News of Science

NSF Report on Federal Budget for Research

The Federal Government during fiscal year 1956 spent an estimated $2.4 billion for scientific research and development activities, a 7 percent increase over 1955. For the current fiscal year, about $2.7 billion will be spent, 12 percent more than in 1956. These data are contained in a new National Science Foundation report, *Federal Funds for Science, V.*

The report, the fifth in a series, analyzes for the fiscal years 1955, 1956, and 1957, the Federal scientific research and development budgets according to administering agencies, scientific fields, and character of the research. For the first time, data are included that indicate the distribution of Federal funds among the organizations performing Government research.

Approximately 85 to 90 percent of the total funds are for the conduct of research and development; the remainder, for the expansion of the research and development plant and facilities.

Twenty-five agencies of the executive branch administer research and development funds, with individual agencies spending from less than $50,000 a year to approximately $2 billion. However, 99 percent of the funds were spent by eight agencies: Department of Defense; Atomic Energy Commission; Department of Health, Education, and Welfare; Department of Agriculture; National Advisory Committee for Aeronautics; Department of Interior; Department of Commerce; and the National Science Foundation.

By far the greater part of the Federal research budget is devoted to applied research and development. The proportion spent for basic research although comparatively small, is increasing. In fiscal year 1957, basic research will account for about 9 percent of the research budget.

The Federal research dollar during fiscal year 1956 was divided in the following manner: 47 cents for research performed in the Government's own laboratories; 38 cents for research by profit organizations; 13 cents for educational institutions; and the remainder by other organizations. These figures include obligations for research centers which are Government-financed research installations managed for the Government by private organizations. These research centers account for approximately 15 cents of the research dollar.

Physical sciences, including engineering, account for about 87 percent of Government research funds, the life sciences for 11 percent, and the social sciences for 2 percent. A copy of *Federal Funds for Science, V* may be obtained for 35 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D. C.

N.Y. Botanical Garden Laboratory

A new $1-million laboratory was dedicated recently at the New York Botanical Garden, of which William J. Robbins, botanist, is director. The laboratory includes 32 research rooms with elaborate control of light, temperature, and humidity. The projects to be studied at the new facility will deal with plant nutrition and propagation, abnormal plant growth, antibiotics and antiviral substances associated with plants, and plant diseases. Run-of-the-mill problems will be investigated, too; for example, whether or not natural gas is harmful to vegetation, and whether or not the compost pile can be a source of plant diseases and plant-feeding insects. The city of New York contributed $185,000 toward the cost of the new laboratory and will pay some of the administrative and operating expenses.

ICAO Standard Atmosphere

A new extension to the 20-kilometer International Civil Aviation Organization standard atmosphere (the accepted U.S. standard) is being adopted by about 23 United States scientific and engineering organizations; this extension provides tables of atmospheric parameters up to 300 kilometers. The new standard atmosphere has a temperature of about 217°K at 25 kilometers, 283°K at 47 kilometers, 197°K at 75 kilometers, and then increases more or less continuously above 90 kilometers to reach a temperature of more than 1000°K at 300 kilometers.

Because of their great need for such tables in their high-altitude research programs, the 23 organizations met in November 1953 to seek agreement on a single representation of the atmosphere compatible with the best available data. The U.S. Weather Bureau of the Department of Commerce and the Geophysics Research Directorate, Air Force Cambridge Research Center of the Air Research and Development Command, cosponsored this movement. For further information, write to the committee on Extension to the Standard Atmosphere, Geophysics Research Directorate, 415 Summer St., Boston 10, Mass.

Australian Water Conservation Method

At the United Nations Educational, Scientific and Cultural Organization symposium on climatology that took place recently in Canberra, Australia, Richard G. Casey, Australian minister in charge of industrial scientific research, reported that Australia would make freely available to other countries its new method of using cetyl alcohol, a chemical extracted from whale oil, to limit evaporation from reservoirs and dams. Cetyl alcohol, which is invisible, tasteless, and harmless to animal life, lays a film over the surface of water and keeps it from evaporating. It does not prevent oxygen from entering and so keeps the water fresh. Tests during the last 2 years in dams and reservoirs have shown a reduction in evaporation of between 20 and 70 percent.

Physics Institute Expansion Program

The American Institute of Physics is embarking on a fund-raising campaign for $500,000 to finance a new headquarters building in New York, expand the publishing of technical journals, and attract more well-qualified young men and women to the profession of physics. The AIP is an association of five professional societies with 17,000 members.

The present AIP headquarters building at 57 E. 55 St. is inadequate, and another building at 335 E. 45 St. has been purchased for $280,000. This structure, which is not far from the United Nations Plaza, is four stories high. After remodeling, it will provide three times the working space now available. The AIP headquarters staff has grown from 25 to 60 since the present building was first occupied. The institute's membership has more than doubled, and the

number of journal pages published annually has increased more than four times.

Conversion of the new headquarters will start in December and operations will be transferred by 1 June 1957. Paul E. Klopsteg, associate director of the National Science Foundation and professor emeritus of applied science at Northwestern University, has been appointed chairman of the American Institute of Physics Development Fund Committee.

The half-million dollars being sought will be allocated as follows: $250,000 for conversion of the building on 45 St. for use as AIP headquarters; $200,000 for new and improved technical journals of physics to speed the flow of research information; and $50,000 for more effective work to attract and train more and better physicists. Of the $500,000, $350,000 is being requested from industry and the remaining $150,000 from members of the AIP.

The publishing crisis facing the field of physics, and for which funds are being sought, arises from the fact that even though almost 19,000 pages appeared in journals published by the AIP last year, another 5000 pages are needed now to take care of reporting new research. These new pages may be added to existing journals or used as the basis for one or more new scientific journals. Examples of special fields in which the demand for more publication space is rising are chemical, mathematical, and fluid physics.

The shortage of physicists, perhaps one of the most critical in the scientific manpower field, will be attacked by a "future physicists fund." This fund will be used to publish and distribute vocational information and to work for improved teaching and educational facilities at all school and college levels.

Engineering Center To Be in New York

United Engineering Trustees, Inc., the joint corporate agency of the four major national engineering societies, has announced that a contract has been signed for preliminary architectural plans and studies for a new Enginering Center in New York, N.Y. The announcement is the first formal notice that all the four member societies of UET, and a fifth that is expected to become a member, had voted, through their governing boards, to remain in New York. Several other cities had tried to obtain the center.

The present 16-story quarters, known as the Engineering Societies Building, houses the four "founder societies"—the American Society of Civil Engineers, the American Institute of Mining, Metallurgical and Petroleum Engineers, the American Society of Mechanical Engineers, and the American Institute of Electrical Engineers. A fifth prospective founder society, the American Institute of Chemical Engineers will be included in the center project.

Occupants of the Engineering Societies Building include the Engineers Joint Council, which is composed of ten major national engineering societies, including the five in the founder group. It is believed that preliminary plans for the center will be completed early next year.

Darwin Centennial Expedition

The Darwin Anniversary Committee, Inc., has announced that Charles Darwin's historic round-the-world trip, which helped him formulate his theory of evolution, will be retraced in 1958. The year 1958 was chosen because it will be the centennial of Darwin's presentation of his paper to the Linnaean Society in London outlining his theory of evolution. Julian S. Huxley, the biologist, is honorary cochairman of the planning committee. Lady Nora Barlow, a descendant of Darwin, is the other cochairman.

Darwin sailed in the British ship *Beagle* as official naturalist on a surveying trip. The expedition, which took place between 1831 and 1836, visited islands in the Atlantic, the coast of South America and adjacent islands, and islands of the western Pacific. The Darwin committee plans to cover the same areas in a year's time, using a 100 to 150-foot sailing ship with auxiliary engines.

On his trip Darwin studied native people and the flora and fauna of the areas. The modern voyage will compare ecologic conditions today with those of 125 years ago. The 1958 trip also will seek to determine if any species of flora and fauna are in danger of becoming extinct.

In the next few months about 20 scientists, both men and women, will be selected as Darwin fellows to sail on the expedition. Others probably will be flown to the research areas.

IGY Observations of the Ionosphere

A group of scientists has left the Boulder Laboratories of the National Bureau of Standards for a year in the Antarctic, where they will operate five widespread research stations. The men at each post will collect continuous data with the C-4 ionosphere recorder, an instrument that beams short pulses into the upper atmosphere, measuring the time required for them to travel there and back. A range of from 1 to 25 megacycles is covered in 15 seconds. A reading will be made automatically at least every 15 minutes.

The same kind of ionospheric observations will be carried out by scientists working simultaneously in more than 75 such stations located throughout the world as part of the International Geophysical Year program. By analyzing the total data, scientists expect to learn much about the height and characteristics of the upper air layers, which change from hour to hour, day to day, and season to season.

Supervising the ionospheric operations in the Antarctic is Hans J. Bengaard, former electrical engineer with the Danish Post and Telegraph Administration, who will also be in charge of the Little America station. His assistant will be Lt. Col. Carl O. Wyman, Philadelphia, Pa., retired communications and electronics officer in the U.S. Marine Corps.

Virgil Barden, Colorado Springs, Colo., formerly radio technician at the White Sands Proving Ground ionospheric station, will be at Byrd Base in charge of ionospheric observations.

John B. Brown, former physicist with E. I. duPont de Nemours, Inc., Bloomington, Del., will be at the Weddell sea station, where he will be accompanied by Donald Skidmore, former electronic engineer with the National Company, Malden, Mass.

Garth Stonehocker, previously physicist with the Glenn L. Martin Company, Baltimore, Md., and his assistant, Robert Long of Rochester, N.Y., will be at the Knox station.

William S. Hough, electronic engineer at the NBS Boulder Laboratories, will make observations from the South Pole station, located at the exact geographic bottom of the world.

PHS Aging Research Center

The U.S. Public Health Service has established a Center for Aging Research in the National Institutes of Health. G. Halsey Hunt, at present associate chief of the PHS Bureau of Medical Services, has been appointed director of the center, which has been set up to deal with the special health problems of the more than 12 million people in this country who are over the age of 65. By 1970, there will be more than 18 million such people.

The primary objective of the new program is to encourage and support additional research into the mechanisms involved in aging. The program will assist universities and other research institutions in establishing a broad research program that will bring the full range of biological, psychological, and social sciences to bear on the problem. A first activity will be to aid universities, medi-