



K. P. N. Kay

KENNETH G. McKAY

1917–2010

Elected in 1968

“Developments in communications, especially in systems engineering and management of technical advances.”

BY WOLCOTT DUNHAM

SUBMITTED BY THE NAE HOME SECRETARY

KENNETH GARDINER McKAY, physicist and executive of Bell Telephone Laboratories and AT&T, died March 5, 2010, in New York City at the age of 92. He had a long career that combined physics and engineering, and his publications included papers on avalanche breakdown in semiconductors and interactions between electrons and solids.

KG, as he was affectionately known by his many friends, was born April 8, 1917, in Montreal. Starting with an amateur radio receiver and transmitter he built while still in grade school in Montreal, he took an early interest in physics and electronics, as he explained in a letter to his daughter:

I started with a fascination with what makes things tick, which led to a lifelong involvement with physics—the desire to understand the world of nature—atoms and electrons, stars and gravity waves, and everything in between. However, I also wished to create things to be used which, starting with amateur radio, led to engineering. ... Then back to physics research at Bell Labs. After establishing a world reputation in solid state physics (now called condensed matter physics) I shifted to the development of devices followed by years of systems engineering, both at Bell Labs and at AT&T. As an officer of the largest corporation in the world, I attempted to introduce technical concepts into the thinking of my fellow officers....

This shifting back and forth between physics and engineering has had a common technological basis. This also underlies my participation in advisory committees to Stanford, University of California, MIT, the National Academies of Sciences and Engineering. A scientist does not have to be a narrowly focused person as he/she is often portrayed. By applying the fundamental principles of research, the scientist can happily enter many fields of endeavour and contribute usefully by exercising a different viewpoint. This is a capsule of one scientist's career. It has all been enjoyable.

At McGill University KG earned a BSc in 1938, winning the Anne Moldson Gold Medal for Mathematics and Natural Philosophy, and an MS in 1939. He received a Moyses Traveling Fellowship to support further graduate study at Oxford University, but the start of World War II prevented his attendance, so he earned his doctorate in physics from the Massachusetts Institute of Technology in 1941. He returned to Canada and designed radar equipment during wartime service with the National Research Council of Canada in Ottawa (1941–1946). After the war, he came to the United States and joined Bell Telephone Laboratories, where he established his reputation in solid state physics.

His long career began in 1946 in the Bell Telephone Laboratories group that invented the transistor and applied it in practice. He was selected "to lead a transistor-development team that would work more or less in parallel with Shockley's group in order to maintain breadth of effort." He invented, among other things, bombardment-induced conductivity in solid insulators, an amplifier and a photomultiplier utilizing bombardment-induced conductivity, a negative resistance semiconductive apparatus, an alpha particle counter, and an electron camera tube for television.

He was appointed director of solid state device development (1957–1959) and became the lab's youngest vice president (systems engineering, 1959–1962). In 1962 he was intimately involved with the launching of Telstar, America's first successful telecommunications satellite. From 1966 to 1973 he

was vice president of engineering for AT&T, the parent company of the Bell System, and chair of the board of Bellcom Inc., which was charged with overseeing communications for the NASA Apollo Program. He also served on the boards of Bell Telephone Laboratories, Bell of Canada, and Sandia Corp. He retired as executive vice president in 1980.

After retiring from the Bell System, he chaired the board of the Charles Stark Draper Laboratory, in Cambridge, Massachusetts (1982–1987), and was an advisor on telecommunications to ministries in Egypt and Taiwan (1982–1996). In Taiwan he helped to draft a National Telecommunications Development Plan, arranged for Bell Labs to send personnel to assist Taiwan's Institute of Telecommunications (a research arm of the Ministry of Transportation and Communications), and advised on AT&T's establishment of a plant to manufacture digital switches equipment.

He also served as a director of Keuffel & Esser Co. (1954–1982), National Aviation and Technology Corp. (from 1982), National Telecommunications and Technology Fund (from 1982), and Network Control Corp. (from 1985). He was a member of the board of governors of McGill University (1973–1978); the board of trustees of Stevens Institute of Technology (from 1974); the board of governors of the New York College of Osteopathic Medicine (from 1980); the Scientific and Academic Advisory Committee of the University of California (from 1980); the advisory council of the School of Engineering, Stanford University; the NAE Academic Advisory Board (1985–1988) and the Commission on Sociotechnical Systems of the US National Research Council; and the US Department of Commerce Technical Advisory Board. NASA gave him its Public Service Award and its Public Service Group Achievement Award in 1969.

He was a fellow of the Institute of Electrical and Electronics Engineers, the American Physical Society, and the New York Academy of Sciences, and a member of the National Academy of Sciences and Sigma Xi. He was elected to the National Academy of Engineering in 1968 and served as councillor

from 1970 to 1973. He was also a member of the Century Association of New York.

Dr. McKay was survived by his wife of 67 years, Renee McKay, a professional artist who died in 2011, son Kip McKay, daughter Margo McKay Mulligan, and grandchildren Lisa and Chris.

