

dited, where these uses may be put to practice in a short time, say 2 or 3 years. Clearly, this should be done with all the care that can be spent on an emergency problem. The United States certainly cannot undertake all possible scientific applications in a limited period and hope to complete them in time for operational use. There must be careful selection as to the practical uses which are both feasible and of high priority.

This country also must remain in scientific readiness over a long period of years. This will require the utmost effort to strengthen our scientific progress and maintain that strength at the highest possible level. In this second phase, the United States must keep the initiative, scientifically speaking, in as direct a sense as it intends to keep the initiative with respect to the effectiveness of its military forces. It is here that the program of basic research to be supported by the National Science Foundation can be most effective.

For its part, the Foundation has listed among its first tasks a thorough review of the present national pattern of research and development in order to provide a picture of the total effort in the main fields of science, together with a breakdown in terms of funds and manpower and the state of the art to show in what areas additional work is needed.

The Foundation's graduate fellowship program is to be the first order of NSF business. Emphasis will be given to fellowships rather than scholarships, it is stated, because the completion of graduate work will have the most immediate effects upon the national supply of trained manpower. In this connection, the Foundation has announced that twenty-eight hundred applications for NSF graduate fellowships in the mathematical, physical, medical, biological, and engineering sciences had been received by January 7th, the last date for filing applications for the 1952-53 academic year. Because of the limited funds appropriated for NSF operations for this year, only about four hundred of these applicants can be selected to receive fellowships under the program, which is the only major fellowship program in the United States emphasizing fellowships to first-year graduate students. Although the majority of awards will be granted to graduates working for their doctorates, a small number will be given to fellows who already have the doctor's degree but who are carrying on additional postdoctoral study. It is expected that final awards will be announced in April.

The Foundation has also announced the appointment of an advisory divisional committee on Scientific Personnel and Education. This panel of experts from educational and scientific fields will be concerned with development of national policies in scientific personnel and education, and includes among its members: Joel H. Hildebrand, professor of chemistry, University of California; Frank J. Welch, dean of the University of Kentucky College of Agriculture and Home Economics; Douglas Whitaker, dean of humanities and science, Stanford University; Katherine McBride, president of Bryn Mawr College; and Harry A. Winne, vice president for engineering, General Electric Company.

Copies of the Foundation's first annual report are listed for sale (20 cents each) by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Atoms into Plowshares

Arco and Harwell Use Reactor Heat

Both the British and U. S. atomic energy projects have announced that successful means have been determined for making use of heat drawn directly from experimental nuclear reactors as an incidental source of energy. In November, according to the British Ministry of Supply, a heating system employing coils of pipes carrying water heated by a reactor was put into service to warm an eighty-room building at the Atomic Energy Research Establishment at Harwell.

One month later, the U. S. Atomic Energy Commission announced that small amounts of electric power had been produced from heat energy released in the operation of the experimental breeder reactor at the National Reactor Testing Station near Arco, Idaho. In a trial run in mid-December, electrical power of more than one hundred kilowatts was generated and used to operate the pumps and other reactor equipment and to provide light and electrical facilities for the reactor building. The heat energy was removed from the reactor by a liquid metal (not further identified) at a temperature high enough to generate steam to drive a turbine. The power generation phase of the experimental program, according to the AEC, is being carried out to secure experimental information on the handling of liquid metals at high temperatures under radioactive conditions and on the extraction of heat from a reactor in a useful manner.

The Arco breeder reactor, which has as its principal long-range goal the converting of nonfissionable material (uranium-238) into fissionable material (plutonium) more rapidly than the uranium-235 used as fuel is consumed, was designed and is being operated by the Argonne National Laboratory. It was constructed at a cost of about \$2,700,000.

College Enrollment

Decline Less Severe Than Predicted

Total college and university enrollments for the 1951 fall semester, including part-time as well as full-time students, have dropped 7.8 percent from the 1950 total—a decline that is less than had been anticipated one year ago. An increase in the number of part-time students, according to Raymond Walters, president of the University of Cincinnati, is largely responsible for the more encouraging 1951 figures, although a gain was also seen in freshman engineering enrollment for the year. Dr. Walters, whose thirty-second annual statistical study of attendance figures appeared in the educational weekly *School and Society*, reported that the decrease in the number of full-time college and university stu-

dents (11.4 percent under 1950 totals) was also less than had been expected, but pointed out that tuition income in many institutions has nevertheless been reduced "to a point which endangers their financial position in these days of inflationary operating costs".

Scientific Instruments

Record Sales Expected During 1952

A forecast that most makers and distributors of scientific instruments and laboratory apparatus will probably have their biggest year in 1952 has been voiced by J. Claire Evans, president of the Scientific Apparatus Makers Association, the national organization of the apparatus and instrument industry. With the industry's sales for 1951 about forty percent over those for 1950, Evans said, backlogged orders already total as much as half a year's normal production for many companies.

New Research Reactor

Developed by North American for the AEC

A low-cost, low-power nuclear reactor for use in industrial and institutional research and in training scientists and engineers in the operation of reactors has been designed by North American Aviation, Inc., according to a recent announcement by the Atomic Energy Commission. Estimated construction costs of the reactor have been set at about one million dollars. The design program was undertaken by North American at the Commission's request, and it is stated that development work on the reactor components is currently under way at the company's atomic energy research department at Downey, California. A graphite-uranium reactor, the instrument will make it possible to provide a source of short-lived isotopes for research centers located long distances from the Brookhaven and Oak Ridge National Laboratories, where such isotopes are now produced. The design calls for an octagonal shaped reactor to be operated at an energy rate equivalent to 160 kilowatts, according to the AEC, with a neutron flux of about 10^{13} neutrons per square inch. Provision has been made for a heavy water cooling system.

Reactor Technology

ORSRT Students Must Apply by March 1

Prospective students for the 1952-53 session of the Oak Ridge School of Reactor Technology have only until March 1, 1952, to complete their application forms for admission, it has been announced. A complete set of the necessary forms, including acknowledgment of an Atomic Energy Commission security clearance, must be filed by that date. The AEC's Committee of Admissions will then select approximately 70 students to attend the session that begins on September 8, 1952. Students are selected from two categories: Category A, recent graduates from universities; and Category B, representatives from industry and govern-

ment agencies. All applicants must hold a bachelor's degree or higher in chemistry, engineering, metallurgy, physics, or engineering-physics. Category A students are paid a stipend of \$285 per month for the training period; Category B students remain on the payrolls of their home organizations.

The school was established in 1950 by the AEC to provide training in reactor theory and technology to selected engineers and scientists who will engage directly in the AEC's reactor development program. The curriculum includes courses in reactor chemistry, nuclear physics, theory, experimental physics, metallurgy and ceramics, and engineering. Each class is in session for a twelve-month period, beginning in September. Category A students are available for employment at the end of the training period, when it is anticipated that they will join the AEC, its contractors, or other organizations interested in reactor development.

Additional information about the school and application forms for either category may be obtained from the Oak Ridge School of Reactor Technology, Post Office Box P, Oak Ridge, Tennessee.

Meteorology and Oceanography

Fellowships Available at NYU

New York University College of Engineering has announced the establishment of three new research fellowships in meteorology and oceanography to become effective in the academic year 1952-53. All three awards will provide full tuition and fees for nine months, with one carrying a cash award of \$1000, and another \$500. Applicants must have the bachelor's degree by September 1952 and must have completed courses in mathematics through differential equations and at least twelve semester hours of physics. Application forms and additional information may be obtained from Assistant Dean Henry J. Masson, Graduate Division, New York University College of Engineering, New York 53, N. Y. Completed forms should be submitted by April 1st.

Training in Statistics

Post-Doctoral Awards Available

A program of post-doctoral awards to provide training and experience in statistics for scholars whose main interests lie in other fields has been established by the Committee on Statistics, a department of the University of Chicago, under a five-year grant from the Rockefeller Foundation. There will be three awards per year to holders of the doctorate or its equivalent in the biological, physical, and social sciences. Each award will amount to \$4000 or slightly more, office space will be provided, and from \$600 to \$1000 will be available for clerical, computational, and research assistance. There will be no tuition charges. Recipients must spend eleven months studying statistics at the University of Chicago, and will be expected to pursue a number of regular courses.