MACELWYN VAN VALKENBURG

1921–1997

Elected in 1973

"For contributions to circuit theory, beacon antennas, servomechanisms, and computer science."

BY TIMOTHY N. TRICK
SUBMITTED BY THE NAE HOME SECRETARY

MACELWYN VAN VALKENBURG, former W.W. Grainger Professor Emeritus of the Department of Electrical and Computer Engineering and Dean Emeritus of the College of Engineering at the University of Illinois, Urbana-Champaign, died on March 19, 1997, at the age of 75. He was elected to NAE in 1973.

Mac was born on October 5, 1921, in Union, Utah, the son of Charles M. and Nora Louise Walker Van Valkenburg. In grade school, Mac was inspired by a neighbor boy who had figured out how to use a one-tube, battery-powered radio to amplify sound from a hand-cranked phonograph. Before he was a teenager, Mac and a close friend, Vance Burgon, were making crystal radio receivers from copper coils wrapped around oatmeal boxes and crystals of galena found in nearby copper deposits. The two became amateur radio operators, and their walls were plastered with QSL (one of the Q codes used in radiocommunication and radio broadcasting) cards, postcards from other ham radio operators verifying that their signal had been received. Soon the boys were scripting a radio program based on information from ham radio magazines and their own experiences. The program aired late Saturday night on radio station KSL in Salt Lake City.

After graduating from Jordan High School in Sandy, Utah, Mac enrolled in the electrical engineering program at the University of Utah, where he earned his B.S. in 1943. On August 27 of that year, he married his high school sweetheart, Evelyn June Pate, in Salt Lake City. Since the United States was in the midst of World War II and Mac was a top student, upon graduation he received an assignment to join the staff at the Massachusetts Institute of Technology (MIT) Radiation Laboratory, where he helped develop radar under the direction of the renowned Ernst Guillemin.

In 1946, Mac received his M.S. from MIT and returned to the University of Utah where he taught until 1955, with a leave of absence from 1949 to 1952 to pursue his Ph.D. at Stanford University. Interestingly, his Ph.D. thesis was on the detection of meteor trails in the ionosphere. While at Stanford, Mac was asked to develop a new course on servomechanisms. One can only conjecture that this daunting assignment might have stimulated his interest in circuits and systems.

Mac joined the faculty of electrical engineering at the University of Illinois in Urbana-Champaign (Illinois) in 1955, where he was associate director of the Coordinated Science Laboratory and, for a semester, acting department head. In 1966, he became head of the Department of Electrical Engineering at Princeton University, and in 1974, he returned to Illinois where, in 1982, he was named to the College of Engineering's first endowed chair, the W.W. Grainger Professorship. In 1984, he was appointed dean of the College of Engineering.

Upon his retirement in 1988, Illinois Chancellor Thomas Everhart said, "The renaissance in engineering, which has seen an explosion of new endeavors in the past three years, has been due, in no small part, to the supportive atmosphere Dean Van Valkenburg has embodied and the encouragement he has given to new initiatives."

Although Ernst Guillemin is rightfully called the father of modern circuit and system theory in engineering education, Mac's books made those concepts understandable to the masses worldwide. In an era of dc/ac analysis, the revolutionary time domain/frequency domain transform methodologies were little

understood by most engineering educators. The first edition of *Network Analysis* (Prentice Hall) was published in 1955, but Mac's fame as an engineering educator was cemented in 1960 with the publication of his second book, *Introduction to Modern Network Synthesis* (Wiley, 1960). The second and third editions of *Network Analysis* were published in 1964 and 1974 respectively, and his final book, *Analog Filter Design* (Holt Rinehart & Winston) was published in 1982. All of his books were translated into several languages and became standard texts worldwide.

Mac was quick to sense new trends in electrical engineering. In 1963 he organized the first Circuits and Systems Conference at the Allerton Conference Center at Illinois. Most of the notable educators in electrical engineering were in attendance, and many new ideas for research, new courses, and textbooks resulted from the mix of seasoned veterans and young educators and graduate students. This was the kind of intellectual stimulation Mac enjoyed throughout his career. Later he encouraged similar conferences at Princeton, the Asilomar Conference Center in California, and the University of Hawaii. Approximately 10 years later, the IEEE Circuit Theory Society became the IEEE Circuits and Systems Society.

During his career Mac held visiting appointments at Stanford University, University of California, Berkeley, University of Colorado, University of Hawaii-Manoa, University of Arizona, and Indian Institute of Technology at Kanpur. He was also a delegate to the meeting of the 1st International Federation of Automatic Control in Moscow. Mac received numerous honors and awards, including Fellow of IEEE, IEEE Education Medal, IEEE Centennial Medal, American Society of Electrical Engineers (ASEE) Lamme Medal, ASEE George Westinghouse Award, Guillemin Prize, and the Halliburton Award. Mac was IEEE vice president, editor of *IEEE Proceedings* and *IEEE Transactions on Circuit Theory*, and editor in chief of the IEEE Press. He also served on numerous NAE, IEEE, ASEE, and ABET committees and a number of advisory committees for the National Science Foundation and various universities.

As Mac's reputation as one of the foremost educators in electrical engineering grew, demands on his time increased to

a level that most people would find intolerable. Between his travels abroad and his keen interest in engineering education, he was a valuable source of information. He served on endless policy and advisory committees and wrote numerous articles on engineering education, including a column in the ASEE *Prism.* Engineering students, educators, and publishers from all over the world sought his advice and counsel. John Whinnery, Professor Emeritus, University of California, Berkeley, confided to me that "Mac is the guru to electrical engineers."

Mac communicated as effectively in the classroom as he did in print. His famous colored-chalk lectures, delivered with infectious enthusiasm, attracted thousands of undergraduates to his courses. He also enjoyed communicating with other professionals and was incredibly loyal to his friends.

Mac's talents weren't limited to communication. With his genuine interest in people and powers of subtle persuasion, he was also a mentor of bright, creative people with open minds. He even encouraged them to write textbooks that would be competitive with his own books. He had a talent for extending horizons and engaging people in professional activities they would never have undertaken on their own initiative. Mac was a father figure to many young people in the profession.

Mac is survived by his children, Charles Mac Van Valkenburg, Kaye Van Valkenburg, David R. Van Valkenburg, Nancy J. Van Valkenburg, and Susan L. Van Valkenburg; and twelve grandchildren. His wife, Evelyn J. Pate Van Valkenburg, and one daughter, JoLynne Van Valkenburg, have passed away since his death.