John Grist Brainerd

Born 1904; died February 1, 1988, Kennett Square, Pa.; Dean at the Moore School and co-principal investigator for the ENIA C Project

Education: BS, Moore School of Electrical Engineering, University of, Pennsylvania, *1925;* PhD, Moore School, *1929.*

Professional Experience: Brainerd remained his whole life with the Moore School: instructor, 1925; administrative leader of the ENIAC project, 1943-1946; director, 1954-1970; retired Emeritus University Professor, 1975; established the first evening graduate school in electrical engineering, 1929; first academic program in systems engineering, 1953.

John Grist Brainerd, a life-long professor at the Moore School of' Electrical Engineering of the University of Pennsylvania, and head of' the team that created ENIAC from conception through construction to final operation, died on February 1, 1988, at the age of 83, at the Quaker retirement community of Crosslands in Kennett Square, Penn. He formerly lived in Exton, Penn. At the time of his death he was Emeritus University Professor.

Brainerd earned his BS, MS, and PhD degrees at the University of' Pennsylvania and began teaching there in 1925. While working his way through college, he was at one time a part-time police reporter for the now-defunct *Philadelphia North American*. In 1927 he helped establish the first evening graduate program in electrical engineering. He initiated new electrical engineering courses and was co-author of two pioneering textbooks, *High Frequency Alternating Currents* (1931), and *Ultra-High Frequency* Techniques (1942). The latter was a major aid in training and upgrading engineers who were needed for radar development. In addition to his research, publication, and teaching (which was his lifetime love), he contributed to the work of technical committees and the organization of the IRE, AIEE, and its jointure, the IEEE. Even after retirement in 1975, he continued to commute from Crosslands to his Moore School office and served as president of the Society for the History of Technology, in which he had been active for many years.

He made his chief contribution to computing when he played a major management role in realizing the proposals of engineer J. Presper Eckert and the late physicist John W. Mauchly to build ENIAC. As a professor at the Moore School, he endorsed and took formal responsibility for the design and construction proposal to the Army, and was designated as the principal investigator. That is, if ENIAC had failed, it would have been his neck. Controversy about the relative roles and contributions to ENIAC has been constant since the importance of the computer was first recognized by others, but there is no question about Brainerd's support of the project when it was just a dream, declared to be wild, impractical, and impossible by some who have since forgotten their myopia. There is also no question that he was formally designated as project head or that he was responsible for getting and managing its $486,000 budget, of which he later said that “considering the magnitude of the result, it was one of the cheapest research and

development projects the government ever invested in." Some of this controversy has been reported in *Annals* articles, most notably in "The ENIAC: First General Purpose Electronic Computer," by Arthur W. Burks and Alice R. Burks (Vol. 1, No. 4, October 1981), and "John Mauchly's Early Years," by Kathleen R. Mauchly, (Vol. 6, No. 2, April 1984), and the associated comments, queries, and debates.

When Eckert and Mauchly left the Moore School as a consequence of a disagreement about patent rights,[1] Brainerd remained at the University of Pennsylvania. It appears that whereas they thought the patents should be theirs, Brainerd and others thought the benefits of the inventions should go to the University.

Brainerd took no further part in later Moore School computer project work, but devoted himself to graduate teaching, administration as director of the Moore School, and curriculum revision. His tenure as professor encompassed the transition of the electrical engineering field from a near-exclusive emphasis on power, with a slight concern with telegraphy and telephony, to the vacuum tube era, and ended as the discipline actually developed into what is now called computer science and engineering. Brainerd handled the first part of the transition well, and was a leader in the introduction of the mathematics of electric and magnetic fields and the transmission of energy and information into the teaching of electrical engineering. Although he participated in the earliest development of computers (especially in regard to his specialty, electronic circuits), like some leading classical physicists who never really accepted quantum electrodynamics, he never became a full participant in the new world of computing. He always admitted its worth but he never felt that he understood the field sufficiently to contribute to it.

In the early days of computers, Brainerd's idea of the proper way to employ them was to set them to solving differential equations and publish the results in the form of highly precise tables of functions. Engineers could then use these new tables much as they did tables of Bessel Functions. At that time he did not see the possibility of solving problems directly, or conceive of the computer age.

Several generations of students learned the basic principles of electrical engineering and its related mathematics as a consequence of Dr. Brainerd's long and useful career as a teacher, textbook author, and hands-on department administrator. Although in public he may have presented a quiet and reserved personality, and to his students sometimes seemed overly rigorous and demanding, his friends and professional associates appreciated his sharp mind and enjoyed his quiet but quick sense of humor.[2]33

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[1] See the biographies of J. Presper Eckert and John Mauchly.

[2] From, Weiss, 1988,

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UPDATES

Portrait inserted, MRW, 2012.