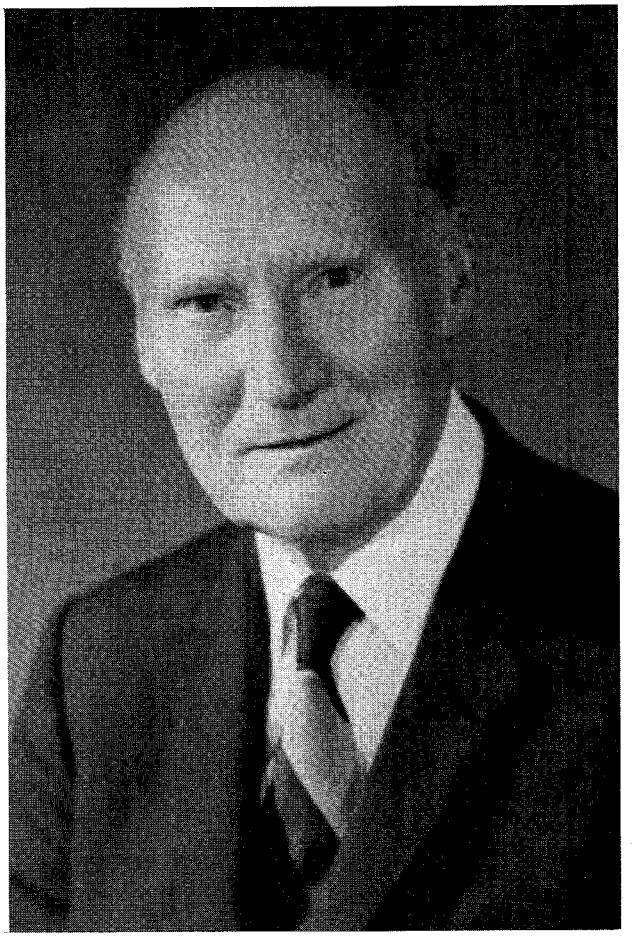
1978 MTT-S MICROWAVE CAREER AWARD

TO

ERNST WEBER

"For more than 50 years of continuous contribution in the fields of microwave engineering, education, and in engineering professional actitivities."



Dr. Ernst Weber, a member of the National Academy of Sciences and a founding member of the National Academy of Engineering, was born in Vienna, Austria, on September 6, 1901.

A dual interest in philosophy and engineering led him to pursue a double course of studies in his native city, attending both the Technical University of Vienna and the University of Vienna. Following receipt of the diploma in electrical engineering in 1924, he joined the Austrian Siemens-Schucket Company as research engineer. He was awarded the degree of Doctor of Science from the Technical University in Vienna in 1927. Concurrent with the work for his engineering degree he had studied philosophy, physics, and mathematics at the University of Vienna, and had received a Ph.D. from that institution in 1926.

Dr. Weber was transferred to the Siemens-Schucket Company in Berlin in 1929, and appointed Lecturer at the Technical University of Berlin.

In the fall of 1930 he was invited to be Visiting Professor at the Polytechnic Institute of Brooklyn. A year later he was named a permanent Research Professor of Electrical Engineering in charge of graduate study. From 1942 to 1945 he was professor of Graduate Electrical Engineering and head of graduate study and research in that field.

Early in World War II, Dr. Weber organized a microwave research group, out of which grew the Microwave Research Institute, forerunner of the present Department of Electrophysics. In recognition of the contributions of the research group, he was awarded the Presidential Certificate of Merit.

In 1945 Dr. Weber was appointed head of the Department of Electrical Engineering and director of the Microwave Research Institute. Under his direction, enrollment in electrical engineering grew to the point where it represented 38 per cent of the Institute total enrollment of 5500 graduate and undergraduate students in the nine fields of science and engineering at Polytechnic. The graduate program itself developed into one of the largest in the country.

When the vice presidency for research at the Polytechnic was created in 1957, Dr. Weber was named to that position. He was appointed President on December 20, 1957.

The creative work of Polytechnic's faculty and staff in the Microwave Research Institute led to the formation of a small, vigorous company responsible for the development and introduction of countless pieces of sophisticated microwave measuring instruments. Founded by Dr. Weber and his associates in 1944, the firm named Polytechnic Research and Development Company, Inc., came to be known as P.R.D. It was sold in 1959 to the Harris-Intertype Corporation and continues as a division of that firm i.e. PRD Electronics; the proceeds from the sale went to Polytechnic Institute of Brooklyn and were added to the then small endowment funds of the Polytechnic.

A pioneer in high frequency electronic research, Dr. Weber holds many American, Canadian and British patents in the field of microwave techniques. His published works include many scientific papers on electromagnetic fields, linear and non-linear circuits, and microwave measurements. He has contributed to several books and has published "Mapping of Fields" and "Linear Transient Analysis."

Dr. Weber is a Fellow, served as member of the board, as member of the executive committee and was president in 1959 of the Institute of Radio Engineers. He is a Fellow of IEEE and served as the first President in 1963. He is a Fellow of the American Physical Society, and honorary member of the Institute of Electrical Engineers of Japan and of the Institute of Radio Engineers of Japan.

Dr. Weber was a member and consultant of the Army Scientific Advisory Panel, a member of the Advisory group to the Army Electronics Command, and a member of the New York Gov. Nelson Rockefeller's Advisory Council for the Advancement of Industrial Research and Development. He served on the Defense Science Board from 1963 through 1966.

He holds honorary doctorates from Newark College of Engineering, Pratt Institute, Brooklyn Law School, Long Island University, the University of Michigan and Polytechnic Institute of Brooklyn.

He retired as President of Polytechnic on June 30, 1969 when he was elected Professor Emeritus and President Emeritus. He served as chairman of the Engineering Division of the National Research Council, National Academy of Sciences in Washington, D.C., from 1969 to 1974 and is now a member of the Commission on Sociotechnical Systems of the National Research Council; having served as its acting Executive Director from November 1, 1974 to June 1, 1976.

IRE/IEEE ACTIVITIES

Member Board of Directors 1952-1962, President 1959, Vice President 1962.

Professional Groups Committee
Member 1951-1960, Vice Chairman 1954-1956,
Eastern Division Vice Chairman 1957-1959, Chairman 1960-1962.

Standard Committee
Member 1949-1960, Vice Chairman 1951-1954, Chairman 1954-1956, Exofficio 1957-1959.

Professional Groups
MTT member since beginning - (life member IEEE).
Antennas and Propagation, member soon after beginning (life member IEEE).
Instruments and Measurements 1948-1952, Chairman 1949-1951.

National Convention, Chairman Technical Program Committee 1947 and 1951.

Education Committee, member 1944-1951.

URSI, member US National Committee, 1954 to present.

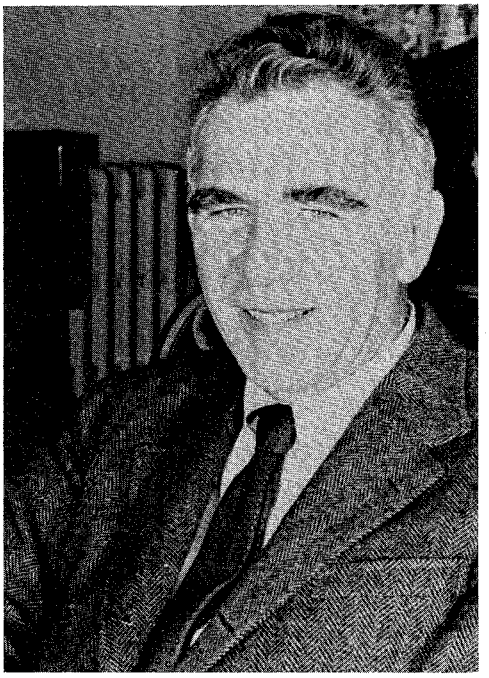
Representative of IRE, IEEE since 1956.

1978 MTT-S MICROWAVE PRIZE AWARD

TO

MARION E. HINES, RONALD S. POSNER AND ALLEN A. SWEET

For paper "Power Amplification of Microwave FM Communication Signals Using a Phase Locked Voltage Tuned Oscillator," published in the IEEE Trans. on Microwave Theory and Techniques, Vol. MTT-24, pp. 393-404, July 1976.



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.

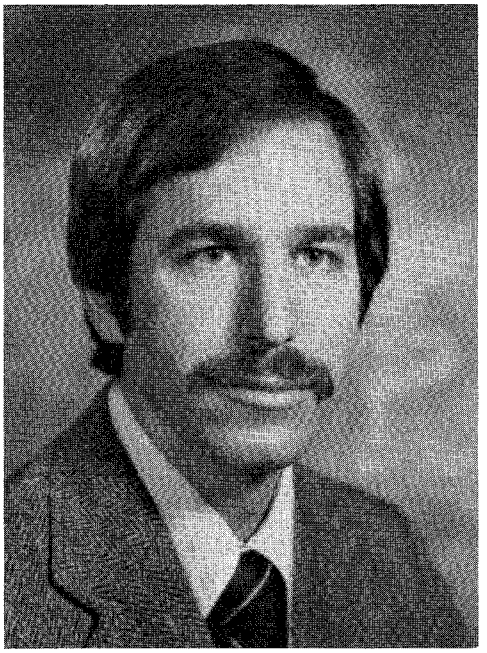
From 1946 to 1960 he was a member of the Technical Staff at Bell Telephone Laboratories. Until 1956 he worked with traveling-wave tubes, microwave triodes and digital storage tubes, making contributions to beam focusing, amplification theory, and practical tube development. In 1956 his interest shifted 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 principals 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 power control using PIN and other 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).

In the mid 70's, serving as Vice President and Corporate Technical Director, he has diversified somewhat, having published papers on Ferrite devices, on new methods of microwave power amplification, and on computer science and automatic microwave measurements. At present, he is studying improved techniques for microwave diode frequency conversion.

Mr. Hines has contributed more than 50 technical papers and oral presentations. He holds about 40 patents. He received a "Best Paper" award from ISSCC in 1967, the S-MTT "Microwave Prize" in 1972, and was made a fellow of the IEEE in 1968. In 1976 he received the J.J. Ebers Award from the IEEE Electron Devices Group. He has served on numerous technical committees and editorial boards for the IEEE.



Ronald S. Posner was born in Los Angeles, California on February 22, 1943. He received his B.S. degree in Engineering from the University of California at Los Angeles in June, 1964.

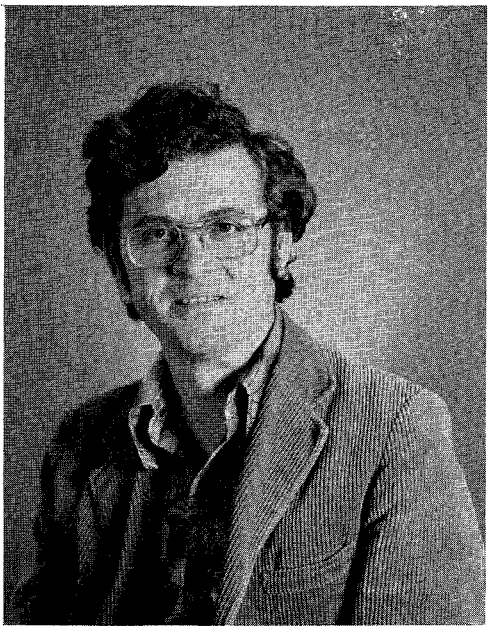
After continuing his education for a year, he joined Rantec Corporation. His responsibilities included the development of microwave components for broadband automatic impedance measurement systems, and the development of circulators and ferrite phase shifters. He received his M.S. degree in Engineering in January, 1966, from the University of California, Los Angeles, specializing in electromagnetics.

Awarded a NASA Fellowship, he returned to the University of California, Los Angeles, where his studies and research continued in the area of solid-state electronics, Quantum mechanics and applied mathematics. He received his Ph.D. in Engineering in June, 1970. His dissertation concerned current crowding in bipolar transistors.

In September, 1970, he joined the Micro State operation of the Raytheon Company. At Micro State, he developed high-power avalanche diodes and avalanche diode amplifiers for use in microwave radios and transmitters.

In September, 1972, Dr. Posner, became a member of Microwave Associates, Inc. At Microwave Associates, Inc. he has spearheaded the development of commercial microwave sources, sensors, and telecommunications local oscillators. Currently he is Product Manager for Commercial Microwave Products, where he has been active in the creation of a commercial microwave communications technology.

Dr. Posner graduated with Honors, received the faculty-friends prize for his senior engineering design project (a restartable solid propellent rocket engine with the capability of controlled thrust termination and restart), and was awarded the faculty-alumni award for outstanding academic achievement by a Ph.D. candidate in Engineering. Dr. Posner is a member of Tau Beta Pi.



Allen A. Sweet was born in Providence, Rhode Island on July 5, 1943. He received a BSEE from Worcester Polytechnic Institute in 1966. Cornell University awarded him an MS in 1968 and the Ph.D. in 1970.

From 1969 to 1971 Dr. Sweet was a Senior Research Engineer with the Monsanto Co. At Monsanto his work concerned the electrical characterization of Gunn Effect Devices, with special emphasis on noise.

From 1971 to 1975 Dr. Sweet was employed by Microwave Associates as a group leader in charge of communications sources. During this period he developed many kinds of Gunn sources including the first commercially available cavity stabilized Gunn source for telecommunications.

In 1975 Dr. Sweet joined Varian Associates in Palo Alto, California where he developed a line of GaAs Fet Amplifiers and the processing laboratory necessary for their construction.

In 1977 he joined Wakins-Johnson as section head in charge of communications amplifiers. His present work concerns the development of a line of cooled and uncooled GaAs amplifiers for communications systems.

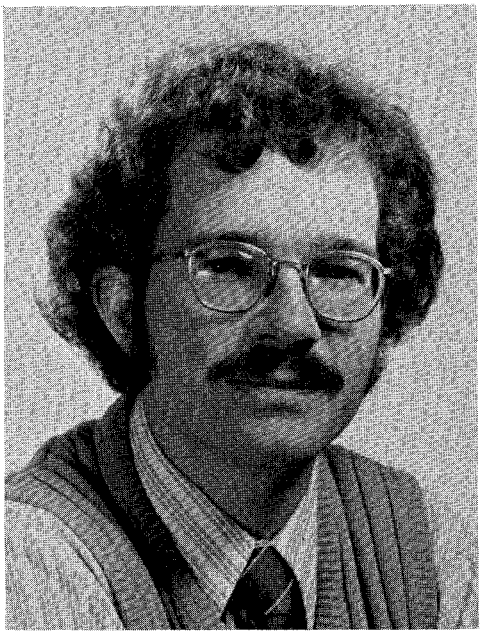
Dr. Sweet is a member of the IEEE. He has published over twenty technical papers, many of them in the area of oscillator noise.

1978 MTT-S MICROWAVE APPLICATION AWARD

TO

STEPHEN I. LONG

For "The Study of InP Materials, Devices and Circuits for Applications to Millimeter-Wave Gunn Diode Devices."



Stephen I. Long was born in Alameda, California on January 11, 1946. He received the B.S. degree in engineering physics from the University of California, Berkeley in 1967 and the M.S. and Ph.D. degrees in electrical engineering from Cornell University, Ithaca, N.Y. in 1969 and 1974 respectively. His thesis research dealt with steady state liquid phase epitaxial growth of GaAs.

During 1966 and 1967, he was a staff assistant at Stanford Linear Accelerator Center and investigated electron multiplication effects in alkali halides. During 1968 and 1969, he helped to develop GaAs liquid phase epitaxial growth systems at Cayuga Associates, Ithaca, N.Y. for transferred electron device fabrication. From 1969 to 1973, he served as a project engineer at the Rome Air Development Center, Griffiss AFB, N.Y. where he investigated and developed a steady state LPE growth technique for thick, uniformly doped layers. In 1974, he joined Varian Associates, Palo Alto, California where he has worked on vapor phase epitaxial growth of GaAs and InP, development of GaAs and InP, development of GaAs high efficiency IMPATT devices and millimeter wave InP oscillator and amplifier devices. He is presently manager of the semiconductor engineering group, solid state west division.

Dr. Long is a member of IEEE, Tau Beta Pi, and the Northern California Crystal Growers.

Steve wishes to share the honor with his colleagues by acknowledging their key contributions to the development of InP devices: They are R.D. Fairman for InP epitaxial material growth; R.J. Hamilton, Jr., for circuit design and device evaluation; J.T. Andrews for device evaluation; and F.B. Fank for his leadership, encouragement, and support.