Obituary

JOHN FARQUHAR FULTON
1899–1960
When Professor John Farquhar Fulton died on May 29, 1960, he left a heritage of teachers, a school of neurophysiology, and a host of friends. The Yale Medical Historical Library now stands as an enduring monument to him and to an outstanding friendship with two other great bibliophiles, Arnold C. Klebs and Harvey Cushing. Professor Fulton was also a great humanist whose moving spirit will be ever with us, to be remembered for his positive attitude toward life and toward those about him that made him so beloved of all.

Born in St. Paul, Minnesota, on November 1, 1899, the son of a physician, who helped to found the University of Minnesota and later its Medical School and of the same family as Robert Fulton, pioneer of the steamboat, he seemed destined to excel. He was graduated from St. Paul High School at the age of 16 and enrolled in the University of Minnesota, later transferring as an Army veteran to Harvard from which he was graduated with the degree of Bachelor of Science magna cum laude in 1921. Early promise was shown in the publication of his first scientific paper in *Acta Zoologica* (1920) while he was still an undergraduate, and in the appearance of another five scientific papers the following year including the first on his studies of neuromuscular transmission. He was chosen as a Rhodes scholar and was admitted to Magdalen College, Oxford, in 1921. Early during his stay in England he went to Cambridge for a time to help Sir Arthur Shipley in the preparation of his classic of elementary biology, entitled *Life*, which Sir Arthur later dedicated to him.

The year 1923 was a happy and memorable one. He married Lucia Pickering Wheatland, of Salem, Massachusetts, his constant companion and source of inspiration throughout his life, and Oxford granted him the degree of B.A. with first class honors in physiology, appointed him Christopher Welch Scholar, and made him University Demonstrator in Physiology, with the privilege of working in Sherrington’s laboratory. His energy seemed boundless, and within the next two years he had increased the number of his scientific publications to 27, including studies of neuromuscular transmission which were to culminate in a monograph of 644 pages, entitled *Muscular Contraction and the Reflex Control of Movement*, published in 1926.

He received his D.Phil. from Oxford in 1925 and returned to Harvard where he was awarded his M.D. magna cum laude in 1927.

The year 1928 was spent with Harvey Cushing, and this association resulted in a lifelong friendship which began at Harvard and ended at Yale with the establishment of one of the greatest collections on the history of medicine in the world. Already recognized as a brilliant young physiologist he showed himself to be an equally brilliant clinician with a remarkable capacity to see the implication of clinical problems and to work imaginatively with clinical material. This wedding of clinical neurosurgery with experimental physiology later gave birth to the *Physiology of the Nervous System*, in the preface of which Dr. Fulton underscored this union between laboratory and clinic when he wrote, “The present monograph is essentially an exposition of the experimental physiology of the nervous system in which material has been assembled that will aid those whose ultimate objective is the study of clinical medicine.” In that year, as associate in neurological surgery, he managed to write five clinical papers as well as four in neurophysiology. His clinical energy and ingenuity were demonstrated in his paper entitled *Observations Upon the Vascularity of the Human Occipital Lobe During Visual Activity* (1928), which concerned a patient who had an angioma of the occipital lobe. Dr. Fulton’s observations were made simply by listening over the skull with a stethoscope during visual activity. The clinical record copiously annotated may be seen by all those interested at the Cushing Tumor Registry at Yale.
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Recognition was fully asserted in 1929 when he was offered the chair of physiology at Yale. Granted a year’s leave of absence to remain at Oxford he was named Sterling Professor in 1930, the youngest in the University, thus launching him upon the most fruitful period of his career as a neurophysiologist. Inspired by Sherrington’s scientific tutelage and Cushing’s clinical interest in cerebral physiology, he established the first laboratory of primate physiology in the United States of America in the hope of studying in the highest primates neurological lesions similar to those seen in clinical practice. In a parallel to clinical practice he introduced complete records and careful protocols on all animals as well as aseptic operating room technique, which, combined with his own brilliance as a surgeon, kept mortality low and insured the success of his laboratory.

The decade of the 30’s was a prolific one for his department which he chose to call the Laboratory of Physiology, truly a working place for ideas, and in this environment with its emphasis upon learning rather than teaching, young men were attracted to learn about cerebral functions. There was a minimum of direction and a maximum of enthusiasm and encouragement from the Professor with an additionally strong stimulation coming from various Fellows and staff working in the laboratory in a common spirit of inquiry. Neurosurgeons, neurologists, and physiologists came from not only all parts of the United States but from many foreign lands to work in this laboratory. Despite the strong orientation toward neurophysiology, significant work was also done in electrocardiology, endocrinology, and aviation medicine.

During this period he also participated actively in all phases of the Medical School. One of his fellow members of the Board of Permanent Officers described him as a man of ideas, the cost of which did not bother him nor did he think of it, and this freed him for more important thinking. Great things were being done in his laboratory, and the list of men working with him in those years includes some of the best known names in neurology, neurosurgery, and neurophysiology. He taught actively, travelled widely, and had a heavy program of appointments, including visitors from all over the world; thus, he was able to bring topflight speakers to the Neurological Study Unit, which by combining surgical, medical, and psychiatric neurology with the basic neurologic sciences in an integrated unit of mutual endeavor represented Yale’s answer to the demand for a Department of Neurology. The Neurological Study Unit attracted attendance from a radius considerably wider than that of the immediate vicinity of New Haven. Dr. Fulton was an active participant in discussions, being a brilliant and facile speaker, making everyone feel that the lecturer’s presentation was important and always giving some historical background to put the problem in wide perspective. His praise was genuine for he always took immense pleasure in the success of others.

Medical students loved him, and his bouncing step coming down the corridor to the amphitheater was always the quieting signal for what usually proved to be an enlightening talk on cerebral physiology presented in a sonorous, clear, and strong voice with good humor and assorted mannerisms, which the students enjoyed imitating. The hour always passed all too quickly.

He liked to encourage young investigators and carried on a world-wide correspondence with them, often spending a great deal of time on papers of young authors. Unique in the number of foreign students and Fellows attracted to it, his department was a fine influence in international science. Characteristically thoughtful he was effective in getting grants for his students, and upon their arrival tried to introduce them to other members of the faculty and did everything possible to make them feel an integral part of the school.
In addition to his personal influence, his written word achieved an international reputation. His *Physiology of the Nervous System* published in 1938 was translated into French, German, Portuguese, Spanish, Japanese, and Russian. In 1944 he undertook the revision of Howell's *Textbook of Physiology* (15th edition, 1946), and two editions later the stamp of Fulton was so undeniable that the title was changed to Fulton's *Textbook of Physiology*. During this productive period of his laboratory he recognized the need for a journal devoted to the physiology of the nervous system and the *Journal of Neurophysiology* was founded in 1938 together with J. G. Dusser de Barenne. This journal remained one of his pet projects to the end.

With the outbreak of World War II Dr. Fulton threw his energies completely into the war effort, serving on several committees of the National Research Council. As a member of the Commission on Aviation Medicine he recognized the importance of studying the physiology concerned with flights at high altitudes and toward this end he arranged to have a decompression chamber built in his laboratory. Time and effort were unstintingly devoted to this important research with results of practical benefit to the Allied Air Forces. Soon the expanding literature on the subject became difficult to cope with so he fostered the publication of *A Bibliography of Aviation Medicine*.

Among the casualties of the war years was the unavoidable postponement of his biography of Harvey Cushing which he was not able to complete until 1946 and which now stands as a fitting companion to Cushing's own life of Osler.

Not least among these casualties was his own health which suffered from the tremendous pace he kept during those hectic days. Being in constant demand as a lecturer, gradually he diverted more and more of his time to writing and less to the laboratory. In 1951 he resigned as Sterling Professor of Physiology to become the Sterling Professor of the History of Medicine and Chairman of the newly created Department of the History of Medicine.

His preparation for this last post had begun when he was still in high school and worked as a stack boy at the St. Paul Public Library. It was furthered at Oxford in Osler's library for although Osler had been dead for two years, Lady Osler kept the house open to all students from overseas. During his leisure hours he helped in the compilation of the *Bibliotheca Osleriana*. Sherrington himself was a collector of incunabula, and this influence is seen in the historical treatment of the material in *Muscular Contraction and the Reflex Control of Movement*. His clearly historical bent was demonstrated early when in 1930 he published the *Selected Readings in the History of Physiology*.

Although it was Harvey Cushing who conceived the notion of establishing an endowed institution of medical book lore that would be more than just a cemetery of collections, Cushing himself, writing to Klebs in July 1939, "... left the matter in John's hands... to have him organize something that he would like..." This was a natural selection for it was Dr. Fulton who was largely instrumental in bringing his former teacher to Yale as Professor of Neurology in October 1933. Despite all this there was a time when it was not at all certain that Harvey Cushing would give his books to the Yale Library because of lack of adequate housing, but through the persistent efforts of his friend, colleague, and former pupil, the new library building was finally assured.

Having thus been an essential part of the preparation for his position as Sterling Professor of the History of Medicine, he could have rested on his laurels. On the contrary he thrust himself into this new endeavor with all his energy and soon his de-
department became one of the foremost centers in the world for medical historical studies, for it had the double endowment of the rich resources of the historical library and his own broad knowledge of the field. He became editor of the Journal of the History of Medicine and Allied Sciences. Just prior to his death his efforts to expand his department were finally successful. An additional chair in the history of science has been created, a graduate program leading to a M.A. or Ph.D. in the history of science and medicine has been established, and the department will now teach both graduates and undergraduates.

In addition to the personal satisfaction he got out of life, his achievements were eminently rewarded by sixteen decorations and nine honorary degrees from governments and universities of many countries. Gregarious by nature he was a member of no less than sixty-three societies, many of these being honorary appointments. He was especially pleased at his election as an Honorary Fellow of the Royal Society of Medicine and of having been a charter member of the Harvey Cushing Society and its second president (1933–34).

Although his accomplishments read as numerous as the catalogue of ships in Homer's Iliad and will stand equally long for posterity, I cannot conclude this note of appreciation without the privilege of personal sentimentality and a few reminiscences that span a period of more than half a lifetime.

It was during undergraduate days at Yale as Harvey Cushing's bursary student that I was first introduced to this bright-eyed, effervescent, friendly young professor. Later as a medical student working with the Cushing collection we met again and his greeting made me feel remembered. This quality of personal interest in those about him was sincere and real. That it was enduring and thoughtful was demonstrated by his annual Christmas letter with its penned note at the bottom. For those of us who were Fellows in his Laboratory the feeling was even more personal with invitations to Mill Rock, where both Mrs. Fulton and he were gracious hosts to a wide circle of friends. His regard for his students continued throughout their careers. Remembering my appreciation of books, he sponsored my appointment as a Trustee of the Associates of the Library, so Fate played a hand in having begun and ended our association among the Cushing collection. Yet, I am not sure it has ended for he had the capacity to make people believe in themselves and to impart something of himself to those he had thus encouraged. This, his spirit, will remain forever with all those who knew him.

Lycurgus M. Davey, M.D.