

SUPPORT OF BASIC RESEARCH IN THE SCIENCES

During the year ending June 30, 1953, 173 grants totaling \$1,698,150 were made for the support of basic research in the natural sciences. These funds were distributed for research in the biological, medical, mathematical, physical, and engineering sciences to 85 institutions in 37 States, the District of Columbia, and Hawaii. During the previous year 96 grants totaling \$1,053,762 were made for the support of basic research. The average research grant for both years was \$10,300 to run for 1.9 years, or about \$5,400 per year.

Table VII below gives a summary statement of the research support program for fiscal years 1952 and 1953 by broad subject categories. A detailed list of the grants, showing institution, principal scientist, title of project, duration, and amount is given in appendix II, page 72.

RESEARCH AND TRAINING

Research conducted in a college or university campus stimulates more effective teaching and teaching in turn stimulates research. Graduate and undergraduate students participating in research see the basic information they have acquired put to use in pushing back scientific frontiers. Good research enriches the educational process in ways not measurable in dollars or in the availability of equipment.

In addition, therefore, to the award of fellowships, the support of conferences for college science teachers, and similar efforts to strengthen science education described elsewhere in this report, the Foundation sees in the distribution of research support among the several types of educational institutions in various sections of the country another opportunity to strengthen the teaching of science.

Generally speaking, Federal funds in support of research at universities and colleges have been concentrated in a relatively small number of institutions. However, in evaluating this institutional concentration of funds, one factor must be kept in mind. The Department of Defense, the Atomic Energy Commission, and other agencies which have supplied the greater part of Federal research funds at educational institutions, mainly sponsor research related to the operating functions of the agencies. These agencies need and expect results which further

their over-all programs and, therefore, place research contracts and grants in large, well-equipped and well-staffed institutions. Regardless of the long-term national gains to be obtained through broader institutional support of research, these agencies on the whole dare not risk any substantial proportion of their research support effort in institutions which cannot quickly and effectively meet their operating needs.

The Foundation has made some progress in broadening the distribution of its research support funds, but the relatively small amount of funds available and the great number of pressing and outstanding proposals have reduced the effectiveness of its efforts in this direction.

TABLE VII.—*National Science Foundation Research Grants By Fields of Science*

	Fiscal year 1952		Fiscal year 1953	
	Number of grants	Amount	Number of grants	Amount
Biological and medical sciences:				
Developmental biology	9	\$66, 975	4	\$39, 600
Environmental biology	4	25, 060	2	7, 500
Genetic biology	5	86, 800	7	100, 700
Microbiology	9	83, 687	9	107, 600
Molecular biology	9	114, 500	11	134, 800
Psychobiology	2	15, 400	8	101, 000
Regulatory biology	15	173, 800	14	177, 900
Systematic biology	11	106, 480	15	99, 700
General	4	72, 760	2	30, 000
Total	68	745, 462	72	798, 800
Mathematical, physical, and engineering sciences:				
Astronomy	1	8, 000	7	81, 000
Chemistry	12	143, 800	28	206, 500
Earth sciences	3	23, 700	6	66, 150
Engineering sciences	3	41, 900	18	145, 300
Mathematics	1	19, 300	19	85, 200
Physics	8	71, 600	22	282, 400
Total	28	308, 300	100	866, 550
General	0	0	1	32, 800
Total	96	1, 053, 762	173	1, 698, 150

CONFERENCE ON PHYSICS RESEARCH IN COLLEGES

In early May 1953 a conference jointly supported by Amherst College and the National Science Foundation brought together 25 college teachers of physics with an active interest in physics research. The participants were chosen so as to represent various types of colleges and regions of the country. The outcome of the Amherst Conference and similar meetings planned by the Foundation in other fields may be an important factor in developing a suitable program designed both for support of research and the strengthening of college science teaching, particularly at the undergraduate level.

The conference agenda contained several major items for discussion: (1) the probable benefits of a college research grant program from the point of view of its contribution to scientific knowledge, the capacity of the small college for conduct of basic research, and the benefits to the faculty member, the student, and the college; (2) the possible dangers of such a program to an institution in which education is the prime objective; and (3) the problems which arise in administering such a program and in evaluating requests for grants.

The discussion indicated a potential need for several types of college research grants, for example, grants in which payment for summer salary of the principal investigator is made, grants permitting the investigator up to a full year to work on research free of teaching assignments, or grants which relieve part, generally not greater than one-third, of the faculty member's formal teaching load during the academic year.

Recommendations

In connection with the administration of programs of this kind, the conference recommended that in addition to evaluating the significance of the proposed research for its own sake, the evaluation criteria should place equal emphasis upon the probable contribution of the proposal to the educational work of the institution. Four other additional considerations were suggested in the evaluation of proposals:

1. Projects which involve student participation should be strongly encouraged.
2. The promise and ability of the principal investigator should be given weight at least equal to that assigned to the scientific merit of the project.

3. An attitude sympathetic to research in the department and institution is highly desirable.
4. Experts appraising research proposals should be cognizant of the fact that they are judging proposals under the college program.

The full report and recommendations of the Amherst Conference are given in appendix VI, page 104.