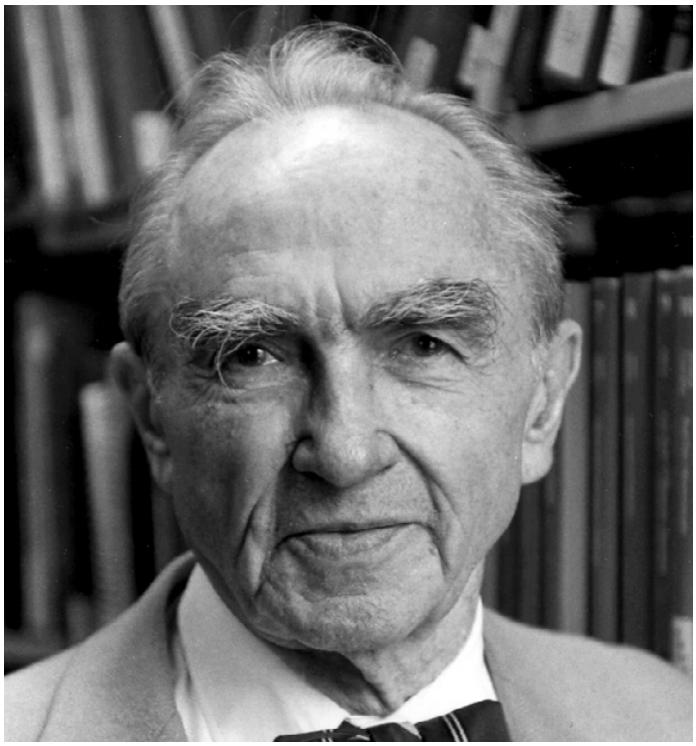
THE FACULTY OF MEDICINE
Harvard University

Abraham Clifford Barger



News of Cliff Barger's death on March 13th, 1996 must have come as a pang to several thousand alumni of the Harvard Medical School. He was certainly one of its most revered, most loved and most productive teachers during the 50 years of his devoted service to the school.

Cliff was one of four children born to parents who had emigrated from Russia prior to the first World War and who settled in western Massachusetts, where they acquired a small dairy farm near Greenfield. All four of the children worked on the family farm before going on to colleges and interesting careers. Cliff always spoke of his early life on the farm with pride and nostalgia and in fact he went to medical school with the intention of returning to Greenfield to practice medicine in a rural setting. And what a wonderful general physician he would have been! As it turned out, however, he was diverted to a career in academic medicine and in this role he was able to fulfill his innate capacities and desires to help the ill and the disadvantaged on a far larger scale than would otherwise have been possible. He came to know almost every medical student individually and his strong interest in their personal lives as well as their professional careers continued long after they had completed their training with him. In the 40th Reunion Report of the Class of 1955, Dr. Barger was the teacher most frequently remembered; in the words of Roman DeSanctis, now Professor of Medicine at the MGH, ... "I have never encountered anyone who is really as concerned about students..... no one ever forgets Cliff Barger and the reverse is also true... he keeps track of hundreds of former students."

Cliff arrived at Harvard College in 1935 at a time when the experimental arm of L. J. Henderson's department of Biochemical Sciences was located in the Fatigue Laboratory in the basement of the Business School. Research at the Fatigue Laboratory was largely concerned with physiological adaptations of humans to adverse environmental conditions: it attracted the interests of many premedical students

In tribute to their dedicated efforts to science and medicine, deceased members of the Harvard Faculty of Medicine (those at the rank of full or emeritus professor) receive a review of their life and contributions with a complete reflection, ***a Memorial Minute****.*

who later went on to distinguished careers in medical research. Cliff's undergraduate tutor was Dr. Robert Johnson who was then a Research Associate in the Fatigue Lab and who introduced Cliff to physiological research and its importance for medicine. Cliff was awarded a fellowship that enabled him to spend summers and spare time during term to work on the metabolism of contracting muscle, work that led to his first publications and did no harm to his application to Medical School.

Cliff graduated from HMS in 1943 on the accelerated war time schedule and following a brief internship at the Brigham he was inducted into the Army and assigned to its Climatic Research Laboratory, doubtless because of his previous experience with the Harvard Fatigue Laboratory. His most productive and important accomplishment during military service was his marriage to Claire Basch, a felicitous union that was to provide hospitality in the Barger home to untold numbers of medical students, graduate students and postdoctorals for the next 50 years. Following release from the Army, Cliff resumed his internship at the Brigham but his advisors, Dr. Samuel Levine and Hermann Blumgart, urged him to spend a year as research fellow with Professor Eugene Landis who had joined the preclinical Faculty in 1944 to succeed Walter Cannon as Chairman of Physiology. Landis was an outstanding cardiovascular physiologist who had previously been a Professor of Medicine and was eager to develop his new department with a strong orientation toward Human Physiology. This was a perfect match for Cliff, who was to become a devoted friend and right-hand man to Landis in the years to come; it is fair to say that no one person had a more profound influence on Cliff's professional development. Landis had organized a mammoth laboratory course for first year students and he expected all his junior staff, including research fellows, to bear a heavy load of teaching. This intense teaching experience provided Cliff with a formal training in cardiovascular physiology and by year's end he opted for a career in physiology, a decision that was fully supported by Professor Landis. Although Landis suggested the problems for Cliff's early ventures in cardiovascular research he nevertheless insisted on Cliff's independence and it is noteworthy that they never published a research paper together despite twenty years of close association.

In 1948 Cliff began his now classical studies of congestive heart failure and renovascular hypertension. Starling had expressed the opinion that chronic congestive failure would never be understood until the syndrome could be reproduced and studied in experimental animals. Cliff and his surgical colleagues succeeded in creating chronic congestive right heart failure in dogs by combining tricuspid insufficiency with pulmonary artery stenosis. The animals developed symptoms characteristic of the disease in man while their circulatory responses to graded treadmill exercise and their renal responses to salt loads could be determined quantitatively as the symptoms progressed gradually to overt failure. By means of ingenious operations involving a split bladder and implanted catheters in both renal arteries,the responses to a salt load delivered to one kidney could be determined while the other kidney served as control. It was shown clearly that abnormal renal tubular retention of sodium occurred early in the disease before any detectable changes of glomerular filtration rate and before detectable circulatory changes in the resting animal. These powerful new techniques were then used to investigate the role of the renin-angiotensin system during the development of experimental congestive failure and renovascular hypertension in conscious dogs. In collaboration with Dr. Edgar Haber's group at the

MGH it was shown that the renin-angiotensin system participates in normal cardiovascular homeostasis under circumstances of sodium deprivation. Inhibitors of angiotensin converting enzyme were valuable adjuncts to treatment of experimental congestive failure and were also effective in lowering blood pressure of dogs made hypertensive by constriction of the renal arteries. The results were verified in humans and the inhibitors are now in widespread clinical use. International acclaim for this work came in the form of honors and awards too numerous to mention here. They also led to distinguished lectureships in Europe, Australia and China.

All of these investigations were made possible by Barger's devotion to his experimental animals and by the extraordinary skill with which he conducted these exacting experiments on fully conscious dogs. It was a sight to see one of his experimental animals, bristling with externalized catheters, come bounding into the laboratory, leap up on the operating table, lie down catheter-side up and then submit quietly to a long experiment with a heart rate of less than 60 beats per minute. Of course, this kind of research required the cooperation of many colleagues and Cliff published original papers with more than 100 postdoctoral fellows who flocked to his laboratory, many from abroad. Publication of a paper with Cliff was no light matter; usually it was the product of two or three years of work in which he participated fully at all stages -- in the surgery, the conduct of experiments, the analytical discussions and the writing of the final paper. His association with research fellows was therefore very close and, thanks to Claire, it usually extended to his home as well as the lab. He was always accessible, not only to his immediate research fellows but to medical students and to fellow faculty members. You didn't need to make an appointment. You just walked into the lab and if he wasn't busy with a dog you went to his small adjoining office, crowded with books and papers: you sat down on a tattered but comfortable sofa and were given his undivided attention, whether your problem was scientific, administrative or perhaps some intimate personal or medical problem. His advice was usually combined with humor and sympathy but always it was constructive and optimistic and he was both willing and eager to help the many people who came to him with their troubles. He had broad shoulders.

Responsibility for the teaching of cardiovascular physiology was gradually transferred from Landis to Barger and this involved extensive use of anesthetized dogs for acute experiments by first year students. For most students this was an enormously exciting and stimulating experience and even the most sophisticated electronic simulators of the cardiovascular system could only supplement rather than substitute for it. However, the use of anesthetized dogs for teaching purposes, combined with Cliff's own research on conscious animals, led to his involvement with antivivisectionists and he spent untold hours convincing the Massachusetts legislature to pass a bill enabling procurement of animals from the pound for use in medical research and teaching. The Pound Bill was in fact passed while Cliff served as President of the Massachusetts Society for Medical Research, although it was subsequently repealed.

As Cliff's scientific reputation developed worldwide, he was called upon to serve on many editorial boards and national committees. His principal professional society was the American Physiological Society which he served faithfully for more than 20 years as editor for its journals, chairman of its

Publications Committee and eventually as its President. Most importantly, he served as chairman of its Porter Development Committee which administers scholarships supported by the Harvard Apparatus Company, founded in 1904 by William T. Porter, then Professor of Physiology at HMS. The scholarship fund was traditionally used for elite research fellowships but under Cliff's leadership the funds were instead used to recruit promising minority-group students for careers in physiology. Several of the minority students recruited under this program are now professors in departments of physiology and Cliff himself helped to train some of them. In addition to serving on demanding national committees of the National Institutes of Health and the National Research Council, Cliff gave unstintingly of his time to almost every Medical School Committee, including Admissions, Student-Faculty, Alumni Council, Editorial Board of the Alumni Bulletin and most recently as Director of the Alumni Fund. From 1974-1976 he served as Chairman of the Physiology Department. He was a natural choice as Master of the Cannon Society, not only because of his unusual rapport with students but also because of his great interest in Cannon's life and contributions to American Medicine. His scholarly biography of Cannon, published in 1987 with Saul Benison and Elin Wolfe, is also a history of the Harvard Medical School in the period 1880-1915.

In 1961 Cliff was promoted to full professorship and in 1963 he was honored by appointment to a named chair, the Robert Henry Pfeiffer Professor of Physiology. The Ad Hoc Committee of seven professors appointed by Dean Berry to consider his appointment was almost, but not quite, unanimous because one member of the committee remarked that "Dr. Barger was too good to be true".

Professor Barger is survived by his wife, Claire, two sons, Craig of Easton, MA, and Curtis of Washington, D.C., and a daughter, Shael, of San Francisco, CA.

Respectfully submitted,

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