



JOHN FARQUHAR FULTON
NOVEMBER 1, 1899–MAY 29, 1960

JOHN FARQUHAR FULTON, 1899–1960

WITH THE DEATH of John Farquhar Fulton medical science has lost a stimulating leader. To physiology, neurology and the history of medicine he contributed both by his own original investigations and by the inspiration he gave to others through his enthusiasm and untiring energies.

Born in St. Paul, Minnesota on November 1, 1899, Dr. Fulton grew up in the middle West. He attended the University of Minnesota and later Harvard where, in 1921, he received a B.S. degree and was named Rhodes Scholar at Oxford. His contacts there did much to mold his future career for in Sherrington's laboratory he came under the stirring influence of the leading physiologists of that time.

The year 1923 was a particularly eventful one for John Fulton. It was then that he married Lucia Pickering Wheatland, his constant companion for the remainder of his life. That summer he received a degree of B.A. from Oxford. And in the same year he began his career as demonstrator in Physiology under Charles Sherrington. At that time the study of muscle was at its height in physiology, and so Fulton devoted long hours to the investigation of the mechanisms of muscular contraction, as a result of which he received M.A. and Ph.D. degrees in 1925. In the book which he wrote on this subject he reveals his interest in the history of medicine by a classical account of the development of the concepts of muscular activity.

The exciting new specialty of brain surgery attracted him to the clinic of Harvey Cushing at the Peter Bent Brigham Hospital, Boston, where he served as Associate in Neurological Surgery in 1928. His contacts with Harvey Cushing developed into a warm friendship which lasted throughout their lives.

Cushing's interest in cerebral physiology inspired Fulton to resolve the mysteries of the brain. Accordingly, when in 1929 he was offered the chair of Physiology at Yale University, Fulton saw an opportunity of achieving his goal. He hoped to reproduce in the highest primates the neurological states encountered in clinical practice, so that he could analyse their mechanisms. The establishment of the first laboratory of primate physiology in the U.S.A. was a signal triumph, for monkeys had rarely been used in physiology because of their inaccessibility and their prohibitive cost. But Fulton had confidence that with improved neurosurgical techniques and the use of modern operating room equipment he could operate upon the nervous system with a low mortality. Because of his early interest in muscular contraction he wished to investigate the neural aspects of movement. To this end he began a series of investigations on the motor representations in the cerebral cortex with stimulation and ablation techniques. Moreover, realizing the necessity of careful protocols and detailed anatomical controls,

he insisted that each animal have its history carefully typed and preserved in a record room just as hospital records are kept and used for medical writing. Inspired by this new program, young neurologists, neurosurgeons and physiologists came to his laboratory to learn about the workings of the brain and to contribute in some way, great or small, to the knowledge of neurophysiology.

This was the golden era of Fulton's primate laboratory for in the early 30's the future leaders in the neurological sciences from not only the United States but many European and South American countries spent shorter or longer periods of time there. Experiments attempted by Horsley, Beevor, Bechterew, and the other great investigators of the last part of the 19th century were repeated under more ideal conditions and with anatomical controls and yielded more meaningful results. The significance of the cyto-architectural patterns of the motor cortex became apparent. The report of the effects of ablation of the prefrontal granular cortex stimulated Egas Moniz to introduce lobotomy for the relief of certain mental states. Cerebellar relationships took on a new meaning as the experimental approach allowed an analysis of the function of the little brain. The men who worked with Fulton gained not only some insight into neurophysiology but an appreciation of the historical background of medicine. For Professor Fulton believed with Billroth that "only the man who is familiar with the art and science of the past is competent to aid in its progress in the future."

It was natural that Professor Fulton should wish to make the new physiology available to students and physicians and so his *Physiology of the nervous system* was published in 1936. It has been revised on several occasions and translated into French, German, Portuguese, Spanish, Japanese and Russian. Later he took over the revision of Howell's *Textbook of physiology*. The growing interest in the physiology of the nervous system created a need for a medium of publication. Largely at the instigation of Charles C Thomas, the *Journal of Neurophysiology* was founded in 1938 by J. G. Dusser de Barenne and John F. Fulton. After Dusser de Barenne's death in June 1940, Fulton continued as Editor-in-Chief, gradually enlarging the editorial and advisory boards of the *Journal*.

At the outbreak of World War II Professor Fulton put his varied talents at the disposal of the government, serving on several committees of the National Research Council and being Chairman of the Sub-Committee on Decompression Sickness. His laboratory facilities were devoted to important research in aviation medicine. To make the scientific literature of this rapidly expanding field readily available, he edited a bibliography of aviation medicine.

The press of these military commitments prevented Fulton from pursuing energetically the work so dear to his heart—the biography of Harvey Cushing which he had started shortly before the outbreak of hostilities. However, during the war years he managed to accumulate the material so that with the cessation of activities, he was able to complete the manuscript

and have it published in 1946. But the tremendous pace of his efforts in those trying days had undermined his health so that after the war his activities were directed more and more to the history of medicine. In 1951 he resigned as Sterling Professor of Physiology to take up a newly created post as Sterling Professor of the History of Medicine. Again he attracted students from all over the world. With visions of still greater things, he organized a Department of History of Science and Medicine, but unfortunately did not live to see its inauguration.

Throughout his life, books were Professor Fulton's passion. On each of his many trips he visited the booksellers and returned triumphantly with his prizes. His passion for books kept him busy on library committees both local and national. As a result of his efforts, the Yale Historical Library was established to house Harvey Cushing's valuable collection of books, as well as his own library and that of Arnold Klebs.

Professor Fulton was a member of many physiological, neurological and historical organizations, both in this country and abroad, in the majority of which he held high office. Honors have been bestowed upon him by both scientific societies and governments of Great Britain, France, Cuba, Rumania, and the U.S.A. He has received honorary degrees from Yale, Oxford, Uppsala, Kenyon, Birmingham, Oslo, Louvain and other universities.

Yet, in spite of these many demands on him, Professor Fulton always had time to add a personal touch to every note, to see every visitor and to inspire all who sought his counsel. For Professor Fulton had an intense humanistic touch. The evenings at "Mill Rock" where Fellows in the laboratory mingled with famous visitors from every country and listened with awe to the spirited discussions were events to be remembered. And even years after one had left his laboratory, Professor Fulton's Christmas letters of his doings during the year and the activities in and out of the department had an intimate message.

One of the overseas Fellows has written, "He is gone, but his spirit is still with us. He still shapes the thoughts and lives of the thousands who admire and love him."

Such a leader will be missed by all.

A. EARL WALKER