



Allen M. Peterson

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1922-1994

By Von R. Eshleman

Allen Montgomery Peterson, emeritus professor of electrical engineering, died of a heart attack at his home in Los Altos, California, on August 17, 1994. He was seventy-two.

He was born in Santa Clara on May 22, 1922. He served in the Army Air Force during World War II and was in the Battle of the Bulge. At Stanford University he received B.S. (1948), M.S. (1949) and Ph.D. (1952) degrees in electrical engineering. He rose to the rank of professor in 1961 and became emeritus in 1992.

Peterson's association with Stanford University as student, researcher, and professor spanned half a century. Starting in 1954, Peterson held dual positions at the university and at the Stanford Research Institute (SRI), Menlo Park, through a special arrangement made by the late Frederick Terman, often called the father of Silicon Valley. At SRI, Peterson was a senior scientific adviser and was the key person in initiating and building up what became the Radio Physics Laboratory and the Communications Laboratory, where about three hundred people have been involved in communications and defense problems.

At Stanford, Peterson developed and taught courses on radar systems, digital signal processing, microprocessors, logic design, and digital filters. He worked with a large number of graduate student assistants and was the mentor for approximately

one hundred students who received advanced degrees. Although officially retired, Peterson was the adviser for seven graduate students at the time of his death.

With students and colleagues, Peterson initiated several significant areas of research, including radar oceanography and radar-acoustic sounding of the atmosphere. His dissertation studies and later research were instrumental in the development of the over-the-horizon radar systems that were installed in the United States and the Soviet Union for early warning of ballistic missile attack. His work in the 1950s on radar reflections from the trails produced by meteors helped initiate continuing applications to communications and basic studies of the upper atmosphere. He was active in ionospheric and auroral studies during the International Geophysical Year. The innovative method Peterson invented for sounding the atmosphere with a combination of acoustic and radar waves led to commercial systems and stimulated international conferences on this method of environmental and weather measurement. He also helped start the discipline of radar astronomy, which has provided new methods to study surfaces and atmospheres of the other planets of our solar system.

Commercial applications of digital systems developed by Peterson and his students include a widely applied filter bank for transferring between time and frequency division multiplex signals in telecommunications systems; worldwide sales of this and similar devices were on the order of a billion dollars during the mid-1980s. Related studies at Stanford led to an early concept for a million-channel receiver for the national program called the Search for Extraterrestrial Intelligence. At the time of his death, Peterson was working with a former student on a technique for vastly reducing the power consumption of electronic chips.

For decades up to the time of his death, Peterson was involved with several Silicon Valley start-up companies, the Department of Defense, and other governmental agencies. Since 1961 he had been a member of the JASON group of about fifty academics who meet yearly to advise the secretary of defense on scientific matters related to national defense.

He was a member of the White House Science Council on Space Defense related to the Strategic Defense Initiative, the Naval Strategies Board, the Air Force Studies Board, the Voice of America Broadcast Engineering Advisory Committee, the Jet Propulsion Laboratory Advisory Council, and several National Research Council committees.

Peterson served as a consultant to a number of companies and to the President's Science Advisory Committee, the Defense Atomic Support Agency, the Advanced Research Projects Agency, the Institute for Defense Analyses, the Office of Telecommunications, and the Office of the Secretary of Defense. He served for a time as the chief scientist of the Science Applications International Corporation. He had a long-term association with the Geophysical Institute of the University of Alaska and caused a "northern exposure" fracas when his radar studies of the aurora led to an account in a local newspaper that he planned to turn off the northern lights.

Allen Peterson touched the lives of numerous students, colleagues, and friends throughout the world. He will be sorely missed by all.

He is survived by his wife of fifty-one years, Shirley, a full partner in the esteem of colleagues and students who were welcomed to their home, and by four children, three grandchildren, and two brothers.

The Allen Peterson Memorial Fund has been established in the Electrical Engineering Department at Stanford and will be used to assist graduate students.