Fulton and Pi Suner regard them as tension receptors. Since the tension of the inspiratory muscles increases as they meet with increasing resistance during inspiration, the signals which the Golgi endings send out must increase, as do those of the vagal endings. We, therefore, propose that Golgi signals bolster the inspiratory act as do the vagal signals. This effect is readily demonstrated in the augmentation of action potentials of an inspiratory muscle by occlusion of the trachea during inspiration.

Still less is known about the muscle spindles. Fulton and Pi Suner and Matthews point to the significant fact that these sensory end organs are arranged in parallel with the contractile fibers. They, therefore, suggest that the spindles are released of their strain when shortening of the muscle occurs. In this mechanical arrangement we see the possibility of another automatic mechanism of reflex bolstering of contraction, for if the muscle spindles are inhibitory the inhibition which they produce would diminish as contraction progresses.

In conclusion, we may say that though we have attempted to analyze only the forces which drive the respiratory act, the principles outlined may be basic to a fundamental concept of the integration of motor activity in general.

# SCIENTIFIC EVENTS

## THE BEIT MEMORIAL FELLOWSHIPS

A MEETING of the trustees of the Beit Memorial Fellowships for Medical Research, at which Sir Alfred Beit, Lord Onslow, Lord Harlech, Lord Rayleigh, Lord Macmillan, Professor T. R. Elliott and Dr. H. L. Eason were present, was held in London on July 19. According to the London *Times* resignations from the advisory board of Sir F. Gowland Hopkins and Sir Patrick Laidlaw were received and the vacancies were filled by the appointment of Dr. R. A. Peters, Whitley professor of biochemistry, University of Oxford, and of Dr. Paul Fildes, bacteriologist on the scientific staff of the Medical Research Council.

The following elections to fellowships were made:

*Fourth Year Fellowships* (value £500 a year).—Isaac Berenblum, M.D., M.Sc. (London). To continue his work on the production of cancer by skin irritants, and to study the metabolism of living cells in tissue culture. At the School of Pathology, University of Oxford.

Thomas Arthur Howard Munro, M.B., Ch.B., F.R.C.P. (Edinburgh). To continue his studies of the rôle of inheritance in mental disorders. At the Royal Eastern Counties Institution, Colchester.

Albert Neuberger, M.D. (Wurzburg), Ph.D. (London). To extend his work on the chemistry of amino sugars in elucidation of the structure of natural compounds. At the department of pathological chemistry, University College Hospital Medical School, University of London.

Richard Julius Pumphrey, M.A., Ph.D. (Cambridge). To continue his studies on the nervous system of Cephalopods and on the auditory processes in insects. At the zoological laboratory, University of Cambridge, and the laboratory of the Marine Biological Association, Plymouth.

*Junior Fellowships* (value £400 a year).—Vernon Hollis Booth, B.A., Ph.D. (Cambridge). George Henry Lewes Student, 1935–38. Ramsay Memorial fellow for chemical research, 1938–39. Proposed research—(1) the internal constituents of bacteria by means of a wet-crushing mill; (2) carbonic anhydrase. At the physiological laboratory, University of Cambridge.

Eric George Lapthorne Bywaters, M.B., B.S., Hons. (London), M.R.C.P. Assistant clinical pathologist, Middlesex Hospital, 1935–36; Rockefeller research fellow in medicine, 1937–38. Proposed research—rheumatoid arthritis. At the British Post-Graduate Medical School, University of London.

Wilfred Ingram Card, M.D. (London), M.R.C.P. Since 1935 medical registrar and tutor to the medical unit, St. Thomas's Hospital; Louis Jenner research fellow, St. Thomas's Hospital, 1938 and 1939. Proposed research—the inhibition of gastric motility and secretion by experimental studies on man. At the medical unit laboratories and Sherrington School of Physiology, St. Thomas's Hospital Medical School, University of London.

Hans Heller, Ph.D. (Prague), M.B., B.Ch. (Cambridge). Assistant to professor of pharmacology, University of Vienna, 1929–34. Proposed research—the antidiuretic principle of post-pituitary extract. At the medical unit laboratories, University College Hospital Medical School, University of London.

Maxwell Shaw Jones, M.D. (Edinburgh), D.P.M. (London). Walter Smith Kay research fellow in psychiatry, University of Edinburgh, 1934–36; Commonwealth Fund fellow, 1936–38. Proposed research—insulin treatment of schizophrenic mental states. At the Maudsley Hospital, Denmark Hill, University of London.

Barnett Levin, B.Sc. Hons., Ph.D. (London). Pedler research scholar, Institute of Chemistry, 1931–32. Since 1932 lecturer in chemistry at Guy's Hospital Medical School, University of London. Proposed research—the effect of spatial configuration of antigens on immunological reactions. At the clinical chemical laboratories of the London Hospital, University of London.

Ian Mackenzie, M.B., Ch.B., F.R.C.S. (Edinburgh). Vans Dunlop scholar in bacteriology, University of Edinburgh, 1933. Rockefeller research fellow, 1938. Proposed research—immunological investigations on constituents of tumors. At the department of surgical research, University of Edinburgh.

Alexander Francis Rawdon-Smith, M.A., Ph.D. (Cambridge). Senior student of the 1851 exhibition, 1936–37 and 1938–39. Rockefeller Foundation fellow, 1938. Proposed research—congenital deafness. At the physiological laboratory, University of Cambridge.

Basil Roland Record, B.Sc. Hons., Ph.D. (Birmingham). Department of scientific and industrial research award, 1937–39. Proposed research—the specific soluble substance found in the tissues in acute vaccinial infection. At the Lister Institute of Preventive Medicine, University of London.

## NOMINATIONS TO THE COUNCIL OF THE AMERICAN ASSOCIATION OF MUSEUMS

NOMINATIONS to the Council of the American Association of Museums for the three-year term of 1940–43 have been made by the council as follows:

Clyde H. Burroughs, secretary of the Detroit Institute of Arts.

Frederick Trubee Davison, president of the American Museum of Natural History, New York.

Mrs. Juliana R. Force, director of the Whitney Museum of American Art, New York.

James J. A. Fortier, president of the Louisiana State Museum, New Orleans.

Chauncey J. Hamlin, president of the Buffalo Society of Natural Sciences; a former president of the American Association of Museums.

Robert T. Hatt, director of the Cranbrook Institute of Science, Bloomfield Hills.

Horace H. F. Jayne, director of the University Museum, University of Pennsylvania.

Miss Mildred E. Manter, director of the Children's Museum, Boston.

Daniel Catton Rich, director of the Art Institute of Chicago.

Francis Henry Taylor, director of the Worcester Art Museum.

The by-laws provide that any five members of the association may make other nominations in writing. Additional nominations reaching the office of the association before April 12 will be incorporated in the final ticket. The council's nominations and any additional nominations that may be put forward by members will be voted on by mail prior to the annual meeting, which begins on May 22. Council members elected will take office at the time of the annual meeting.

## SYMPOSIUM ON THE THERMODYNAMICS OF HYDROCARBONS

THE American Chemical Society will hold a national symposium on "Fundamental Thermodynamics of Hydrocarbons and Their Derivatives" at its ninety-ninth meeting, which will be held in Cincinnati from April 8 to 12.

The symposium, of which Dr. Frederick D. Rossini, chief of the Section of Thermochemistry and Constitution of Petroleum of the National Bureau of Standards, Washington, D. C., will be chairman, is planned to give fresh direction to the new and revolutionary activities of the petroleum industry in the potentially vast field of synthetic products, including plastics, artificial rubber and silk and other materials.

While the petroleum industry, with a $2,000,000,000 investment in refineries, is now primarily concerned with the production of fuels for automobiles and airplanes, it is also believed to be at the threshold of practically limitless expansion as a manufacturer of synthetics. Chemists aim to clarify the scientific and economic problems involved in this development.

The purpose of the symposium is to bring before scientific men and technologists associated with the petroleum and other allied industries a summary of present knowledge concerning the thermodynamic properties of hydrocarbons and related compounds. With this summary available, it will be possible to know what new thermodynamic data need to be obtained in some cases because of the absence of any data at all and in others because many of the older data are not accurate enough to satisfy present-day requirements.

Speakers at the symposium will include: Professor E. Bright Wilson, Jr., of Harvard University, who won the $1,000 American Chemical Society Award in Pure Science in 1937 for experimental work in physical chemistry; Professor John G. Aston, of Pennsylvania State College; Professor Kenneth S. Pitzer, of the University of California; Professor George S. Parks, of Stanford University, and Dr. Rossini.

The symposium will be a feature of the program of the Division of Petroleum Chemistry, of which Dr. Cary R. Wagner, of the Pure Oil Company, Chicago, is chairman.

## PIONEERS ON THE AMERICAN FRONTIERS OF INDUSTRY

ON the occasion of the hundred and fiftieth anniversary of the founding of the American patent system a series of fourteen regional meetings and dinners were held throughout the country during February under the auspices of the American Manufacturers Association. At these dinners, sponsored by state industrial groups, scrolls were awarded to about five hundred local "Modern Pioneers on the American Frontiers of Industry" for "significant contributions to the creation of jobs and the improvement of the standard of living through patented inventions or discoveries."

Robert L. Lund, executive vice-president of the Lambert Pharmacal Company, was chairman of the national committee. Members of the committee on awards were:

Karl T. Compton, president, Massachusetts Institute of Technology; past president, American Association for the Advancement of Science, *chairman.*

Forest R. Moulton, permanent secretary, American Asso-