

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-