News of Science

National Science Foundation Budget

The National Science Foundation budget for fiscal year 1959 will be $140 million if the President's recommendations are followed by Congress. This amount is exactly $100 million greater that the 1958 appropriation; how the actual appropriation for 1959 will compare with the current $40 million will depend upon Congressional action. The proposed increases are spread over practically every item in the foundation's budget, but the largest increases are in the field of science education, for which approximately a fivefold increase has been recommended.

Estimated expenditures for 1958 and budget proposals for 1959, expressed in thousands of dollars, for some of the major items are given in Table 1. The proposed research facilities and the amounts for each are: biological research facilities, $2 million; southern hemisphere astrograph, $1.2 million; solar research telescope, $5 million; radio and optical astronomy facilities, $700,000; and university nuclear reactor facilities, $1.5 million.

The foundation plans to increase all of its fellowship programs and to start some new ones. The smallest increase is in the regular predoctoral fellowships, which will increase from 776 to 970 if appropriations are granted. The increase in regular postdoctoral fellowships is from 100 to 200; in senior postdoctoral fellowships from 42 to 100; and in science faculty fellowships from 90 to 300. The following new fellowship programs are planned: 2500 summer fellowships for high school science and mathematics teachers (these are in addition to the institutes that have been conducted for several years and that are mentioned below); 2000 summer fellowships for college and university teaching assistants to enable them to study or engage in research during the summer months; 800 pre-service fellowships for persons who would like to become high school teachers of science or mathematics but who have not received the necessary education; and 1250 training grants for fellows who would be chosen jointly by the foundation and the university at which the recipient planned to take his graduate work.

The summer institute program is in for a big increase if plans go through. Institutes for high school teachers would be increased in number from 103 to 320, and institutes for college teachers from 5 to 36. In addition, support would be available for 20 short-term (about 2 weeks) summer conferences on special topics for college teachers, for 10 summer institutes for members of the faculties of technical training institutes, and for 20 summer institutes for elementary school supervisors who want additional training in science or mathematics.

Institutes lasting through the academic year are also scheduled to increase in number. The increase for regular, full-time institutes for high school teachers is from 17 to 30, and for institutes (usually on Saturdays) for teachers who are in service from 30 to 200. Comparable in-service institutes for elementary school teachers have not been offered by the foundation in the past, but 125 are scheduled in the new budget.

Two entirely new programs are planned to give special opportunities for science instruction or research experience to students. One of these programs would provide science instruction for from 4 to 8 weeks, on 80 campuses, for 4000 able high school students. The other would provide research experience for 1500 selected college undergraduates in special institutes offered on 60 campuses.

Table 1. National Science Foundation budget in thousands of dollars.

Item	Estimated expenditure for 1958	Proposed budget for 1959
Support of basic research (approximately evenly divided between physical and biological sciences)	$16,000	$40,000
Research facilities (about 5/6 in physical sciences)	6,000	12,000
Survey and reports on scientific resources	174	290
Dissemination of scientific information	855	1,879
Attendance at international meetings	125	500
Research on scientific information problems	266	414
Pre- and postdoctoral fellowships	3,265	21,000
Institutes for teachers	9,790	35,500
Special projects in science education	655	15,400
Improvement of course content	611	6,000
International science education program	0	1,000
Clearinghouse for scientific manpower information	248	830

Parliament of Science

The planning committee for the AAAS Parliament of Science that is to take place in Washington, 15, 16, and 17 March (see editorial, 9 Feb.) has released a statement which includes the background philosophy that led to the meeting and that guides the committee in its planning:

"The power of man through science is currently assuming a new order of magnitude. Power has always been sought avidly. Sometimes it has been used disastrously; often it has been used wisely. How America shall keep abreast of the developments in science and scientific technology; how it shall help avoid disaster; how it shall ensure that new knowledge (the age-old synonym for power) will be used for the benefit of mankind in general and its citizens in particular are among the most important questions before the public today.

"But the American public is disturbed, worried, and confused. We were supposed to be well in the lead, scientifically and technologically. Now, all of a sudden, this comfortable assumption is challenged. We are 'behind.' It isn't clear just what this statement means, or whether the serious versions of its possible meanings are in fact true. But there is no denying the general concern, and the almost frantic determination to 'do something about it.'

"The concern and the determination are, we believe, justified. But it is imperative that we sort out our ideas, brush off as superficial certain spectacular but minor items, and try to see our problem in its true dimensions.

"Not long after the discovery of fission, we began to sense the fact that man's impending control of atomic and nuclear power made possible, and indeed made inevitable, the beginning of a new age. As the still more vast potentialities of fusion were made available for destructive purposes, and as it became clear

that these incredible forces would presently be tamed for nonmilitary use, the magnitude of our break with the past became visibly greater and greater.

"We are just beginning to see that even these advances, tremendous as they are, constitute the signal, rather than the substance, of what is to come. Our successful probing into the nucleus of the atom is but an example of the clear fact that science is entering a new and accelerated stage of advancement, which will give to man the possibility of control over his environment, over himself, and over his destiny, which we have as yet only vaguely sensed. By probing the atom, man is exploding into the universe. With prospects that are—just as they were in the case of nuclear energy—both marvelous and frightening, we are on the threshold of an equally revolutionary probing of the cell and of the mind.

"Man is breaking with the past, its limitations and its safeguards. The prize is greater than ever before—so are the risks. The question is not, 'Do we like this?' The question is, 'What role do the people of the United States wish to play in the drama of the future?' We cannot hide. We must not relax. How can we play a noble part?

"What concerns us here is far and away larger than any question about a satellite, or even about a battery of long-range guided missiles, although these dramatic devices have precipitated discussion, and have produced a readiness to consider drastic action.

"We are in fact saying that man is on the very edge of a new relation to the atom, to the cell, to himself, and to the universe in which he is set. Many forces have been active, but clearly it is science which has been chiefly instrumental in bringing about this new relation. The new relation will place new demands on all man's resources—especially on his capacity to handle this new power with restraint and decency.

"This scientific revolution will totally dwarf the industrial revolution and the other historical instances of great social change. It will be more compelling, and will pose more urgent problems, due both to the pace and the magnitude of the changes which now impend.

"What faces man is not, in any restricted sense, a scientific problem. Scientific issues are vitally and almost universally involved. The special knowledge of the scientist is necessary, to be sure; but that knowledge would be powerless or dangerous if it were not effectively pooled with the contributions of social scientists, humanists, statesmen, and philosophers and brought to the service of all segments of our society.

"What on earth—excuse us, it is difficult to adjust—what in the universe ought we to do? The scientists certainly have no arrogant illusion that they have the answers. But they do want to help. At the very least, they have the duty of briefing their colleagues in other fields. They are, moreover, convinced that the time is overripe for a more understanding collaboration between their special profession and the rest of society.

"Because it is urgent for scientists to organize their own thinking about the problems raised in the preceding paragraphs, and urgent for society to understand those problems and their implications, the Council (the legislative body) of the American Association for the Advancement of Science decided that the Association should convene a special meeting, widely representative of all fields of science, to consider certain definite and pressing aspects of the current problems. For obvious practical reasons, the discussion will be largely restricted to actual proposals for increasing support for science and improving education."

Exchange of Scientists

During the 5-year period 1952–56, 6108 scientists participated in the State Department's international educational exchange program. Of the total number of persons exchanged during that period, one out of every five was a scientist.

Of the nearly 5000 scientists who came to the U.S., the largest number were in the field of medicine; others were in engineering, chemistry, physics, mathematics, and biochemistry.

More than 1200 American scientists went abroad to lecture, study, or conduct advanced research. The largest groups were in physics, chemistry, engineering, and mathematics.

The range of scientific pursuits which relate to peaceful uses of atomic energy has grown tremendously in the last few years. During 1956, 183 exchanges under the State Department's program were related to such endeavors.

Research in Human Behavior

A citizens' group of 15 people closely associated with behavioral science urges a national effort to expand research in human behavior as a means of fostering improved international relations and strengthening national defense. In a 7000-word statement the group describes the perils of inaction in the "sciences of man" and outlines a series of recommendations for action by both governmental and private agencies.

The group, which is a temporary body, was organized some 3 months ago by James G. Miller, director of the Mental Health Research Institute at the University of Michigan. It came into being following a discussion with Vice President Richard Nixon. The proposed program was also discussed with James R. Killian, Jr., special assistant to the President for science and technology, and with members of his committee. The Ford Foundation awarded a grant to the AAAS to support the group's work.

The statement, which may be obtained from Dr. Miller, says, in part:

"The present situation facing our country calls for an evaluation of the role and potential contribution of behavioral science. This is the combined endeavor of many fields, investigating all aspects of behavior leading to understanding of human beings as individuals and in social relations.

"Behavioral science therefore includes many studies in the fields of anthropology, biochemistry, ecology, economics, genetics, geography, history, linguistics, mathematical statistics, neurology, pharmacology, physiology, political science, psychiatry, psychology, sociology, and zoology.

"Applications ramify into advertising, business administration, education, government, human engineering, labor relations, law, medicine, military science, operations research, personnel selection, public relations, and many other aspects of human endeavor. Some of these sciences are still in early stages of development, but American research in them at the moment has a clear lead over Russian, which is constricted by Communist dogma.

"Behavioral science has demonstrated its usefulness to human welfare and national security. Its further development could increase its contribution in areas of international relations, military defense, and national vigor.

"To accomplish these goals, the following recommendations are offered:

"I. Formation of an advisory panel of behavioral scientists to work closely with the special assistant to the President for science and technology. There is need for more understanding, backing, and use of behavioral science throughout the government and by the people of the United States, and for encouraging the scientists themselves in their research tasks.

"II. Provision of increased funds for behavioral science research, training, and facilities in the National Science Foundation, the Department of Defense, the National Institutes of Health, the Atomic Energy Commission, and other appropriate governmental and private agencies, in order to: (i) establish additional university programs or institutes to conduct research in designated crucial areas; (ii) finance more fellowships, both predoctoral and postdoctoral, especially in all the social sciences; (iii)