in high school dropped 42 percent, and the number qualified to teach mathematics and science dropped 51 and 56 percent, respectively.

"More serious still is the fact that many college graduates who qualify to teach high school science subjects actually find employment in other fields. A recent study of 1953 college graduates in teacher preparation programs showed that only 40 per cent of those qualified to teach science and mathematics were actually teaching in November 1953."

Meanwhile, the report said, high school enrollments have increased from 2.5 million students in 1920 to 7 million in 1950, and the number is expected to rise to 12.7 million during the next decade. But despite this anticipated increase in the total number of students,

a large proportion of the most talented individuals fail to continue their education beyond high school and at the present time only 40 percent of the group representing the top eighth in intellectual capability complete a college education. The report offers no simple solutions to the problem, but suggests that greater public support of education may be needed in order to reduce the financial burden of attending college, at least in those fields where policy dictates that increases are essential.

National Science Board Chairman Chester I. Barnard, in his foreword to the report, remarked pointedly that scientists cannot be produced simply by the lavish and indiscriminate expenditure of money. "The increase in government contract work, security considerations, and the necessity for large-scale cooperation and team research may be limiting conditions on scientific freedom," he said, "and in many cases impose a discouraging degree of anonymity upon individuals. The tendency of these conditions to restrict initiative, imagination, and persistence is a matter of real concern."

Budget Message

RESEARCH and development is more than holding its own as an item in the Federal budget, accounting for more than \$2.2 billion of the total outlay of \$62 billion provided for in the President's estimated budget for the 1956 fiscal year, which starts next July 1st. As usual, most of the research funds are earmarked for the Defense Department and the AEC.

The gradually improving fortunes of the National Science Foundation seem likely to continue. "Despite our tremendous technological strides in recent years," the President said, "our national interest requires that we support a strong program of basic research and that we train a greater number of highly qualified scientists and engineers. Accordingly, this budget recommends increased National Science Foundation grants for basic research and for training more graduate students, college instructors, and high school science teachers. It includes also the remaining necessary financial support for United States participation in the International Geophysical Year. . . ." The 1956 budget request for NSF is \$20 million, almost double the 1955 appropriation, and an additional \$11 million is requested for the International Geophysical Year. The following table summarizes obligations for the Foundation's regular program for the two years as shown in the budget.

*National Science Foundation Obligations for Fiscal Years 1955-56
(in thousands of dollars)*

	1955 Activity Estimates	1956 Budget Request
National Science Policy Studies	\$ 939	\$ 926
Grants for Support of Research	8 100	13 228
Grants for Training of Scientific Manpower	2 245	4 248
Review of Research and Training Programs	625	856
Scientific Information Exchange	366	350
Executive Direction and Management	382	392
Total	\$12 657	\$20 000