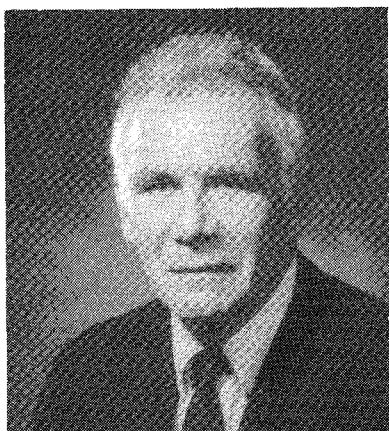


MICROWAVE CAREER AWARD



Marion E. Hines

For a career of meritorious achievement and outstanding technical contribution in the field of microwave theory and techniques.

Marion E. Hines was born on November 30, 1918 in Bellingham, Washington. He received a B.S. degree in Applied Physics in 1940 from the California Institute of Technology. He joined the U.S. Army Air Force in 1940 and served as a weather officer throughout the war. He returned to Cal Tech and received an M.S. in Electrical Engineering in 1946. Further part-time graduate study in Physics was done in 1947-1948 at Columbia University. He was married in 1947 to Miss Julie Warren Viele of Buffalo, New York. They have 3 (now adult) children.

From 1946 to 1960 he was a member of the Technical Staff at Bell Telephone Laboratories. Until 1956 he worked with traveling-wave tubes, microwave triodes and digital storage tubes, making contributions to beam focusing, amplification theory, and practical tube development. In 1956 his interest shifted to semiconductor devices. In 1957 (with H. E. Elder) he demonstrated the first negative-resistance varactor parametric amplifier. In 1960 he published an important paper on the microwave properties of tunnel diodes.

In 1960 he joined Microwave Associates, Inc. In the period to 1963, he and his co-workers established many of the fundamental principles of varactor harmonic generation and developed numerous practical microwave power sources using this principle. This led to the introduction of all-solid-state microwave communications systems by Microwave Associates in the mid 60's. In 1964 he published a fundamental paper on microwave switching and phase shifting using semiconductor diodes. This led to the development of practical pulsed megawatt duplexers, multi-kilowatt phase shifters and power switches, now extensively used for RADAR. From 1965 to 1974 he concentrated on IMPATT and Gunn-effect diodes, making important contributions to a quantitative understanding of their electron dynamics and to their application as microwave oscillators and amplifiers. These include the small-signal impedance theory (1966); small signal noise theory (1966); nonlinear effects in oscillators and power amplifiers (1970); and large signal noise, instabilities and intermodulation (1972).

He diversified further, after 1970, publishing papers on stripline propagation using ferrite, computer aided microwave network analysis, phase-locked power amplification, and mixer theory.

Mr. Hines has contributed more than 50 technical papers and oral presentations. He holds more than 40 patents. He was made a fellow of the IEEE in 1968. He received a "best paper" award from the ISSCC in 1967. He received the microwave prize for his 1971 paper on ferrite propagation, and again as a co-author in 1978 for a paper on phase-locked amplification. In 1976 he was given the J. J. Ebers Award of the IEEE Electron Devices Society. He has been awarded the 1983 Lamme Medal of the IEEE.

At present he is Vice President and Chief Scientist for the M/A-COM Corporate Technology Center. He is now working on CAD techniques for microwave network synthesis and equalization, and on IMPATT diode power amplification and combining.