



## E. L. Ginzton

Born in Russia in 1915, in Ekaterinoslav, now Dnepropetrovsk, Edward L. Ginzton came to the United States when he was 13. He attended the University of California, receiving the B.S. and M.S. degrees in electrical engineering. With the encouragement and assistance of Dr. F. E. Terman, he transferred to Stanford University for graduate work in radio engineering, receiving the E.E. degree in 1938 and the Ph.D. degree in 1940, after specializing in the study of negative feedback and the theory and application of stabilized negative impedances.

In 1939 he was a research associate in the Physics Department of Stanford University working with Prof. W. W. Hansen, Russell and Sigurd Varian, and Prof. D. L. Webster on the development of the klystron tube and its application in microwave systems. In 1940, he moved with this project and some of the personnel to the Garden City Research Laboratories of Sperry Gyroscope Company. He remained there throughout the war, successively becoming assistant project engineer, project engineer, and research engineer, in charge of the Microwave Research Department from 1942 to 1945, and the head of the Microwave Research and Tube Research Laboratories from 1945 to 1946. The work at this time included the development of microwave measurement techniques and instruments, of special Doppler radar systems for MTI applications, and early experimentation with Doppler navigation. He made two trips to Europe as a result of this work. The first, in 1944, was sponsored by OSRD to exchange information between the United States and England about Doppler radar, klystrons, and microwave measurement techniques. The second, in 1945, was sponsored by the Vacuum Tube Development Committee to study and evaluate wartime klystron developments.

In 1946, after the end of World War II, as assistant to Prof. W. W. Hansen, he returned to Stanford University to help form the Microwave Laboratory. In 1949 he was appointed Professor of Electrical Engineering and Applied Physics, and after the death of Dr. Hansen he was made Director of the Microwave Laboratory.

The Stanford Microwave Laboratory, under Dr. Ginzton's direction, undertook the development of the high power pulsed klystron which became a key element in the construction of the Stanford Billion Volt Linear Electron Accelerator. This machine, started under the direction of W. W. Hansen after the completion of a 10-foot pilot model, occupied a large fraction of the activities of the Laboratory until completed in 1952 and has since become a prominent tool in nuclear physics research.

Since the completion of the 200-foot Linear Electron Accelerator, Dr. Ginzton has participated in the development of several other specialized linear electron accelerators. These include a six million volt X-ray machine, designed for cancer therapy that is currently being used for experimental treatment.

As a member of the Physics and Electrical Engineering Departments, he supervises the research work of graduate students in the fields that bridge physics and engineering. His students have been engaged in many aspects of microwave research, especially in studies of high power tubes, linear electron accelerators, and their application in medical and biological research problems.

Dr. Ginzton has been active in Varian Associates from the early planning period that preceded the formation of this electronics firm. Since the formal organization in 1948, he has served on its Board of Directors, taking an active part in formulating the policies of the company.

Dr. Ginzton has published many papers in the field of electronics and microwave applications and is the sole or joint inventor of approximately 50 patents on klystron tubes, klystron circuits, radar systems, microwave measuring devices, linear electron accelerators, and electronic computing circuits. He teaches graduate courses in microwave measurements and is presently writing a text on that subject. He is a member of Sigma Xi, Tau Beta Pi, Eta Kappa Nu, and in 1951 was made a Fellow of the IRE for his contributions to the development of the high power pulsed klystron.