

dence, Rhode Island, of the American Mathematical Society; a summer conference in collegiate mathematics at the University of Colorado; a conference on problems in astrometry at Northwestern University; and supplementary support for the Third Annual Conference on High-Energy Physics at the University of Rochester. Awards for research in astronomy and astrophysics were made to the Universities of Chicago and Cincinnati and to Vanderbilt and Yale Universities. Duke University received \$4500 for an eighteen-month theoretical study of low-temperature phenomena under the direction of F. London.

Air Research

ARDC's Report for 1952

The Air Research and Development Command, created in 1950 and made a major air command in 1951, is today an undertaking whose magnitude is indicated by the more than one-half billion dollars of Air Force funds allocated to research and development in the fiscal year 1953. The Command itself receives only thirteen percent of the total, but coordinates and evaluates the work done by non-Air Force agencies and private concerns financed by the remainder of the funds in addition to carrying out its own research program.

The range of activity of ARDC as outlined in its report on work done in 1952 is suggested by the following incomplete list of accomplishments: under its sponsorship the design and construction of twenty-four new types of military aircraft were in various stages of completion, supersonic bombers and atomic powered aircraft were being investigated, transistor and cosmic-ray research was supported, special clothing was developed to enable pilots to survive at high altitudes, the official world's speed record was broken by a combat-equipped jet interceptor, a geophysical research station was established on T-3, the ice island 135 miles from the North Pole, and a pair of monkeys were rocketed two hundred thousand feet above the earth and were recovered unharmed.

Scientific Manpower

National Manpower Council Reports

A 263-page document on the present scientific and professional manpower situation in the United States has been submitted to the White House by the National Manpower Council, a nonprofit survey group established two years ago at the Columbia University Graduate School of Business by General Eisenhower to provide a continuing appraisal of the nation's manpower problems and policies in a period of enduring emergency. The Council was supported by a grant from the Ford Foundation. Warning that "scientists and professional people cannot be stockpiled like commodities against future shortages", the Council examined in detail the problems of providing sufficient engineers, physicists, teachers, and doctors to satisfy future requirements.

"Only a purposeful and sustained effort can insure that the United States will have adequate resources of scientific and professional manpower to meet its needs," the Council concluded. "Neither reliance upon a single course of action nor the pursuit of separate and unrelated policies will enable the nation to attain this goal."

While the Council made it clear that it has no magic formula for ensuring the adequacy of manpower resources in the future, it did propose a fourteen-point program for action. The Council emphasized the need to develop a framework for the analysis of manpower shortages and to develop basic information about supply and demand as well as effective utilization of manpower—information, it said, which is now "grossly inadequate".

Among its recommendations, the Council called for the establishment of a presidential commission to determine how seriously the two-billion-dollar governmental research and development programs may be diverting colleges and universities from their primary responsibilities of teaching and carrying on basic research. It also recommended action by the President to provide civilian participation in decisions relating to manpower distribution for military and civilian needs where the recall of reservists is involved. This recommendation is consistent with the provisions of H. R. 3893, the bill described below.

Amendment of Reserve Act Proposed

Identical bills have been introduced in both houses of Congress aimed at providing for "the orderly and selective recall to active duty in the military services of members of the military reserves so as to afford the most effective utilization of manpower resources of the United States". The House bill, H. R. 3893, was introduced by Representative LeRoy Johnson of California, chairman of the House Sub-Committee on Military Affairs, on March 11th. S. 1551 was introduced on April 2nd by Senator Ralph E. Flanders of Vermont, a member of the Senate Armed Services Committee.

The bills are designed to amend the Armed Forces Reserve Act of 1952, under which reservists can be recalled to active duty solely at the discretion of the military without assurance that whatever special skills or training will have been acquired by reservists by the time of their recall will necessarily be put to use in the best interests of the nation. It has been pointed out that ultimately the military reserve is likely to include all ten million of the physically fit men between the ages of 18 and 30. Even now, twenty-five percent of those listed under the category of technical manpower in research and development are in reserve status.

The proposed amendment would provide for a nine-member National Manpower Board in the offices of the President to recommend criteria and procedures governing the call to active duty of reservists having special proficiency or experience in engineering, the physical sciences, and other specialized fields. The Board members, at least six of whom would be civilians, would be persons "thoroughly familiar" with the nation's mili-

tary, defense, and other needs, and with the functions of scientists and other specialists. The Board would have final jurisdiction on appeals from call to active duty of reservists having special proficiency or experience.

Scientific Manpower Commission

The newly formed Scientific Manpower Commission, which will serve to present the point of view of professional organizations devoted to the advancement of science on questions concerning scientific manpower, has opened an office at 1530 P Street, N.W., Washington 25, D. C. Sixteen scientists, nominated by eight participating scientific organizations, will make up the Commission, which will study the nation's needs for scientists in education, industry, government service, and the armed forces, and will direct its efforts toward bringing the scientific manpower supply and demand into adjustment under changing international economic conditions, according to the president of the Commission, Howard A. Meyerhoff, former administrative secretary of the American Association for the Advancement of Science. Incorporated in the District of Columbia, the Commission was established through the cooperation of the AAAS, the American Chemical Society, the American Geological Institute, the American Institute of Biological Sciences, the American Institute of Physics, the American Psychological Association, the Federation of American Societies for Experimental Biology, and the Liaison Committee of the Mathematical Societies.

Submarine Reactor

Prototype Plant Begins Operation

The land-based thermal reactor which is to serve as the pilot model for the power plant of the USS *Nautilus*, intended to be the first atomic-powered submarine, is now in initial operation at the Atomic Energy Commission's reactor testing station at Arco, Idaho, and is expected to be brought to full power shortly. The Arco unit, known as the "Submarine Thermal Reactor", was brought to the critical stage some weeks ago, according to the AEC, and will now undergo further testing. The STR plant and the similar plant for the USS *Nautilus* have been a joint project of the AEC's Argonne National Laboratory, the Atomic Power Division of the Westinghouse Electric Corporation, and the Electric Boat Division of the General Dynamics Corporation, assisted by numerous subcontractors. The keel for the USS *Nautilus* was laid last June by Electric Boat.

The second land-based prototype, known as the "Submarine Intermediate Reactor", will serve as the pilot plant model for the second nuclear submarine, the USS *Sea Wolf*, which also is to be constructed by Electric Boat. Fabrication of the intermediate reactor was begun last year by the General Electric Company, through subcontractors. A section of the submarine hull in which the reactor will be assembled is to be contained within a steel sphere 225 feet in diameter that is now

under construction at West Milton, N. Y., eighteen miles north of Schenectady. Primarily a safety precaution, the sphere's 5.4 million cubic feet of "free space" is intended to confine hazardous material should all controls fail.

Fire Protection for Accelerators

Hazards Discussed by Insurance Group

Particle accelerator installations present unique problems in fire protection and insurance. Not only are substantial investments of time and money involved in the construction of such devices, but fire hazards resulting from the employment of high voltages and inflammable cooling oil and the use of wooden and other combustible building materials render this aspect of accelerator operation a matter of great concern.

In a recent report, *Fire Protection for Particle Accelerator Installations*, the Joint Fire and Marine Insurance Committee on Radiation considers this problem at length. Most of the 61-page booklet is devoted to an elementary exposition of the fundamental ideas involved in the design and operation of cyclotrons, synchrotrons, etc. Nine pages of very specific recommendations for fire prevention and protection follow which should be of interest to personnel engaged in work with existing and contemplated accelerators. For instance, one point made is that "geographic areas which are subject to floods, earthquakes, hurricanes, or tornadoes should not be considered as sites for particle accelerator installations"—which is interesting in view of the density of these machines in certain regions of California. Another item of some significance is their recommendation that water or special concrete be employed rather than paraffin for shielding purposes.

A rather complete list of accelerators now in use throughout the world concludes the report, which can be obtained from E. H. Williams, Associated Factory Mutual Fire Insurance Companies, Boston, Massachusetts for one dollar.

Himalayan Cosmic-Ray Expedition

19,000 Foot Altitude Reached

In a brief report in *Nature* for April 12, 1953, K. B. Mather of the physics department of the University of Ceylon describes an expedition to the Garhwal Himalayas carried out in 1951 to investigate cosmic radiation with nuclear emulsions. The plates were exposed at an altitude of 18,400 feet at the Mana Pass on the border of India and Tibet, although the party reached an altitude of 19,150 feet in the course of the expedition. Mather points out that a number of reasonably accessible sites where high-altitude stations of a temporary nature could be established at altitudes up to 20,000 feet exist in the Himalayas near the Tibetan border, and that electronic equipment as well as emulsions can be used at such stations if funds for porters are available.