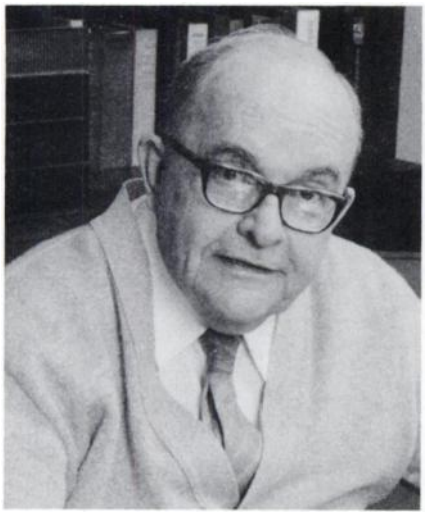

William H. Oldendorf, MD
1925-1992

William H. Oldendorf, MD, Professor of Neurology and Psychiatry, UCLA School of Medicine and Senior Medical Investigator and Director of the Neuroscience Laboratory, Department of Veterans Affairs Medical Center, West Los Angeles, CA, died on December 14, 1992 from cardiac complications. Most of his career was devoted to finding new methods of investigating the human brain. He used the tools of nuclear medicine to study the functions of the nervous system. In his scientific career that spanned more than 35 years, he made numerous fundamental contributions to our knowledge of the physiology of the central nervous system and to our ability to perceive and appreciate the structure of the brain.

Bill Oldendorf was born in 1925 in Schenectady, NY, where he spent his childhood. At 12 years of age, he learned how to grind telescope mirrors, and at 15, he delivered a formal talk on astronomy before the Schenectady Astronomy Club. He entered Union College in Schenectady when he was 16 years old as a physics major. His interest in astronomy and in grinding mirrors continued, and at the request of the General Electric Physics Research Laboratory, he ground two paraboloid mirrors that were used in an optic apparatus to test the first jet engines made in the United States during World War II. He also was interested in short-wave radio, which led to a job as a staff announcer at the first commercial FM radio station in Schenectady. He sang with a cowboy band that performed regularly on this station. He enjoyed singing and studied voice. It was his ambition in those early days to be an opera singer.

His career in medicine began quite by chance. He accompanied some colleagues, with whom he was studying general biology, who were applying to medical school and decided to try a career in medicine. On his 18th birthday he was accepted by Albany Medical College. After receiving his MD degree at 21, he took a general internship at Ellis Hospital in Schenectady with the intent of going into general practice. At the end of the internship, however, he thought that he was not mature enough to undertake private practice and decided to seek further training. He accepted a three-year residency in psychiatry at the New York State Department of Mental Health and later spent two years in military service at the Naval Hospital, Newport, RI, as a psychiatrist. In 1953, he was certified by the American Board of Psychiatry and Neurology as a psychiatrist, the youngest physician ever to be so certified. After leaving the military, he continued post-graduate training as a Fellow in Neurology at the University of Minnesota Hospitals and obtained his board certification in Neurology in 1955. That same year he joined Wadsworth Hospital VA Medical Center, West Los Angeles, CA, as a staff neurologist where he began his illustrious scientific career.

Bill Oldendorf's myriad research accomplishments include a description of the first method for measuring human brain circulation by intravenous administration of a gamma-emitting radionuclide and the first regional brain perfusion measurement using a lipid soluble radionuclide. He experimentally established the "sink" function of cerebral spinal fluid and was the first to report a technique quantitating the permeability of the blood-brain barrier. He also was the first to identify the major blood-brain barrier carrier transport systems.

In addition to physiological investigations, another major research interest was instrumentation development. He described a technique utilizing conversion electrons in liquid scintillation counting; a method to enhance vascular detail on angiogram films using a double-subtraction film technique; and a dark field illumination method for viewing intentionally underexposed radiographs to reduce radiation exposure. His published works include more than 270 scientific articles, chapters and books.

The work for which he is best known was done in 1960. He described an apparatus embodying the fundamental principle of computed tomography. This experi-

mental apparatus consisted of a plastic box containing an array of iron nails with one iron and one aluminum nail in the center. The box was placed on an HO gauge flatcar on a piece of HO track which he obtained from his children. A spring motor of an old alarm clock pulled the flatcar and the entire apparatus was mounted on a discarded phonograph turntable that rotated the apparatus past a beam of gamma rays from a 10-mCi collimated source. The source was lined up with a sodium iodide crystal detector, which in turn was attached to a ratemeter and a strip chart recorder. With this apparatus, he was able to demonstrate the feasibility of monitoring the interior of a structure that was obscured by dense surrounding material. This work was published in the Institute of Radio Engineers Transactions, *Biomedical Electronics*, in January 1961 under the title "Isolated Flying Spot Detection of Radiodensity Discontinuities–Displaying the Internal Structural Pattern of a Complex Object." In 1967, Oldendorf wrote the following letter to William Meyers, a distinguished nuclear medicine pioneer and late historian of the Society of Nuclear Medicine, "I am enclosing a reprint describing an old idea of mine. You're one of the few able to appreciate the idea. The thing is interesting and I suppose someday will find an application."

In 1971, Godfrey Hounsfield at Central Research Laboratories of EMI in England constructed the first computed tomography scanning system using the fundamental principle described by Oldendorf, which revolutionized the field of neurological diagnosis.

In recognition of this fundamental achievement in medical science, Oldendorf received many distinguished honors and awards, including the first Ziedses Des Plante Gold Medal from the Medical Physics Society of Wurzberg, Germany, with Hounsfield in 1974; the coveted Albert and Mary Lasker Foundation Award for Clinical Research in 1975; the Middleton Award in 1976, the highest honor for medical research given by the Veterans Administration; the Paul C. Aebersold Award of the Society of Nuclear Medicine in 1978; the President's Award for Distinguished Federal Civilian Service in 1979; and the Distinguished Scientist Award for contributions to nuclear medicine from the Society of Nuclear Medicine Western Regional Chapters in 1980. He also was a Fellow of the American Academy of Arts and Sciences, the Association for the Advancement of Science and the Institute of Electrical and Electronic Engineers. In 1991, he was elected to membership in the National Academy of Sciences.

Oldendorf also was well known as an educator and lecturer. As a distinguished member of the UCLA School of Medicine faculty, he took great pleasure in teaching. There was great enthusiasm by faculty and students alike for his lectures, which usually reflected his droll sense of humor. His academic career spanned more than 35 years. He received Honorary Doctor of Science Degrees from Albany Medical College, Union College and St. Louis University.

Bill Oldendorf's death is a great loss to the scientific community. He was a unique physician-scientist whose many contributions led to advances in science and medicine. The seminal work which led to the development of computed tomography will stand as a monument to the inventiveness and ingenuity of this remarkable man. He leaves Stella, his wife of 47 years who was by his side in his laboratory during most of his career, three sons, Eric, Mark and William, Jr., and the world of science in mourning.

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