



Raymond W. Ketchledge

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1919–1987

By Amos E. Joel, Jr.

Raymond W. Ketchledge, who was best known for his inventions and leadership in telecommunications and in the military, died of cancer on October 23, 1987, in Engelwood, Florida. He was born in Harrisburg, Pennsylvania, December 8, 1919. His father was a Presbyterian minister, and in his preteen years Ray moved with his family to Johnstown, New York. Upon graduation from high school, he attended the Massachusetts Institute of Technology from which he received a B.S. and M.S. in electrical engineering in 1942.

Following graduation he entered the employ of Bell Telephone Laboratories, where he spent his entire career in engineering and executive capacities. At the time of his retirement in 1982, he was executive director of military development.

Ray initially was a member of the technical staff of Bell Telephone Laboratories. During World War II he was engaged in the development of radar and other systems for the detection of enemy aircraft and submarines. He was particularly attracted to underwater sound detection and made several important contributions in this area. These included development of the Mark 24 mine, an acoustically guided torpedo, and several infrared detectors for locating enemy targets through their heat radiation.

After the war, he was assigned to the development of transmission systems. He made substantial contributions to the equaliza

tion of the broadband signals transmitted over long (4,000-mile) coaxial cable systems. He also developed the method for the remote testing of repeaters used in the first transatlantic submarine cable system.

In 1954 he became head of a department engaged in the development of memories, switching networks, and logic equipment for the initial development and application of electronic techniques and new technology in switching systems. In 1956 Ray was promoted to assistant director of electronic switching development and in 1959 to director responsible for the design and manufacturability of all device, circuit, and physical elements required in this important new field of electronic switching.

During the initial phases of this work, he was not only the organizational leader but also a great innovator in providing the basic technology needed to make these systems successful. Among his most famous contributions was the use of cathode ray tubes and photographic plates for a digital read-only-memory to store large amounts of digital information for rapid random access retrieval. Known as the "flying spot store," it not only stored large amounts of information for its day but also was controlled by a unique digital servo control. The availability of this subsystem made possible the demonstration of the first stored program control of switching systems. He was also the coinventor of the basic switching network used in this system.

The development of the first electronic switching system was a high-risk project involving the expenditure of far more than any previous telecommunications development project. Ray blended technical innovation, management, and salesmanship to enable the commercial success of this technology, which was unequaled in the telecommunications business at the time. It was an undertaking that was the envy of experts in this field throughout the world.

In 1966 Ray was promoted to executive director of electronic switching and established a new development laboratory, called Indian Hill, in Naperville, Illinois, where most of this work was organized. Initially 1,500 engineers and technicians were assigned there. Ray was the first leader of this laboratory, which hosted many visitors from around the world who came to marvel over the wonders of this new technology—electronic switching.

He was also an outstanding citizen in Naperville and of the state as a member of the board of directors of the Naperville National Bank and Trust Company and the Illinois State Chamber of Commerce, and a member of the Illinois Science Advisory Council.

In 1975 Ray returned to Bell Laboratories in New Jersey as executive director of military systems. There he continued to make important contributions to the nation's military posture. During his career he received more than sixty U.S. patents. His last patent, filed in 1981, was granted just before his retirement in 1983.

He carried his enthusiasm and technical expertise over to his hobbies. The most prominent of these was his radio-controlled airplanes, for which he received several patents. He placed so much emphasis on keeping abreast of the technology that when he retired in 1984 to Englewood, Florida, he built a special room as a laboratory where he could continue to build experimental models.

Mr. Ketchledge received several honors for his work. He was elected to the National Academy of Engineering in 1970, was corecipient of the Institute of Electrical and Electronics Engineers (IEEE) Alexander Graham Bell Medal in 1972, and was posthumously elected to the New Jersey Congress and Inventors Hall of Fame in 1989. He was also a fellow of the IEEE and a member of Sigma Xi.

He is survived by his wife, Janet, seven sons (Bruce Ketchledge, Raymond A. Ketchledge, David Ketchledge, Richard Ketchledge, Kevin Bell, William Bell, and Randy Bell), two daughters (Carol Jossem. and Robin Heffner), two brothers (Arthur and Edwin), and eleven grandchildren.