

News and views

Physics in Engineering Education

THE National Science Foundation has granted the American Institute of Physics the sum of \$13 600 to support a study and evaluation of the role of physics in engineering education. A committee to make the study has been appointed by the Institute as follows:

E. Hutchisson, Case Institute of Technology, (Chairman)
Raymond Seeger, National Science Foundation, (Secretary)
Lyle B. Borst, New York University
J. W. Buchta, University of Minnesota
Dudley Chambers, General Electric Company
Hugh Dryden, National Advisory Committee for Aeronautics
Harvey Fletcher, Brigham Young University
W. V. Houston, Rice Institute
J. A. Hutcheson, Westinghouse Electric Corporation
R. B. Lindsay, Brown University
Donald H. Loughridge, Northwestern University
H. V. Neher, California Institute of Technology
Lloyd P. Smith, Cornell University
J. A. Stratton, Massachusetts Institute of Technology
William W. Watson, Yale University
Marsh W. White, Pennsylvania State University

The role of physics in engineering education has continually been under discussion. Recently such discussion has been intensified and has received the attention of a committee of the American Society for Engineering Education. That committee was asked to determine "the pattern or patterns that engineering education should take to keep pace with the rapid developments in science and technology, and to educate men who will be competent to serve the needs of and provide the leadership for the engineering profession over the next quarter-century." It has now prepared and circulated an interim report including recommendations.

Another committee, sponsored by the American Association of Physics Teachers, has also considered this subject and wishes to develop well-founded views to exchange with the ASEE committee. The present AIP activity was undertaken at the request of the AAPT because it was believed that the interest and resources of the entire organization of physicists should be mobilized behind this enterprise.

A meeting of the AIP Committee was held at Gould House of New York University on January 31 and February 1. As a result of a program adopted at this meeting, visits will be made to a number of institutions having engineering schools to determine the actual

present role of physics in the engineering curricula and the objectives in the minds of those who teach it. The information and opinions gathered in this way will be digested and interpreted by the Committee and its staff, and then presented in a report with recommendations. An opportunity to present an interim report will come at the joint ASEE-AAPT meeting June 20-24 at Pennsylvania State University.

NAS to Study Loyalty Problem

ADVICE has been sought by the Administration from the National Academy of Sciences on the formulation of Government policy dealing with the relations between questions of loyalty and the awarding of grants and contracts in support of unclassified research. In an exchange of letters between Presidential Assistant Sherman Adams and Academy President Detlev W. Bronk made public on February 8th, the White House asked for and received assurance that the Academy will form a committee to look into the matter.

Mr. Adams noted that there has been "a very small number of occasions" when questions have arisen regarding the loyalty of individuals whose work is in connection with Government grants or contracts to private institutions for the support of unclassified scientific research. "When these cases come to the attention of the Government agency administering the program," he wrote, "a problem arises in their handling inasmuch as it does not involve security but concerns an area outside established Government-wide security procedures for its employees. It is of concern to all Government agencies which support or sponsor such unclassified research. It is of tremendous importance in the handling of this problem, to avoid misunderstandings between scientists and the Government which might impair the cordial relationships which are so vital to the national welfare, misunderstandings which could lead to a loss of valuable benefits from research. It is equally important that people outside the scientific community understand the nature of the problem, and that their confidence in the Government's handling of this important phase of the public trust be maintained. No one will question the fundamental principle that only those who are loyal to our Government should be beneficiaries of Government grants-in-aid or contracts. . . . At the same time the Government must take every precaution to guard against harming unjustly any member of the community. Toward this end we are constantly seeking to improve our procedures and at the present time are evaluating various proposals for so doing.

"It seems to us that these questions relating to loyalty can best be resolved if scientists, through a representative group such as the National Academy of Sciences, can counsel with the Government on its policy in this matter. . . ."

Dr. Bronk, in his reply, agreed that it would be "desirable for me to appoint a committee of scientists

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