

*ment of Science*, consisting of a gold medal, bronze replica, certificate and \$3,000 in cash, awarded to Sir William Bragg, of the Royal Institution, London. Sir William is distinguished by his fundamental work in x-ray crystal analysis. He has shown how to reveal the constitution of crystalline forms and accurately measure them, and his studies have given birth to a new tool which is bringing to light important facts regarding such complex structures as the larger organic molecules. Dr. Frank B. Jewett, chairman of the Committee on the Carty Fund, stated the reasons for the award, and Dr. A. H. Compton, of the University of Chicago, spoke on Sir William's work.

### ELECTIONS OF THE NATIONAL ACADEMY OF SCIENCES

At the annual meeting of the National Academy of Sciences, held in Washington on April 24, 25 and 26, Dr. Frank B. Jewett, president of the Bell Telephone Laboratories, was elected president for a term of four years, to succeed Dr. Frank R. Lillie, emeritus professor of zoology of the University of Chicago, who will retire on June 30.

New members of the academy were elected as follows:

Gregory Breit, professor of physics, University of Wisconsin.

Detlev Wulf Bronk, Johnson professor of biophysics and director of the Johnson Foundation, University of Pennsylvania.

William Bosworth Castle, associate professor of medicine, Harvard Medical School, director of the Thorndike Memorial Laboratory, Boston City Hospital.

Frederick Gardner Cottrell, president, Research Associates, Incorporated, Washington, D. C., consulting chemist, Bureau of Chemistry and Soils.

Frederick Parker Gay, professor of pathology and bacteriology, College of Physicians and Surgeons, Columbia University.

Albert Baird Hastings, Hamilton Kuhn professor of biochemistry, Harvard University.

Vladimir Nikolaevich Ipatieff, research director of the Universal Oil Products Company, professor of chemistry, Northwestern University.

Merkel Henry Jacobs, professor of general physiology, University of Pennsylvania.

Zay Jeffries, General Electric Company, Cleveland, Ohio.

Donald Forsha Jones, geneticist, Connecticut Agricultural Experiment Station, New Haven.

George Bogdan Kistiakowsky, professor of chemistry, Harvard University.

Warren Judson Mead, professor and head of the department of geology, Massachusetts Institute of Technology.

Oscar Riddle, investigator, department of genetics, Station for Experimental Evolution, Carnegie Institution, Cold Spring Harbor, N. Y.

Adolph Hans Schultz, associate professor of physical anthropology, School of Medicine, the Johns Hopkins University.

Philip Edward Smith, professor of anatomy, College of Physicians and Surgeons, Columbia University.

Foreign associates elected were:

Sir Joseph Barcroft, professor of physiology, the University of Cambridge.

Sir William Bragg, director, the Royal Institution of Great Britain and Fullerian professor of chemistry and director of the Faraday Research Laboratory.

Dr. F. A. Vening Meinesz, professor of geodesy and cartography, the University of Utrecht.

Dr. Frederick E. Wright, of the Geophysical Laboratory, Carnegie Institution of Washington, was re-elected home secretary for a term of four years, and Dr. Charles August Kraus, professor of chemistry at Brown University, and Dr. Alfred Newton Richards, professor of pharmacology at the University of Pennsylvania, were elected members of the council to succeed Dr. Simon Flexner, director emeritus of the Rockefeller Institute for Medical Research, and Dr. J. B. Whitehead, director of the school of engineering of the Johns Hopkins University.

## SCIENTIFIC NOTES AND NEWS

THE John L. Lewis Prize of the American Philosophical Society has been conferred on Dr. Henry Norris Russell, professor of astronomy and director of the observatory at Princeton University, "in appreciation of his contribution on 'stellar energy,' at the society's symposium on astrophysics in February." The presentation was made by Dr. Harlow Shapley, director of the Harvard College Observatory, at the annual dinner of the society on April 22. Dr. Roland S. Morris, formerly United States Ambassador to Japan and president of the society, presided. The speakers included Dr. Vannevar Bush, president of the Carnegie Institution of Washington; Dr. Victor G. Heiser, of the International Leprosy Commission, and

Professor Jesse S. Reeves, of the University of Michigan.

At the closing session of the meeting in Washington of the American Geophysical Union, Dr. William Bowie was made the first recipient of a newly established Bowie Medal, named in his honor, "for distinguished attainment and outstanding contribution to the advancement of cooperative research in fundamental geophysics." Dr. Bowie joined the U. S. Coast and Geodetic Survey in 1895 and from 1909 until his retirement in 1936 was chief of the Division of Geodesy.

THE British Society of Antiquaries, London, will

award its gold medal this year for distinguished services to archeology to Dr. Haakon Shetelig, keeper of the Bergen Museum. He received the medal at the anniversary meeting, which was held at Burlington House on April 27.

THE prize of \$1,000, established by Mead Johnson and Company, was awarded at the Toronto meeting of the American Institute of Nutrition to Dr. C. A. Elvehjem, professor of agricultural chemistry at the University of Wisconsin, in recognition of his work with nicotinic acid as a cure for pellagra.

THE sixth award of the Edward Goodrich Acheson Medal and the \$1,000 prize of the Electrochemical Society was presented at the Columbus meeting on April 26 to Dr. Francis Cowles Frary, director of the Research Laboratories of the Aluminum Company of America and known for his achievements in the metallurgy of aluminum. Previous recipients of the award are: Dr. Edward Goodrich Acheson, for his work on artificial graphite; Dr. Edwin F. Northrup, for the invention of the high frequency electric furnace; Dr. Colin G. Fink, for his contributions to electrochemistry; Dr. Frank J. Tone, for his work on carborundum, and Dr. Frederick M. Becket, for his contributions to electrometallurgy.

PROFESSOR CLAUDE RIGAUD has received the award of the Katherine Berkan Judd Prize of the Memorial Hospital for the Treatment of Cancer and Allied Diseases for the year 1938. The prize, which carries a stipend of \$1,000, is for his "pioneer contributions in the field of radiophysiology and therapy." Dr. Rigaud was for many years director of the Curie Institute, Paris, and since his retirement has been engaged in research in the Pasteur Institute, Paris.

THE A. W. Hoffmann Memorial Medal has been awarded by the German Chemical Society to Dr. Albert Szent-Györgyi, professor of medical chemistry at Szeged, Hungary.

THE Lobatchewsky Prize of the Mathematical Institute of Kazan has been awarded to Professor Élie Cartan, of the University of Paris.

PETER P. T. SAH, professor of organic chemistry at the Catholic University, Peking, China, has been elected to the Kaiserlich Deutsche Akademie der Naturforscher in recognition of his work in vitamin research.

M. JACQUES DUCLAUX, professor of general biology in the Collège de France, Paris, has been elected a free academician of the Paris Academy of Sciences, in succession to the late M. d'Ocagne.

DR. BERTHOLD HATSCHKE, professor of zoology at the University of Vienna, celebrated on April 3 the eighty-fifth anniversary of his birthday.

At the Toronto meeting of the Federation of American Societies for Experimental Biology, Dr. Oscar Henry Plant, professor of pharmacology of the University of Iowa, was elected president of the American Society for Pharmacology and Experimental Therapeutics and, by a system of rotation among the societies, also became chairman of the executive committee of the federation. The next meeting of the federation will be held in New Orleans.

At the annual meeting of the Electrochemical Society, held at Columbus, Ohio, the following officers were elected: *President*, H. Jermain Creighton, Swarthmore College; *Vice-presidents*, D. A. Pritchard, Montreal; Alexander Lowy, Pittsburgh; J. D. Edwards, New Kensington, Pa.; *Managers*, C. E. Williams, Columbus; K. G. Soderberg, Detroit; J. A. Lee, New York City; *Treasurer*, Robert M. Burns, New York City; *Secretary*, Colin G. Fink, Columbia University.

It is stated in *Nature* that at a plenary session of the Academy of Sciences of the U.S.S.R. recently held in Moscow the following officers were elected: *President*, V. L. Komarov; *Vice-presidents*, O. J. Schmidt, the late I. M. Gubkin, E. A. Chudakov, A. A. Bogomolets, A. J. Vishinsky, T. D. Lysenko, V. N. Obratcov, A. E. Fersman. The secretaries of the eight newly constituted departments of the academy, elected at a previous session of the academy, become *ex-officio* members of the Presidium. They are: Department of Economics and Law, E. S. Varga; Department of Technical Sciences, V. P. Nikitin; Department of History and Philosophy, A. M. Deborin; Department of Geology and Geography, P. I. Stepanov; Department of Biology, L. A. Orbeli; Department of Physico-Mathematical Sciences, A. N. Kolmogorov; Department of Languages and Literature, I. I. Meshchaninov; Department of Chemistry, A. N. Bakh.

PROFESSOR ALPHEUS G. WOODMAN, professor of chemistry at the Massachusetts Institute of Technology, has been made emeritus professor.

DR. TRACY J. PUTNAM, professor of neurology at the Harvard Medical School and neurologist-in-chief of the Boston City Hospital, has been appointed professor of neurology and neurosurgery at the Columbia University School of Medicine. Dr. Putnam will also be the director of services of neurology and neurosurgery at the Neurological Institute of the Columbia-Presbyterian Medical Center. Dr. Vernon W. Lip-pard, director of the Commission for Study of Crippled Children of the City of New York, has been appointed assistant dean of the school. Drs. Charles A. Flood and Lawrence W. Sloan have resigned as assistant deans to enter private practice.

ANNOUNCEMENT has been made of a number of pro-

motions and appointments at the Yale School of Forestry, effective on July 1. These staff changes have been occasioned by the retirement of Dean Henry S. Graves and the death of Professor Ralph C. Bryant. As previously announced, Professor Samuel J. Record has been named dean of the school. He will also carry the title of Pinchot professor of forestry. Dr. George A. Garratt, associate professor of forest products, has been appointed Manufacturers' Association professor of lumbering, to fill the vacancy created by the death of Professor Bryant. Dr. Harold J. Lutz, assistant professor of forestry since 1933, has been promoted to an associate professorship. Dr. Walter H. Meyer, professor of forest management at the University of Washington, has been appointed associate professor of forestry, to fill the teaching vacancy created by the retirement of Dean Graves. Robert T. Clapp has been promoted to an assistant professorship, on the Charles Lathrop Pack Foundation, and will serve as director of the Yale Forests and of the summer term of the School of Forestry, as well as giving instruction during the regular college year. Robert W. Hess, assistant professor of forestry at the University of Maine, has been appointed assistant professor of forest products, to fill the vacancy resulting from Professor Garratt's promotion to the professorship of lumbering. Professor Hess was formerly associated with the University of Arkansas.

DR. ALFRED C. CALLEN, of the University of Illinois, has been appointed head of the department of mining engineering and dean of the College of Engineering at Lehigh University. Dr. Bradford Willard, of the Pennsylvania Topographical and Geologic Survey, has been appointed head of the department of geology, and Professor Gilbert E. Doan, of the faculty, head of the department of metallurgical engineering. Relinquishing their administrative work under an age rule of the board, but continuing on the teaching faculty are: Professor Bradley Stoughton, dean of the College of Engineering and head of the department of metallurgical engineering; Professor Benjamin L. Miller, head of the department of geology, and Professor Howard Eckfeldt, head of the department of mining engineering.

DEAN ROBERT C. DISQUE, of the School of Engineering of Drexel Institute of Technology, has been appointed educational consultant in planning and carrying out the cooperative system of education in the Institute of Technology to be established at Northwestern University through the \$6,735,000 gift of the Walter P. Murphy Foundation. He will assume the position left vacant by the recent death of Dean Herman Schneider, of the University of Cincinnati, founder of the cooperative plan, who was originally selected as adviser to the new institute by North-

western University and the Walter P. Murphy Foundation.

DR. JAMES G. HORSFALL, chief in research in plant pathology at the New York State Experiment Station at Geneva since 1929, has resigned to become head of the department of plant pathology and botany at the Connecticut Agricultural Experiment Station at New Haven.

M. J. GOSS, of the Industrial Farm Products Research Division of the Bureau of Chemistry and Soils, has been appointed technical assistant in the general organization of the Regional Research Laboratories which are being established by the U. S. Department of Agriculture.

DR. NORMAN W. KRASE, professor of chemical engineering at the University of Pennsylvania, has been appointed by the E. I. du Pont de Nemours and Company to take charge of all semi-works operations for the ammonia department of the chemical division, with headquarters at the Experimental Station, Wilmington, Del. He will begin his new work at the end of the present academic year.

DR. JUAN NEGRIN, formerly professor of physiology at the University of Madrid, who was premier of the Spanish Republican Government, sailed for New York on April 26.

FRANKLIN C. MCLEAN, professor of pathological physiology at the University of Chicago, writes: "Professor Otto Loewi has been released from Germany. He may be addressed in care of Club de la Fondation Universitaire, Rue d'Egmont, Brussels. Before being released he was stripped of all his property, both inside of and outside of Germany, including his Nobel prize money, which had never been in either Austria or Germany. Mrs. Loewi is still detained in Germany."

COLONEL JOSEPH F. SILER, director of the Army Medical School, delivered the annual Kober Lecture at Georgetown University Medical School, Washington, D. C., on March 28, on a new vaccine for typhoid developed by the army. He was presented with a check for \$500, provided under the terms of the Kober Foundation.

THE John Torrey lecture in botany of the Torrey Botanical Club was delivered by Dr. P. R. White, of the Rockefeller Institute for Medical Research, Princeton, New Jersey, before the club and the Columbia Institute of Arts and Sciences on Friday evening, April 21. He spoke on "Tissue Cultures in Plants."

DR. GEORGE B. KISTIAKOWSKY, professor of chemistry, Harvard University, will deliver the Edgar Fahs Smith Memorial Lecture at the University of Pennsylvania on May 26. His subject will be "Energetics of Some Organic Molecules."

DR. WALTER B. CANNON, George Higginson professor of physiology at Harvard University and president of the American Association for the Advancement of Science, spoke on "Serendipity" or "An Accidental Sagacity" at the second annual meeting of the Wellesley Chapter of Sigma Xi on April 28.

DR. ALBERT D. MEAD, professor of biology, emeritus, will give the Graduate School Convocation address at Brown University on June 17. His subject will be "The Species Complex."

THE Association for Research in Human Heredity meets at the New York Academy of Medicine on May 5 at 8:30 P.M. Dr. Alan Gregg, of the Rockefeller Foundation, is chairman. The speakers and their subjects are Dr. Nolan D. C. Lewis, the New York State Psychiatric Institute, "Evaluation of Present Research on the Genetics of Mental Disease," and Dr. Leslie T. Webster, the Rockefeller Institute for Medical Research, "The Role of Inborn Resistance in Infectious Disease."

A MEDICAL center, built at a cost of \$1,000,000, on Mt. Scopus, Jerusalem, will be dedicated on May 9. Funds for the building were provided by the American Jewish Physicians' Committee and by Hadassah, the Women's Zionist Organization of America.

THE new observatory at the University of Glasgow was opened on April 18 by Sir Arthur Eddington, Plumian professor of astronomy at the University of Cambridge and director of the Cambridge Observatory. Sir Arthur was introduced by Sir Hector Hetherington, principal and vice-chancellor of the university, who said that it was the third observatory of the department of astronomy. It would be used not so much for observation as for instruction and the training of students in the use of astronomical instruments. The new observatory consists of a laboratory, an astronomy room, a dome for the 7-inch refractor and a house for the transit instrument. Before the opening ceremony Sir Arthur lectured on "The Expansion of the Universe."

## DISCUSSION

### THE FIRST EXPERIMENT IN PLANT PHYSIOLOGY

ACCORDING to texts in general botany and plant physiology and to a representative series of books on the history of biology and the history of botany, the first experiment in plant physiology was performed by Van Helmont in the seventeenth century, the familiar and oft-cited five-year test, during which a five-pound willow shoot grew to a weight of one hundred and sixty-nine pounds, while its supporting soil, starting at two hundred pounds, lost only two ounces. That Van Helmont was first to perform this experiment is so generally accepted that a divergent opinion was a matter of special interest. According to Charles Singer ("From Magic to Science," 1928), credit for this experiment really belongs to a man of two centuries before Van Helmont, Nicholas Krebbs (1401-1464), usually set down as Cusanus or Cardinal Nicholas de Cusa (Cues or Kues). Singer writes: "He records a careful experiment of a growing plant—afterwards pirated by the seventeenth century writer, Van Helmont (1577-1644)—proving that it absorbs something of weight from the air. This is the first biological experiment of modern times, and incidentally the first formal proof that air has weight."

As a matter of interest and record, translations of the statements of Cusanus and of Van Helmont are reproduced below for comparison. The Van Helmont excerpt was made by E. J. Russell, as quoted in *Plant Physiology* (1929). The Cusanus translation comes from an English edition of a small part of his writings

published in 1650, six years after Van Helmont's death, and bearing the following title page:

The Idiot, in four books. The first and second of Wisdome. The third of the Minde. The fourth of statick Experiment. or experiments of ballance. By the famous and learned C. Cusanus. London. Printed for William Leake, and are to be sold at the signe of the Crowne in Fleet-Street, between the two Temple Gates, 1650.

#### *From Van Helmont:*

I took an earthen vessel in which I put 200 pounds of soil dried in an oven, then I moistened with rain water and pressed hard into it a shoot of willow weighing five pounds. After exactly five years the tree that had grown up weighed 169 pounds and about three ounces. But the vessel had never received anything but rain water or distilled water to moisten the soil when this was necessary, and it remained full of soil, which was still tightly packed, and, lest any dust from outside should get into the soil, it was covered with a sheet of iron coated with tin but perforated with many holes. I did not take the weight of the leaves that fell in the autumn. In the end I dried the soil once more and got the same two hundred pounds that I started with, less two ounces. Therefore the 164 pounds of wood, bark, and root arose from the water alone.

#### *From Cusanus:*

*Orator.* "There is a saying, that no pure element is to be given, how is this proved by the Ballance?"

*Idiot.* "If a man should put an hundred weight of earth into a great pot, and then take some Herbs, and Seeds, & weigh them, and then plant or sow them in that