

months—the mining, milling and processing of uranium ores into high grade concentrates, and the manufacture of radiation detection instruments. He also called attention to the participation of industry in key parts of the AEC-financed program: du Pont's survey of the chemistry of plutonium, aided by Blaw-Knox, Dow Chemical, General Electric, Kellogg, Monsanto, and Standard Oil Development; and Westinghouse's work in developing a reactor for driving ships. As for the wider dissemination of knowledge on atomic energy, Chairman Lilienthal stated that plans were being pushed toward this end. The broad clearance of industry technicians and executives presents many practical difficulties, he said, and requires further study as does the formation of a general industrial advisory committee on which industrial representation on functional committees might prove an adequate substitute. Mr. Lilienthal welcomed the suggestions for improving organization, but said that the Commission would continue to emphasize managerial decentralization as "a concrete demonstration of how large and far-flung enterprises can be organized for continuity in case an atomic attack should disrupt the headquarters organization."

A seminar on the disposal of radioactive wastes, attended by a number of the country's experts on waste disposal problems, was held in Washington last January. The seminar was sponsored by the Atomic Energy Commission, and is part of a continuing effort on the part of the Commission to maintain close liaison with public health and safety officials with respect to the national atomic energy program and to its effect upon community life.

The radioisotope training facilities at Oak Ridge are now open to a limited number of scientists who are citizens of the twenty-five nations so far qualified to receive radioisotopes under the AEC isotope export program. The first foreign participants in the training program, K. Aterman, of the department of anatomy of the University of Birmingham, England, and P. S. Krishnan, of Madras, India, attended an Institute course during the month of January.

NBS News

National Bureau of Standards scientists have made use of the invariable frequency of molecular spectrum lines to control the accuracy of a clock. The frequency of an oscillator-initiated microwave signal is fixed exactly at the frequency of the strongest (and most easily measurable) absorption line of ammonia gas. This provides a means of controlling the oscillator, which has been used to drive a clock with such unprecedented accuracy that, according to a recent Bureau announcement, it "promises to surpass by one or two orders of magnitude the accuracy of the present primary standard, the rotating earth."

To open up the new spectrum of radiofrequencies for application to practical electronic equipment as well as

for basic research in nuclear physics, the Bureau began in 1944 a comprehensive program on microwave measurement up to one hundred thousand megacycles or more. This work, under the direction of Harold Lyons, has resulted in extremely precise standards of frequency, power, attenuation, etc. A primary standard of frequency, accurate to one part in one hundred million, has been developed, based on a quartz crystal clock and a frequency multiplying system governed by the time observations of the U. S. Naval Observatory. Through its use the Bureau now provides a regular service of frequency measurement and calibration of frequency meters and voltage sources.

A Bureau study conducted by Abner Brenner and Eugenia Kellogg has resulted in the development of a magnetic method for determining thickness of composite copper-nickel coatings electrodeposited on steel. Attractive forces between the plated specimen and two permanent magnets of different strengths are measured in a modification of the Magne-gage, a Bureau-designed instrument. The values thus obtained are used, in conjunction with a set of previously determined calibration curves for each magnet, to obtain the total thickness of the coating and relative thicknesses of the copper and nickel layers. The new method avoids the necessity of destroying the plated article to provide a cross section for microscopic examination. Its accuracy is within about ten percent for composite coatings ranging from five millionths to three thousandths of an inch, and within fifteen percent for each component layer of the coating.

An improved electronic phase meter has been developed at the Bureau by E. F. Florman and A. Tait. Designed for a frequency range from one hundred to five thousand cycles per second, the new instrument will aid the study of factors limiting accuracy of low frequency radio navigation systems.

The Bureau also announces a method for immediately calibrating instruments which record rapidly changing voltages under special conditions. In making a continuous record of the electrical potential developed by a lightning stroke, for example, it may be essential to calibrate the recording instrument before the thunder arrives, since the air-wave shock might change the calibration.

New Australian Journal

A periodical called the Australian Journal of Scientific Research is now being published quarterly by the Australian Council of Scientific and Industrial Research, Melbourne, in collaboration with the Australian National Research Council. It is being issued in two parts, one dealing with the physical sciences and the other with biological sciences.

Awards

Research Corporation scientific awards, consisting of plaques and honoraria of \$2,500 each, have been received by Bruno Rossi, professor of physics at the Massachusetts

Institute of Technology, and Henry Eyring, Dean of the University of Utah Graduate School. These awards are given annually by the Corporation for exceptionally meritorious service in the advancement of knowledge benefiting science, industry, and mankind.

The 1948 Progress Medal of Great Britain's Royal Photographic Society has been awarded to Loyd A. Jones, head of Kodak Research Laboratories' physics department. Dr. Jones received the honor for his contribution to the use of photographic sensitometry in the manufacture and control of photographic materials.

The 1948 Edison Medal of the American Institute of Electrical Engineers has been awarded to Morris E. Leeds, chairman of the board of Leeds & Northrup Company. Mr. Leeds was presented the award for his contribution to industry through the development and production of electrical measuring devices and controls.

The thirteenth annual Oersted Medal of the American Association of Physics Teachers has been presented to Arnold Sommerfeld, theoretical physicist, of the University of Munich. Professor Sommerfeld received the award for "notable contributions to the teaching of physics" after a career of more than fifty years of teaching, over forty of which were at Munich.

Edward C. Creutz, Associate Professor of Physics at Carnegie Institute of Technology and administrator of the 400 million volt synchro-cyclotron project, has been named Pittsburgh's "Man of the Year in Science" by the Pittsburgh Junior Chamber of Commerce.

Abe Mordecai Zarem, manager and chairman of physics research for the Stanford University Research Institute, Los Angeles, Calif., has been selected as the outstanding young electrical engineer of 1948 by Eta Kappa Nu, national honor society for electrical engineers.

Robert Simha has received the A. Crossy Morrison Prize of the New York Academy of Sciences for a paper on the viscosity of dilute solutions of high polymer molecules.

Meetings

The Second Symposium on Plasticity will be held at Brown University, Providence, R. I., April 4-6, 1949, under the joint sponsorship of the Bureau of Ships and the Office of Naval Research. The two principal topics will be "Structural Applications of the Theory of Plasticity" and "Dynamic Problems of Plasticity." For further information write to Professor P. S. Symonds, Graduate Division of Applied Mathematics, Brown University, Providence 12, R. I.

Jet Propulsion Centers

Two national centers of rocket and jet propulsion research, at Princeton University and California Institute of Technology, have been established by the Daniel and Florence Guggenheim Foundation, which has appropriated \$500,000 for their support for seven years. The

principal post at each center will be a Goddard professorship, in honor of the American rocket pioneer, the late Robert H. Goddard. Hsue-shen Tsien, MIT professor of aerodynamics, will fill the post at Caltech when the program starts next fall. Six \$2,000 fellowships, three for study at each center, will also be granted yearly. The two universities will provide necessary buildings and equipment.

Student Exchange

UNESCO has published a handbook of fellowships, scholarships, and educational exchange, called Study Abroad, listing over ten thousand opportunities for international study in one hundred and thirty-six subject fields in twenty seven countries, including the United States. The aim of the publication is to increase the number and quality of candidates applying for fellowships, to define the present opportunities for student exchange, and to suggest directions of possible improvement in scope and emphasis of these opportunities. The handbook will be distributed by the Columbia University Press at \$1.00 a copy.

Fellowships

Columbia University's Radiation Laboratory has announced a \$3,500 Carbide and Carbon Chemicals Corporation fellowship in physics for research in microwave spectroscopy with some application to organic chemistry. Also available are half-time research positions which enable graduate students to earn from \$1,450 to \$1,800 per academic year, and full-time research positions paying up to \$4,000 per year for those qualified for ultra-high frequency generator research. Three to six points free tuition each session are provided in the case of full-time positions. Applications including statements of qualifications and major interest should be addressed to I. I. Rabi, Executive Officer, Physics Department, Columbia University, New York 27, N. Y.

Several \$1,800 research fellowships in physics are to be awarded M.S. candidates for work on a project sponsored by the Department of the Army at Florida State University in Tallahassee. Research at this project will be on particle structure, packing and size distribution by x-ray diffraction. Anyone interested should write to K. L. Yudowitch, project director, Florida State University.

Applications will be accepted until April 1 for all-expense General Electric science fellowships at Union College in Schenectady, N. Y. and the Case Institute of Technology in Cleveland, Ohio. The fellowships are available to secondary school science teachers from nineteen northeastern states and the District of Columbia and each college will accommodate fifty fellows equally divided between science teachers preferring to study chemistry and physics. The Union College session, from July 12 to August 13, is open to teachers from New England, New York, Pennsylvania, New Jersey, Delaware, Maryland, Virginia, and the District of Columbia. The Case Institute session, from June 27 to August 5, is for