through its secretary, an appeal for help for the National Central Library of China. Recently Mr. Chiang Fu-Tsung, the director of the National Central Library, requested further cooperation, as follows:

> Due to the restrictions on the purchase of foreign currencies by the Chinese government, the National Central Library is rendered helpless to buy foreign books to meet the increasing demands of our intellectually starved students and scholars. I have been writing to various friends in the U. S. A. to sound their opinion if a drive for book funds can be started. With those funds deposited in a bank in the U. S. A. the National Central Library will be thus enabled to buy the necessary books in America and Europe.

The Union will gladly serve as a collecting agency for these funds. Checks drawn to the China Book Fund may be sent to the secretary of the Union who will deposit them with the U. A. B. S. Treasurer pending the purchasing of books by the National Central Library of China.

GEORGE W. HUNTER, III
UNION OF AMERICAN BIOLOGICAL SOCIETIES

SCIENTIFIC EXPEDITIONS

A SCIENTIFIC expedition sponsored by Mrs. Anne Archbold in her yacht "Cheng Ho" left Suva, Fiji, for other islands in Melanesia on or about November 21. The party consists of Mrs. Archbold, Captain Skolfield, physician and master of the yacht; Miss Mary Keegan, registered nurse; R. Gucker Abbott, malacologist from Harvard; Otto Degener, representing the New York Botanical Gardens, and his assistant Emilio Ordonez; John Wesley Coulter, geographer, University of Hawaii, and John Swingle, photographer. The party will spend about four months in the field, visiting Gilbert and Ellice Islands, Ocean Island, Solomon Islands, Santa Cruz, New Hebrides and New Caledonia. Land shells collected by the malacologist will be sent to Dr. Montague Cooke, of the Bishop Museum, Honolulu, and to Professor J. W. Clench, Harvard University. Botanical specimens will be sent to Dr. Elmer D. Merrill, of the Arnold Arboretum, to Dr. William J. Robbins, of the New York Botanical Garden, to the U. S. Department of Agriculture in Washington and to other institutions.

An Associated Press dispatch states that three members of the Fahnestock expedition, Mrs. Bruce Fahnestock, her son, Sheridan, and his wife, have returned from the South Seas and are organizing a new cruise in search of rare Pacific birds. The expedition, sponsored by the Whitney Memorial Hall of Pacific bird life on behalf of the American Museum of Natural History, left New York in February. The proposed two-year cruise was cut short on October 18 when the 140-foot schooner *Director II* struck a reef east of Australia and sank.

It is reported in *The New York Times* that the resources of Latin America will be studied this winter, in the interests of Western Hemisphere defense, by eight experts sent by the Department of the Interior to survey the deposits of such minerals as manganese and chromite, tin, tungsten and antimony. Of the eight geologists, all of whom are members of the staff of the Geological Survey, five already are in the field, one is on the way and two are awaiting the completion of arrangements with the government of the country to which they have been assigned.

S. R. Capps will make a three-months survey of the manganese deposits of Brazil, where W. D. Johnson, Jr., already is looking for chromite. C. F. Parks, Jr., and T. P. Thayer are in Cuba, studying deposits of manganese and chromite there, while in Bolivia surveys for tin are being made by E. Callighan, with J. F. McAllister making surveys on tungsten and antimony. Through the State Department the Cuban and Brazilian Governments have offered their cooperation in the geological investigations, extending the courtesy of travel on the railroads without cost to the United States Government.

HIGH-VOLTAGE TRANSMISSION LABORATORY AT CORNELL UNIVERSITY

CONSTRUCTION of a new $150,000 laboratory for the College of Engineering of Cornell University designed primarily for research in problems of high-voltage transmission has been authorized by the Board of Trustees.

The laboratory will be used for research into the properties of air and other electrical insulating materials. According to Dr. W. A. Lewis, Jr., director of the School of Electrical Engineering, who will supervise the program, "One of the important problems to be investigated is that of corona, the halo or glow which may surround conductors at high voltages, indicating leakage of electricity to the surrounding atmosphere. Between the empirical work of the practical engineer and the small-scale experiments of the physicist is a large unexplored region where precise investigation and analysis may reveal much of importance in power transmission and throw light on the general properties of materials under electrical tension."

The building, according to Dean S. C. Hollister, will be 72 by 120 feet, and 55 feet high, of steel construction throughout, providing an electro-static shield to keep the effects of high voltages within the laboratory. Connected with it will be a half-mile voltage transmission line. The laboratory will be built on university property near the East Ithaca station, with highway and rail facilities.

It will be provided with both 60 cycle and impulse testing equipment. The former will be used in re-

search on problems which arise within the transmission lines, transformers and machines of the power system, and the latter for research on effects which come from outside the power lines, such as those caused by lightning. The 60-cycle equipment will be capable of providing a voltage of 750,000 volts single phase, of 433,000 volts three phase, which is sufficiently high to test equipment for higher voltages than any now in commercial use. The maximum now used in the United States is 287,500 volts at Boulder Dam. The impulse testing equipment in the new laboratory will simulate natural lightning up to a maximum of 3,000,000 volts. There is no comparable laboratory in any university east of the Rockies and there is only one with similar facilities on the Pacific Coast.

Besides the research program, the laboratory staff will undertake tests of apparatus for commercial purposes, such as insulators, bushings, switching equipment and transformers. It is planned to extend a spur of the Lehigh Valley Railroad tracks into the laboratory, so that large pieces of equipment may be brought in and tested without being removed from the freight cars.

Power will be applied from the University Power Plant, where the necessary facilities are already available. A motor generator will be inserted in the line so that effects of the laboratory will not be reflected back into the university lighting system. Construction of the entire project will begin at an early date.

THE INDUSTRIAL X-RAY UNIT OF THE GENERAL ELECTRIC COMPANY

AN x-ray unit, producing energy equal to $90,000,000 worth of radium, was dedicated on December 17 by the General Electric Company as part of its program commemorating the fortieth anniversary of its research laboratory. Rated at 1,000,000 volts, the unit exceeds by 600,000 volts the rating of the largest previous industrial unit and cuts the time of taking a picture through four inches of steel three feet away from one hour to less than two minutes.

The new equipment will greatly speed up the vital inspection of great steel castings used in mammoth turbines, in all high-pressure marine turbines, and in countless other ways to insure high quality in prime mover machinery. X-ray examination of steel castings has been an established practice for several years. Through application of this method, flaws which would otherwise pass undetected are discovered and rectified before the machinery goes into actual service. Many thousands of dollars have been saved industry through the use of x-rays.

Until now, the largest industrial unit in use anywhere in the world has been a 400,000-volt unit now superseded by the new outfit in the Schenectady works of the General Electric Company. With the new million-volt unit, an exposure of less than two minutes accomplishes the purpose. With the 400,000-volt unit, three hours and a half were required to make a picture through five inches of steel. With the new one, only five minutes are required. The exposure time must be increased two and one-half times per inch of steel to be pictured.

The unit is housed in a special building of its own. Unique construction features are employed to make it the safest possible building for the operation of high-voltage x-ray equipment. For example, the walls of the structure are of solid concrete, 14 inches thick, plus 12 inches of brick on the interior, making a total thickness of more than two feet or the equivalent of approximately four inches of lead. To further prevent any stray x-rays from escaping into surrounding manufacturing buildings, the foundations of the structure extend five feet below the surface of the ground in a solid mass. With such protection, all possible chances of the still mysterious x-rays causing personal injury to any one working in the vicinity are eliminated.

GRANTS OF THE CARNEGIE CORPORATION OF NEW YORK

ACCORDING to the annual report of Dr. Frederick P. Keppel, president of the Carnegie Corporation, grants amounting to $4,692,682 were made during 1939–40. Of this sum $347,520 was appropriated for library interests, $218,000 for adult education, $459,500 for the arts, $2,026,947 for research, studies and publication and $1,613,715 for general interests.

Appropriations for scientific work listed in the appendix of the report include:

University of Montreal, the development of library of Botanical Institute. $8,000.

Montreal Botanical Garden, the development of library and educational program. $6,200.

New York Museum of Science and Industry. $40,000.

American Association of Museums. $37,000.

American Museum of Health, studies in the field of health education. $30,000.

Carnegie Foundation for the Advancement of Teaching, for the development of the program in mental hygiene and education. $5,000.

Carnegie Institution of Washington. $982,000.

The Johns Hopkins University, research in embryology. $7,500.

The Massachusetts Institute of Technology, high voltage nuclear research project. $6,000.

National Research Council. $105,000.

National Academy of Sciences. $50,000.

Australian National Research Council, anthropological research. $10,000.

American Neurological Association, research on heredity of mental diseases. $3,000.

Dental Research, various institutions. $173,000.

Harvard University, endowment of the School of Dental Medicine. $650,000.