

Lectures on applied science centering around the theme "Franklin—Printer and Business Man" will be given from ten to twelve on Saturday. The speakers will be:

Dr. W. E. Wickenden, president of the Case School of Applied Science, Cleveland; Dr. Willis R. Whitney, vice-president in charge of research, General Electric Company; Dr. Abel Wolman, chief engineer, Maryland State Department of Health, Baltimore, and Dr. Harvey N. Davis, president of the Stevens Institute of Technology.

In the evening at 8:30 the ceremonies of the conferring of degrees by the University of Pennsylvania and the award of medals by the Franklin Institute will take place in Franklin Hall. There will be music by the Curtis Symphony Orchestra. A special program under the auspices of the Poor Richard Club of Philadelphia has been arranged for 2:30 on Saturday at which awards will be made to winners of an essay contest on "What Franklin Did for America and for Us Who Live To-day." The celebration will close with a banquet at the Bellevue-Stratford Hotel at which the Honorable Herbert C. Hoover will be the principal speaker.

Special exhibits in all departments of the museum showing the development of science from Franklin's day to the present, especially in the fields in which he was interested, will be placed on display beginning on May 19 and continuing for a limited period thereafter.

#### MEMBERS ELECTED BY THE NATIONAL ACADEMY OF SCIENCES

At the annual meeting of the National Academy of Sciences held in Washington on April 25, 26 and 27 members were elected as follows:

##### *Section of Mathematics:*

Marshall Harvey Stone, Harvard University.

##### *Section of Astronomy:*

John Adam Fleming, Department of Terrestrial Magnetism, Carnegie Institution of Washington.

##### *Section of Physics:*

Carl David Anderson, California Institute of Technology.

George Walter Stewart, University of Iowa.

##### *Section of Engineering:*

Theodor von Kármán, California Institute of Technology.

Warren Kendall Lewis, Massachusetts Institute of Technology.

##### *Section of Chemistry:*

Carl Shipp Marvel, University of Illinois.

Worth Huff Rodebush, University of Illinois.

##### *Section of Geology and Paleontology:*

Walter Hermann Bucher, University of Cincinnati.

##### *Section of Botany:*

Lewis John Stadler, University of Missouri.

##### *Section of Zoology and Anatomy:*

Theophilus Shickel Painter, University of Texas.

##### *Section of Physiology and Biochemistry:*

William deBerniere MacNider, University of North Carolina.

Edward Adelberg Doisy, St. Louis University.

##### *Section of Pathology and Bacteriology:*

Simeon Burt Wolbach, Harvard University.

##### *Section of Anthropology and Psychology:*

Louis Leon Thurstone, University of Chicago.

##### Foreign members elected were:

Alfred Fowler, professor of astrophysics, Imperial College, University of London.

Pierre Janet, professor of psychology, College of France, Paris.

S. P. L. Sorensen, director of the chemical division of the Carlsberg Laboratory, Copenhagen.

D. M. S. Watson, Jodrell professor of zoology and comparative anatomy, University College, London.

Dr. F. K. Richtmyer, professor of physics and dean of the Graduate School of Cornell University, and Dr. E. D. Merrill, professor of botany, administrator of botanical collections and director of the Arnold Arboretum at Harvard University, were elected members of the council for a three-year term, beginning on July 1, 1938.

## SCIENTIFIC NOTES AND NEWS

At the recent meeting of the National Academy of Sciences, the Alexander Agassiz Gold Medal for contributions to oceanography was presented to Dr. Edgar Johnson Allen, for forty-two years director of the Plymouth Laboratory of the Marine Biological Association of Great Britain. The Public Welfare Medal for eminence in the application of science to the public welfare was presented to Dr. Willis R. Whitney, vice-president in charge of research of the General Electric Company. The presentation address for the Agassiz Medal was made by Professor Edwin G. Conklin, of Princeton University, executive vice-president

of the American Philosophical Society, and the presentation address for the Public Welfare Medal was made by Dr. Albert W. Hull, of the General Electric Company, chairman of the committee that recommended the award.

THE John F. Lewis Prize of \$300 and an illuminated diploma awarded "to the American citizen who shall announce at any general or special meeting of the American Philosophical Society and publish among its papers, some truth which the council of the society shall deem worthy of award" was given at its recent meeting to Professor Arthur J. Dempster, of the Uni-

versity of Chicago, in recognition of his work on mass spectroscopy and mass analysis of the chemical elements. The presentation of this prize was made at the annual dinner by Dr. Robert A. Millikan.

DAVID SARNOFF, president of the Radio Corporation of America, will be the recipient of the Marconi Memorial Award for 1939. The presentation will be made on April 25 of next year on the anniversary of Marconi's birth. Premier Mussolini has proclaimed the day a national holiday in Italy, and is personally contributing the medal bearing a likeness of Marconi.

DR. PAUL D. BARTLETT, assistant professor on the staff of Harvard University, will receive the \$1,000 prize in pure chemistry awarded by the American Chemical Society in recognition of "notable progress in the important borderline field between organic and physical chemistry." The prize will be presented at the ninety-sixth meeting of the society in Milwaukee next September. The funds for the 1938 prize were donated by Professor James E. Kendall, head of the department of chemistry of the University of Edinburgh, "in appreciation of the facilities afforded him as a young chemist in America to engage in research work during fifteen years at Columbia and New York Universities."

THE Materials Testing Laboratory of the University of Illinois has been named the Arthur Newell Talbot Laboratory. Dr. Talbot, who has been connected with the university for sixty years, is said to have been responsible for the founding of the Engineering Experiment Station in 1903.

THE University of Oxford has conferred the degree of doctor of science on Dr. Harvey Cushing. Dr. Cushing was Moseley professor of surgery at Harvard University from 1912 to 1932, when he reached the retiring age. He was then appointed Sterling professor of neurology at Yale University, retiring in 1937. The title emeritus was conferred on him by both universities.

THE degree of doctor of laws was conferred on Dr. Alexander G. Ruthven, president of the University of Michigan, by the University of California on the occasion of the annual Charter Day exercises. The degree was presented by President Sproul, who made the following citation: "Able teacher and investigator of the intricate problems of animal life; skilled helmsman of the first state university to attain greatness and one to which we are united by many bonds; a modest, kindly, generous colleague."

AMONG the honorary degrees to be conferred by the Ohio State University at the commencement exercises on July 4 is the doctorate of science on Dr. Robert B. Sosman, physical chemist of the Research Laboratories

of the U. S. Steel Corporation at Kearny, N. J., and on Professor Evan J. Crane, editor-in-chief of *Chemical Abstracts*.

DR. ALEXIS CARREL, member of the Rockefeller Institute for Medical Research, New York, was awarded on April 26 the honorary degree of doctor of science by Manhattan College, New York, on the occasion of its seventy-fifth anniversary.

DR. PEYTON ROUS, member of The Rockefeller Institute for Medical Research, New York City, has been elected a member of the Royal Academy of Sciences of Denmark in the class of the natural sciences and mathematics.

DR. S. WALTER RANSON, professor of anatomy at Northwestern University, was elected president of the American Association of Anatomists at the recent meeting in Pittsburgh. Dr. T. Wingate Todd, of the School of Medicine of Western Reserve University, was elected vice-president.

At the annual meeting of the Electrochemical Society held at Savannah, Ga., the following officers were elected: *President*, Robert L. Baldwin, National Carbon Company, Niagara Falls, N. Y.; *Vice-presidents*, A. Kenneth Graham, Philadelphia; Leon R. Westbrook, Cleveland, and S. Skowronski, Perth Amboy, N. J.; *Managers*, R. B. Mears, New Kensington, Pa.; H. E. Haring, Summit, N. J., and L. C. Judson, New York City; *Treasurer*, Robert M. Burns, New York City; *Secretary*, Colin G. Fink, Columbia University.

At Princeton University Professor Herbert S. Langfeld has been designated Stuart professor of psychology; Professor Charles W. Bray has been promoted to an associate professorship in psychology and Dr. Carl H. Wedell has been promoted to an assistant professorship.

At Brown University, Dr. Paul C. Cross, of Stanford University, has been appointed associate professor of chemistry, and Dr. John P. Howe, of the Ohio State University, assistant professor of physical chemistry. Other appointments are Dr. John R. Lacher, of Harvard University, and Dr. Max F. Roy, of the University of Illinois, instructors.

DR. ROY SIMONSON, of the University of Wisconsin, has been appointed assistant professor of agronomy at the Iowa State College. Mr. Simonson will serve both the Experiment Station and the college, working in the field of soil research.

DR. JAMES N. PATTERSON, assistant professor of pathology of the College of Medicine of the University of Cincinnati, has been appointed director of the laboratories of the Florida State Department of Health at Jacksonville to succeed the late Dr. Paul Eaton.

TRUSTEES of Science Service were elected at the annual meetings on April 28 as follows: Dr. Ross G. Harrison, professor of biology and director of the Osborn Zoological Laboratory of Yale University, chairman of the National Research Council, to represent the council, and O. W. Riegel, director of the Lee School of Journalism, Washington and Lee University, and J. Edwin Murphy, managing editor of the *Sun*, Baltimore, to represent the journalistic profession. Dr. Robert Andrews Millikan, of the California Institute of Technology, was reelected a trustee as a representative of the National Academy of Sciences, and Dr. Henry B. Ward, of the University of Illinois, was reelected to represent the American Association for the Advancement of Science.

DR. JOHN C. MERRIAM, president of the Carnegie Institution of Washington, will be the speaker in the series on the "Social Implications of Science" on May 10 at the final dinner meeting of the season of the American Institute of the City of New York. The title of his address will be "The Application of Science to Human Affairs."

DR. GEORGE HOWARD PARKER, emeritus professor of zoology at Harvard University, will speak on May 9 at the American Museum of Natural History, New York City, on "Color Changes in Animals and the Neurohumoral Hypothesis."

DR. CARL VOEGTLIN, of the National Institute of Health, Washington, D. C., recently gave a course of three Herter lectures at the College of Medicine of New York University on "Some Chemical Aspects of the Cancer Problem" and on "Experimental Chemotherapy."

THE Calvin W. Rice lecture of the American Society of Mechanical Engineers will be given at St. Louis on June 21 at the semi-annual meeting of the society by William Robb Barclay, consulting metallurgist of the Mond Nickel Company, Ltd., of London.

DR. GEORGE GAMOW, professor of theoretical physics at the George Washington University, will go to Warsaw to take part in a symposium on "The New Theories in Physics," under the auspices of the International Institute of Intellectual Cooperation of the Congress of the League of Nations to be held from May 30 to June 4. He will sail from New York on May 17. The following papers will be presented: Professor Niels Bohr, Copenhagen, on "Indeterminist Interpretation of the Formal Structure of Quantum Mechanics"; Professor Louis de Broglie, University of Paris, "Relations Between Quantum Mechanics and the Theory of Relativity"; Professor Edwin Schrödinger, Graz, "Cosmological Applications of the Theory of Quanta"; Professor W. Heisenberg, Leipzig, "Quantum Theory of the Electromagnetic Field"; Professor P. A. M.

Dirac, Cambridge, "Elementary Particles," and Professor Paul Langevin, University of Paris, "Positivistic and Realistic Currents in the Philosophy of Physics."

PROFESSOR JAMES W. COOK, of the Research Institute of the Royal Cancer Hospital, London, will be guest lecturer during the first term of the summer quarter in the department of chemistry at the University of Chicago. Subjects of these lectures will be: "Cancer Producing Chemical Agents and Their Biological Effects" and "Polycyclic Hydrocarbons and Their Relationship to Biological Problems."

THE Virginia Chapter of Sigma Xi held its annual spring meeting on April 11, when Dr. John Paul Nafe, professor of psychology at Washington University, St. Louis, spoke on the "Temperature Sense." At this meeting fifteen graduate students were initiated, and the president and visitors' research prize was awarded to Professors Piet van de Kamp, now at Swarthmore College, and A. N. Vysotsky, for "the most outstanding piece of research of 1937."

At the second annual meeting of the Association of the Southeastern Biologists, held at the University of Georgia, Athens, on April 15 and 16, under the presidency of Dr. G. H. Boyd, of the University of Georgia, a permanent organization was set up and the following officers were elected for the coming year: *President*, E. E. Reinké, Vanderbilt University; *Vice-president*, H. R. Totten, University of North Carolina; *Secretary-Treasurer*, D. C. Boughton, University of Georgia. Approximately a hundred biologists representing thirty-two institutions in Alabama, Florida, Georgia, North Carolina, South Carolina and Tennessee were in attendance. The program included twenty-one research papers and ten demonstrations in the fields of botany and zoology. The principal addresses were made by Dr. Otis W. Caldwell, general secretary of the American Association for the Advancement of Science, who spoke on "Research and Readjustment," and by Dr. F. G. Hall, of Duke University, whose subject was "A High Altitude Expedition."

THE annual meeting of the American Association of Museums will be held at Philadelphia on May 19, 20 and 21. Registration will be at 9 A. M. on the first day at the Pennsylvania Museum of Art, where the opening session will be held. Headquarters will be at the Warick Hotel.

THE twenty-sixth annual meeting of the Eugenics Research Association will be held at the American Museum of Natural History, New York City, on Thursday, June 2, at 10 A. M.

THE twenty-fourth annual meeting of the American Association of Cereal Chemists will be held at the Hotel Netherland Plaza, Cincinnati, from May 23 to

27. Dr. C. H. Bailey is president of the congress. The chairman of the program committee is George Garnatz, chief chemist of the Kroger Grocery and Baking Company, Cincinnati.

THE thirty-third annual meeting of the Southern Society for Philosophy and Psychology was held in Knoxville, Tenn., on April 15 and 16. Eighteen papers in philosophy and thirty-six in psychology were presented. New officers elected were: Frank A. Geldard, University of Virginia, *president*; C. Paul Heinlein, Florida State College for Women, *Secretary-Treasurer*. Elected to the council were: Herbert C. Sanborn, Vanderbilt University; Emily S. Dexter, Agnes Scott College, and James B. Miner, University of Kentucky.

SUBJECTS discussed at the Washington meeting of the Institute of Radio Engineers and the International Scientific Radio Union (American Section) included ionosphere and transmission phenomena and other phases of radio communication. On Thursday evening, April 28, there were semi-popular lectures with experimental demonstrations at the auditorium of the Department of Commerce, including "The Electric Performance of the Electric Eel" with demonstration, by C. W. Coates, of the New York Aquarium, and R. T. Cox, of New York University, and "Electromagnetic Waves in Free Space, in Metal Pipes and in Dielectric Wires" with an experimental demonstration, by George C. Southworth, of the Bell Telephone Laboratories.

THE conference of the Museums Association of Great Britain will be held in Belfast, Ireland, from July 4 to 9, under the presidency of Dr. R. E. Mortimer Wheeler. Information can be obtained from the

Secretary, Chaucer House, Malet Place, London, W.C. 1.

AN International Engineering Congress will be sponsored at Glasgow, Scotland, from June 21 to 24, inclusive, by a number of engineering societies. This will be held during the progress of the Empire Exhibition. A detailed program, including several technical sessions, is being prepared. Those planning to attend the congress can obtain further details by writing to P. W. Thomas, honorary general secretary, 39 Elmbank Crescent, Glasgow, C. 2, Scotland.

THE International Congress on Technical Education will be held in Berlin from July 25 to 29 under the presidency of M. E. Labbé. It is proposed to discuss the following subjects: "The Human Aspect of Labor," "The Organization of Practical Training in Industry," "Contact between Methods of Work Employed in Technical and Vocational Schools and the Business and Technical World," "Recruitment of Principals of Vocational Schools," "Commercial Training of the Technician and the Technical Training of the Business Man," "Complementary Technical Instruction for Adults" and "The Technical Press and Technical Education." Those wishing to become members of the congress should notify M. R. Harlé, 2 Place de la Bourse, Paris, prior to June 15.

THE Committee on Scientific Research of the American Medical Association invites applications for grant of money to aid in research on problems bearing more or less directly on clinical medicine. Preference is given to requests for moderate amounts to meet specific needs. For application forms and further information, please address the committee at 535 North Dearborn Street, Chicago, Illinois.

## DISCUSSION

### INCITANTS OF HUMAN BOTULISM<sup>1</sup>

*Cl. botulinum* types A and B are apparently the only incitants of human botulism thus far described; types C and D have been reported only in outbreaks among various animal species. The identification of two type E strains, incitants of two fatal cases of human botulism in New York State, therefore, seems of interest.

One of the cultures was isolated from German-canned sprats, the other from smoked salmon which came from Nova Scotia; these strains have been found to be similar in cultural and biochemical properties. Their identification was made possible through the kindness of Dr. K. F. Meyer of the Hooper Foundation, San Francisco, who furnished neutralizing

serum as well as transfers of two type E cultures which had been isolated from fish in Russia, where a considerable number of cases of botulism have resulted from eating improperly preserved fish. This information as well as the fact that our strains were obtained from fish prepared in Germany and Canada suggests that type E strains are widely distributed.

The possibility that such strains may have been overlooked in the past seems likely, since methods which are suitable for the detection of types A or B toxins in foods or for the production of toxin in broth cultures were found to be inadequate in this study.

Feeding large doses of the emulsion of the food substance to guinea pigs did not indicate the presence of botulinus toxin in the food, while small subcutaneous doses of the filtrate of the material produced symptoms of botulism in the animals, followed by death. The ratio of the fatal *per os* dose to the fatal subcutaneous

<sup>1</sup> From the Division of Laboratories and Research, New York State Department of Health, Branch Laboratory, 339 East 25th Street, New York, N. Y.