

drew, according to *Museum News*, an unexpectedly large attendance. More than 200 members were registered, of whom 150 were from out of town and 70 from east of the Mississippi. Three members came from Honolulu and two from Canada. It is reported in the *News* that the meeting was marked by especially successful entertainment features and by a generous spirit of hospitality on the part of the San Francisco museums and their friends and of officials of the Golden Gate International Exposition.

Dr. Clark Wissler, curator of anthropology and dean of the scientific staff of the American Museum of Natural History, was reelected president of the association, and Henry Butler Allen, director of the Franklin Institute, was elected a vice-president, succeeding Frank B. Jewett.

Section chairmen were elected as follows: Art Museums Section, George H. Edgell, director, Museum of Fine Arts, Boston; Art Technical Section, Francis Henry Taylor, director, Worcester Art Museum; Children's Museums Section, Mrs. Dean C. Osborne, president, the Auxiliary, Brooklyn Children's Museum; Education Section, Charles Russell, curator, Department of Education, American Museum of Natural History, New York; National and State Parks Section, Ned J. Burns, chief of the Museum Division, National Park Service, Washington, D. C.; Public Relations Section, Daisy Weld Warner, director of Publicity and Radio, Cleveland Museum of Art; Registrars Section, Imogene C. Robertson, registrar of the Buffalo Museum of Science; Science Museums Section, Carlos E. Cummings, director of the Buffalo Museum of Science; Science Technical Section, Ottmar F. von Fuehrer, staff artist, Carnegie Museum, Pittsburgh; Superintendents Section, Albert N. Henriksen, superintendent of the Brooklyn Museum, New York.

At the invitation of the museums of Detroit, Mich., that city was chosen as the meeting place for 1940.

THE AMERICAN PUBLIC HEALTH ASSOCIATION

THE sixty-eighth annual meeting of the American Public Health Association and meetings of related organizations will open at Pittsburgh, Pa., on Sun-

day, October 15, closing on Friday, October 20. Thirty-five hundred health officers, nurses, engineers, school physicians, laboratory directors and other specialists are expected to attend. Every state in the Union, Canada, Cuba and Mexico, and many European countries will send delegates to participate in a scientific program that will cover the official public health activities of the North American continent.

The Sixth Institute on Public Health Education will open on Sunday, October 15. The meetings of the institute continue on Monday, October 16, at which time there will meet the International Society of Medical Health Officers, the American School Health Association, the Association of Women in Public Health and the National Organization for Public Health Nursing. The following conference groups also convene on Monday: the State Laboratory Directors, the State Sanitary Engineers, the Municipal Public Health Engineers, the Directors of Local Health Service and the State Directors of Public Health Nursing. Other organizations meeting during the week are the Pennsylvania Public Health Association, the Tri-State Food and Health Officials, the American Social Hygiene Association, Delta Omega and the American Association of State Registration Executives.

There will be six general sessions of the Public Health Association during the week at which "Medical Care," "Cancer," "Professional Education" and "The American Way as Seen from Abroad" are among the subjects to be discussed. The ten sections of the association have arranged an extensive series of joint and individual meetings covering topics of interest to health officers, laboratory workers, vital statisticians, industrial hygienists, public health engineers, food and nutritionists, child hygienists, public health education experts, epidemiologists and public health nurses. There will be a Health Exhibit with commercial and scientific displays. The headquarters will be at the William Penn Hotel. The preliminary program has been reprinted from the August issue of *The American Journal of Public Health* and may be obtained from the American Public Health Association, 50 West 50th Street, New York, N. Y.

SCIENTIFIC NOTES AND NEWS

M. HENRI PIÉRON, professor at the Collège de France and director of the Institute of Psychology of the University of Paris, was elected at the Liège meeting president of the French Association for the Advancement of Science.

OWING to the early adjournment of the Dundee meeting of the British Association for the Advancement of Science Dr. Isaiah Bowman was presumably unable to give the first British and American Association lecture.

The lecture, which is entitled "Science and Social Pioneering," will be printed in *SCIENCE*.

ON the occasion of the seventh assembly of the International Union of Geodesy and Geophysics, at a special convocation on September 11, Washington University conferred the honorary degree of doctor of science on Dr. Dan La Cour, director of the Danish Meteorological Institute, Copenhagen, who was president, and on Brigadier Harold St. John Loyd Winter-

botham, British geologist and geophysicist, general secretary of the union. The degree conferred on Brigadier Winterbotham was *in absentia*, he having been recalled to England on account of the international situation.

THE American Congress of Physical Therapy meeting in New York City awarded on September 6 gold keys to four physicians in recognition of distinguished accomplishments in physical therapy. The presentation was made by Dr. William Schmidt, president of the congress. The awards were to Dr. Edward C. Titus, of New York, for his research in electrotherapy and light therapy; to Dr. A. Bern Hirsh, of New York, for his organization of physical therapy departments in hospitals and clinics; to Dr. Joseph Rivière, of Paris, for the introduction of electro-surgery into medical practice, and to Dr. James B. Mennell, of London, for contributions to physical medicine, particularly in massage.

THE American Amaryllis Society has awarded one of the William Herbert medals for 1939 to A. B. Stout, curator of education and laboratories at the New York Botanical Garden, for his work in breeding, cytology, genetics, introduction of new wild types and the production of fine horticultural varieties of *Hemerocallis*.

AT Syracuse University the establishment of three pioneer medals "in recognition of outstanding achievements" has been made possible by funds provided by George Arents, vice-president of the Board of Trustees. Dr. William Martin Smallwood, chairman of the department of zoology, was one of the first three recipients of the award. Dr. William P. Graham, chancellor of the university, made the following citation: William Martin Smallwood, distinguished educator; holder of degrees from Syracuse and Harvard; instructor and professor at Allegheny and Syracuse; eminent zoologist; member of various learned societies; author of widely used texts on biology; valued counselor on matters educational; pioneer investigator of the early teaching of science in the United States; donor of the Smallwood Library, an unmatched collection of books which have guided the development of science teaching in this country; for these and other reasons you are cited to receive a George Arents Medal for excellence in science.

F. T. LEWELLYN, who retired on June 1 as research engineer of the United States Steel Corporation of Delaware after nearly fifty years' service, has been presented with an engrossed resolution of appreciation for his contribution to the structural steel fabricating industry by the American Institute of Steel Construction.

DR. LEONARD CARMICHAEL, since 1938 president of Tufts College, previously professor of psychology at

Brown University and at the University of Rochester, was elected at the recent meeting at Berkeley, Calif., president of the American Psychological Association. He succeeds Dr. Gordon W. Allport, assistant professor of psychology at Harvard University.

DR. ROBERT P. FISCHER, secretary and chief chemist of the Board of Pharmacy of the State of New Jersey, was elected chairman of the Conference of Pharmaceutical Law Enforcement Officials, at the annual meeting held in Atlanta, Georgia, on August 24.

DR. WILLIAM HOPKINS CRAWFORD has been appointed dean of the School of Dentistry of Indiana University.

DR. ROBERT T. LEGGE, professor of hygiene at the University of California, who resigned as university physician a year ago and who has been on leave for the past twelve months, will return to the department of hygiene to continue his teaching and research on industrial hygiene.

MARGARET I. PINKERTON, superintendent of nurses at Barnes Hospital, St. Louis, has been made dean of the School of Nursing at Duke University, Durham, N. C.

DR. LEE T. SMITH, chemist in the research laboratories of the Bureau of Dairy Industry of the U. S. Department of Agriculture, has been selected to be head of the carbohydrate and derived products division of the Eastern Regional Research Laboratory of the Bureau of Agricultural Chemistry and Engineering. He will direct investigations concerned with the development of new uses of milk sugar and potato starch and products which can be prepared from these materials by fermentation and other means.

THE *Journal* of the American Medical Association reports that, pursuant to a law passed by the 1939 legislature, Governor Bushfield, of South Dakota, has appointed a basic science board. The members are: James D. Alway, Aberdeen; F. E. Burkholder, Sioux Falls; M. L. Severence, Aberdeen; Dr. William H. Waller, professor of anatomy of the School of Medicine at the University of South Dakota, and Dr. Gregg M. Evans, professor of chemistry and physics, Yankton College.

LIEUTENANT COLONEL L. T. POOLE, assistant professor of pathology at the Royal Army Medical College, England, has been promoted to the rank of colonel and has been appointed director and professor of pathology at the college in succession to Major-General H. M. J. Perry, who is retiring.

DR. EVARTS A. GRAHAM, Bixby professor of surgery at the School of Medicine of Washington University,

St. Louis, served this summer as head of the teaching surgical unit at St. Bartholomew's Hospital, London.

THE British Medical Research Council has appointed Dr. Donald Hunter, physician to the London Hospital, and Harold E. Clay, national secretary of the Passenger Services Group, Transport and General Workers' Union, to be members of the Industrial Health Research Board, in succession to Professor J. A. Nixon and R. Coppock.

THE status of director of the British Royal Air Force Medical Services has been advanced to that of director-general with the rank of air-marshal. Air Marshal Sir Albert Richardson, director of the medical services, thus becomes director-general.

DR. JOHN LAWRENCE, assistant professor of medicine at the University of California, a passenger on the British liner *Athenia*, is reported to have been rescued. Dr. Lawrence is a brother of Dr. Ernest O. Lawrence and a son of Dr. C. G. Lawrence, president emeritus of Northern State Teachers College, Aberdeen, S. D.

SIR FREDERICK BANTING, professor of medical research at the University of Toronto, has enlisted as captain in the fifteenth General Hospital of the Canadian Army Medical Corps.

DR. GEORGE S. AVERY, JR., professor of botany at Connecticut College and director of the Connecticut Arboretum, will return this month from the Carlsberg Laboratory in Copenhagen. He has been working with Professor K. Linderstrøm-Lang on enzyme micro-methods and hormone-enzyme relationships.

DR. STACY R. METTIER, associate professor of medicine in the Medical School of the University of California, at San Francisco, has returned after spending six months in making a study of diseases of the blood in various clinics in London and elsewhere in Europe.

CHARLES B. HUNT, of the U. S. Geological Survey, has returned from his fourth field season in the Henry Mountains, Utah. Thomas A. Hendricks and Paul Averitt have returned from field work in the Ouachita Mountains, Okla. François E. Matthes has returned from a short field season devoted to the study of glacial deposits and physiography in the eastern Sierra Nevada. Mr. Matthes attended the meeting of the Geological Society of America at Berkeley from August 8 to 10 and, after the meeting, conducted an excursion in the Sierra Nevada.

THE eighth Congress of the Institut International d'Anthropologie was to have met at Istanbul from September 18 to 25 under the presidency of Professor E. Pittard of Geneva. Sections were planned covering paleontology and archeology, physical anthropology, heredity and blood groups, social anthropology, linguistics and the history of religions.

APPLICATIONS must be on file with the United States

Civil Service Commission at Washington, D. C., not later than October 2 for the positions of senior aquatic physiologist at a salary of \$4,600 a year and of associate aquatic physiologist at a salary of \$3,200 in the Fisheries Service, Department of the Interior.

A STUDY of "The Place of Mathematics in Secondary Education" has been completed by the Joint Commission appointed in 1937 by the Mathematics Association of America and the National Council of Teachers of Mathematics, under the chairmanship of Dr. K. P. Williams, head of the department of mathematics of Indiana University. It has been carried on under a financial grant made by the General Education Board and will be published early in 1940 as the year-book of the National Council of Teachers of Mathematics. Members of the Joint Commission representing the Mathematics Association are: Professor Williams, A. A. Bennett, Brown University; H. F. MacNeish, Brooklyn College; H. E. Buchanan, Tulane University; U. G. Mitchell, University of Kansas; C. A. Hutchinson, University of Colorado, and F. L. Griffin, Reed College, and, representing the National Council, W. D. Reeve, Columbia University; William Betz, Rochester, N. Y., public schools; W. L. Hartung, University of Chicago; J. A. Nyberg, Hyde Park High School, Chicago; Mary A. Potter, Racine, Wis., public schools; G. H. Jamison, Northeast Missouri State Teachers College, and Ruth Lane, the State University of Iowa.

IN accordance with a resolution passed by the Board of Directors of the American Chemical Society at the Baltimore meeting, the chairman, Dr. Thomas Midgley, Jr., has appointed the following committee to formulate requirements for chemists in clinical laboratories and report to the directors: Frank C. Whitmore, *chairman*, Gustavus J. Esselen and Robert A. Keho. Any one interested in clinical laboratory work and in the proper qualifications for individuals directing or performing chemical work is asked to transmit his ideas to the chairman of the committee. *Industrial and Engineering Chemistry* states that the earlier notice on this subject is bringing in from the secretaries of the local sections and their members part of the information needed. While there is an interest in all clinical laboratories, special importance at this time is to be placed on any information regarding the quality of chemical work for which the public is paying the members of the medical profession in connection with the diagnosis of disease by the latter. It is stated that the preliminary results of the survey seem to indicate that most work of this kind is done by individuals having practically no chemical training. Those having pertinent information or knowing of others who may be able to give such information are requested to write to Dr. Frank C. Whitmore, State College, Pa.

THE expedition led by Dr. Cecil Madigan across the Simpson Desert in Australia has returned to Adelaide after an absence of three months. Dr. Madigan said, according to the London *Times*, that he could not hold out much hope that the desert country was capable of development as pasture land or for any other purpose, though he did not think that there was danger that the desert would increase in area.

THE Case School of Applied Science has received a grant from the National Advisory Committee for Aeronautics for a basic aerodynamic investigation of boundary layer control to study the effect of air upon the drag of airplane wings. Preliminary studies by Dr. John R. Weske have shown the possibility of reducing the wind resistance of airplanes through such a study.

FUNDS were appropriated in the third deficiency act for the investigation of strategic mineral deposits this year by the Geological Survey in accordance with the authorization, which had been previously passed by congress. These funds became available August 10, and the Geological Survey now has parties investigating strategic mineral deposits in several of the western states. These include manganese deposits in Montana, Washington, Oregon and New Mexico; chromite in Montana, Oregon and Wyoming; tungsten in Nevada; quicksilver in California, Oregon and Idaho; tin in Alaska, South Dakota and New Mexico; and nickel in Alaska. Investigation of certain tin and mica deposits in the southwestern states will begin shortly. Some of these investigations are essentially a continuation of those begun in the summer of 1938. The entire program is expected to continue for four years.

DISCUSSION

A SELF-LIMITING MECHANISM IN SYMPATHETIC HOMEOSTATIC ADJUSTMENT

It has been shown that adrenaline exercises a specific inhibitory action on sympathetic synapses.^{1, 2} This has been demonstrated by recording the decrease in action potentials in the post-ganglionic nerves of the superior cervical ganglion of cats and rabbits when adrenaline was either liberated from the adrenals by splanchnic stimulation or was injected intravenously in amounts comparable to those known to be secreted under stress.³ In each case as the adrenaline was destroyed recovery from inhibition took place.

It may appear paradoxical that adrenaline, which promotes sympathetic activity, also inhibits it, but I wish to suggest that a beneficial effect, important to the body economy, is served by the opposed actions. The ganglionic inhibitory action of adrenaline may constitute a self-limiting mechanism capable of checking the wide-spread activity produced by sympathico-adrenal discharge when this has reached a high level. The attempt to preserve maximum efficiency in the face of environmental change, *i.e.*, to maintain homeostasis, calls forth a marked, diffuse increase in sympathetic activity. This initiates the following sequence of events: Adrenaline liberated by the augmented splanchnic impulses prolongs and greatly enhances sympathetic activity. If this tends to become excessive, thereby partially defeating its purpose, the concentration of adrenaline in the blood rises to a level sufficient to produce ganglionic inhibition, and thus decreases the sympathetic discharge by obstructing the passage

of impulses from the pre- to the post-ganglionic neurones. It may be supposed that a block is also interposed at the neuroadrenal junction, since it is structurally and pharmacologically of a ganglionic nature. The output of adrenaline is thus curtailed. With the lowered concentration of circulating adrenaline ganglionic inhibition is removed. Then, if the need for homeostasis still persists, sympathetic activity is once more allowed full play, until again restrained by the self-limiting influence of the rising blood adrenaline. This automatic safeguard adds another means of adjustment to the regulation exercised by other compensatory mechanisms, such as the carotid sinus.

Additional support for this view is found in the work of Tournade and Chabrol,⁴ who observed a restrictive effect on sympathetically controlled functions in adrenalectomized recipient dogs when adrenaline is injected into the donors to which they are joined by adrenojugular anastomosis. Similar and more extensive effects are obtained in the same type of experiment when adrenaline is introduced into the donor by slow, continued infusion.⁵ The inhibitory effects of adrenaline on the pressor action of nicotine and on reflexly induced sympathetic responses, described by Hoskins and Rowley⁶ in 1915, are susceptible in part to a similar interpretation. So are the results of more recent workers,^{7, 8} who have studied the depression of reflex sympathetic phenomena by adrenaline.

⁴ A. Tournade and M. Chabrol, *C.R. de la Soc. de biol.*, 94: 535, 1926.

⁵ J. Malmejac, V. Donnet and E. Desanti, *C.R. de la Soc. de biol.*, 119: 1152, 1935.

⁶ R. G. Hoskins and W. N. Rowley, *Amer. Jour. Physiol.*, 37: 471, 1915.

⁷ L. W. Chu and F. Y. Hsu, *Quart. Jour. Exp. Physiol.*, 27: 307, 1938.

¹ A. S. Marrazzi, *Jour. Pharmacol. and Exp. Therap.*, 65: 395, 1939.

² *Ibid.*, *Proc. Amer. Physiol. Soc.*, page 163, April, 1939.

³ W. B. Cannon and D. Rapport, *Amer. Jour. Physiol.*, 58: 308, 1921.