

program for the instrument was under the supervision of J. C. Chu, who had worked during the war on the design and construction of ENIAC, the first all-electronic digital computer, which was assembled at the University of Pennsylvania and is now being used by the U. S. Army Ordnance Department at the Aberdeen Proving Grounds in Maryland.

New Physics Building

To be Constructed at Pennsylvania

The University of Pennsylvania has announced plans for the erection of a \$2,700,000 physics, mathematics, and astronomy building intended primarily to supplant the Randal Morgan Laboratory of Physics, which is now more than fifty-five years old. The new building, to be located at the southeast corner of 33rd and Walnut Streets in Philadelphia, will contain some two hundred rooms with a total floor area of more than 125,000 square feet. The university's betatron laboratory, built adjacent to the new site in 1948, will become a functional adjunct of the main structure. The building will centralize the classrooms, offices, and laboratories of the physics department, headed by Gaylord P. Harnwell, the mathematics department, headed by John R. Kline, and the astronomy department, of which Charles P. Olivier is chairman and Frank B. Wood is executive director of observatories. Rooms will include 17 laboratories, 52 research office-laboratories, 17 classrooms, 55 offices, five shops, three lecture halls, a library, and an astronomical observatory. The building will be the fourth major structure to materialize under the University's \$32,000,000 development program intended to transform 148 acres of West Philadelphia into a new campus.

National Science Foundation

Grants in Support of Science

The National Science Foundation has reported approval of a second group of grants for 1953 in support of research in the physical and biological sciences and of studies and conferences on science and scientific education. The latest awards, amounting to \$685,200, bring the total under this fiscal year's budget to \$1,340,650. Eight of the seventy-eight new grants are in physics, and the amount given for physics research is \$88,700. The awards were made to institutions in widely separated parts of the nation and were approved by the National Science Board upon the recommendation of NSF director Alan T. Waterman. Since the beginning of the program, the Foundation has awarded 231 grants totaling \$2,481,225. New grants listed under the category of "physics" are as follows (the amount, duration, and name of the principal scientist are given parenthetically):

Brigham Young University, "Research in Musical Acoustics" (\$10,000; one year, H. Fletcher).

University of California at Berkeley, "Research in

the Field of Gaseous Electronics" (\$4000; one year; L. B. Loeb).

University of Chicago, "Mass Spectrometric Investigations" (\$20,000; one year; M. G. Inghram).

University of Colorado, "Solar Radiation in 2100 Angstrom Region" (\$6900; one year; W. B. Pietenpol).

Duke University, "Mass and Momentum Spectra and Interactions of Charged Cosmic-Ray Particles" (\$15,000; two years; M. M. Block).

Florida State University, "Anomalous Transmission of Radiation Through Single Crystals at Bragg Angle" (\$16,800; two years; G. Schwarz and G. Rogosa).

Georgia Institute of Technology, "Angular Correlation Between Nuclear Radiations" (\$7000; one year; L. D. Wyly).

Northwestern University, "An Investigation of the Hall Effect in Metal Single Crystals at Low Temperatures" (\$9000; one year; J. A. Marcus).

Other awards of interest in the latest group include a grant of \$8000 to the Rice Institute (W. V. Houston, principal scientist) for the Third International Conference on Low Temperature Physics; a grant of \$4100 to the State University of Iowa for three years (G. W. Stewart) for the support of the annual Colloquium of College Physicists; and a grant of \$25,000 to the Library of Congress (R. L. Zwemer) for the compilation of lists of scientific and technical serial publications.

Hot Fruit Flies

New Air Force Project

An upper air research project, in which fruit flies will be used to obtain data on the effects of cosmic radiation at very high altitudes, has been announced by the United States Air Force. The research will be carried out as an additional phase of the Air Research and Development Command's balloon research project, which seeks data on the state of winds, temperatures, atmospheric pressures, turbulence, and types of cloud formations at altitudes between 50,000 and 100,000 feet. Controlled balloons launched from West Coast sites will carry, in addition to recording instruments, pressurized test tubes containing harmless fruit flies (*Drosophila*), similar to those sometimes seen on bananas. The balloons will be launched when the prevailing winds are from the west, so that they will travel over and come down in the United States.

Success of the project, according to the Air Force, depends heavily on prompt action by the public in returning the equipment containing the fruit flies. The containers will be marked plainly with complete instructions to the finders regarding their return to the U. S. Air Force. With the returned fruit flies, the Air Force will carry on genetical studies to determine the biological effect of cosmic radiation on the mutation rate and will compare these mutations, if any, with those caused by x-ray, neutron, and gamma radiation.

The research balloons, which are from 45 to 110 feet in diameter, have been sent aloft by the Air Force since

June 1951. They are tracked by ground direction-finding stations throughout their flights. When the balloons descend to 30,000 feet they are automatically deflated and the recording equipment is parachuted to the ground.

Audio Engineering

New Quarterly Journal Established

The *Journal of the Audio Engineering Society*, a new medium for the publication of review and original research articles on broadcast audio systems, the recording and reproduction of sound (musical and otherwise), and certain other topics of particular interest to the professional audio engineer, has been established as the Society's official publication. Volume I, Number 1 of the new journal, which is expected to be issued early in March, contains thirty papers presented last October at the fourth annual meeting of the Audio Engineering Society in New York City. Published under the editorship of Lewis S. Goodfriend, the journal will appear four times each year and will include book reviews and other items of current interest. The annual subscription price of the quarterly has been set at \$8.00 for non-members; it will be distributed to members of the Society without charge. The address of the journal's editorial office is P.O. Box 12, Old Chelsea Station, New York 11, N. Y.

Miscellany

The Atomic Energy Commission is reported to have allocated \$250,000 for studies of the feasibility of high-energy synchrotron focusing by alternating-gradient magnetic and electric fields, a technique that is hoped to make possible the construction of accelerators with energies conceivably ranging upwards as high as 100 Bev. The studies will be carried out by groups at Brookhaven National Laboratory, Princeton University, and at Harvard and the Massachusetts Institute of Technology. The theoretical basis for alternating-gradient focusing was described in the paper by Ernest D. Courant, M. Stanley Livingston, and Hartland S. Snyder, *Phys. Rev.* 88, 1190 (1952).

AEC chairman Gordon Dean, according to reports from Washington, has indicated that he intends to return to private law practice upon the expiration of his term of office this year. President Eisenhower will thus have two vacancies to fill in the Commission since no replacement has been appointed to succeed T. Keith Glennan, who resigned last November to return to his post as president of the Case Institute of Technology.

A panel of specialists in geophysics, geology, and mining representing industry, government, and universities has been established to advise the National Science Foundation on policy questions relating to the development of the mineral resources of the United States.

Proposed American Standard specifications for meters to measure television and radio noise at both medium and very high frequencies have been circulated

on a trial and study basis, the American Standards Association has announced. The specifications are expected to make it possible to develop meters of uniform characteristics for measuring radio noise to which TV and radio equipment will be subjected when operating in the range between twenty and one thousand megacycles. Copies of the Standard are available from the Association at 70 East 45th Street, New York 17, N. Y., at 60¢ per copy.

Confirmation of the value for the half life of polonium reported from Los Alamos in 1949 by W. H. Beamer and W. E. Easton has been announced by the Bureau of Standards, where recent experiments with the NBS ice calorimeter have shown agreement with the 1949 value (138.3 ± 0.1 days) within less than one part in a thousand.

Accurate analysis of x-rays in the energy range between 0.2 and 12 Mev has been made possible, according to the National Bureau of Standards, by the development of the magnetic Compton spectrometer, designed under the direction of H. O. Wyckoff, J. W. Motz and W. Miller of the NBS staff. Bridging the gap left by other types of x-ray spectrometers, the instrument has been used in an analysis of gamma rays emitted from the Los Alamos water boiler and the fast reactor. Measurements of x-ray intensities and energies with the spectrometer can be helpful in determining the amount of shielding required for protection against radiation from high voltage machines and nuclear reactors.

Two cobalt 60 gamma-ray sources, activated in the Brookhaven reactor, have been shipped to non-AEC laboratories for investigations to determine the effects of exposing foods, pharmaceutical products, and other materials to large amounts of radiation. Columbia University has received a 5000 curie cobalt cylinder for use in an AEC-supported research project on chemical and biochemical systems. The other source, consisting of four cylinders and a rod, which can be nested or used in various combinations, is rated at 4500 curies and has been made available to the Stanford Research Institute, Stanford, California, for use on an unrestricted basis in experiments aimed at developing industrial uses for radiation.

A computing center for AEC work in the north-eastern United States is being established in New York City under contract with New York University, and one of the UNIVAC computers constructed for the Commission by Remington Rand's Eckert-Mauchly Division will be installed at NYU this month. The University announced in January the creation of its new Institute of Mathematical Sciences under the scientific direction of Richard Courant. The Institute will be made up of a division of mathematics and mechanics, a division of mathematical research, and a division of computing services.

A new series of atomic tests is slated to begin this month at the AEC's Nevada proving ground near Las