



## H. A. Wheeler

H. A. Wheeler was born in St. Paul, Minn., on May 10, 1903. In 1925, he received the degree of B.S. in Physics from George Washington University, and from 1925 to 1928 engaged in post-graduate study in the Physics Department of Johns Hopkins University.

After summer work with Professor Alan Hazeltine, Mr. Wheeler joined Hazeltine Corporation at its beginning in 1924, where he worked on the design of radio receivers. In 1926, he originated the diode detector and avc that came into common use in broadcast receivers. Later he specialized in fm and TV receivers; the latter work was awarded the Morris Liebmann Prize by the IRE in 1940. In 1939, he was appointed Vice-President and Chief Consulting Engineer of Hazeltine Electronics Corporation. During World War II, he worked on iff radar, for which he received the Navy Certificate of Commendation. Also he was active in the microwave developments that were later adopted in the dme sets now used for air navigation. He has more than 150 U. S. patents and many foreign patents.

In 1946, Mr. Wheeler started an independent engineering group, which in 1947 became Wheeler Laboratories, Inc., in Great Neck, N. Y. He is President of this company and the director of their activities. This group has specialized in the development and design of microwave components, assemblies and antennas, mainly for radar and guided missiles.

From 1929 to 1935, Mr. Wheeler computed and put into use various forms of the piston attenuator in a waveguide below cutoff. In those days before waveguides, he may have been the first to use the TE-10 mode in a rectangular pipe, now the most common mode in waveguides.

In that period, he also became active in the field of antennas. This led to the presentation of the principles of small antennas, and to such concepts as the "radiation power factor,"

the "radianlength," the "radiancircle" (the interception area of an isotropic radiator), and the "radiansphere" (the region in which the "near field" predominates).

In 1942, he published a study of the skin effect, including a simple derivation and some charts and rules that have come into common use.

His interest in transmission lines led to his early use of circle diagrams and reflection charts. One of those was his transition-loss chart published in 1936. Later he promoted the use of the "loss circle" for measuring the attenuation in either a linear network or a superheterodyne converter. About 1942, he computed and designed strip lines between parallel planes and put them into service in trombones.

Mr. Wheeler's more recent interest in waveguides has led to various developments, such as the step twist (fixed or rotary) and the waveguide spark gap (hemispheres). He introduced the term "port" to describe either a hole in a waveguide or a pair of terminals in a wire circuit.

In a series entitled "Wheeler Monographs," he has presented various topics related to circuit theory, circle diagrams, powdered iron, transmission lines, and other subjects. The first collection of these papers was published as Volume I in 1953.

During the past few years, Mr. Wheeler has been devoting some attention to the conformal mapping of fields, in an effort to present the subject in more useful forms. This places emphasis on the equivalence of various contours, and on ways of expressing their simplest properties.

He is a Fellow of IRE and has served on the Board of Directors. He is also a Fellow of AIEE and an Associate Member of IEE. He is now a member of the Administrative Committee of the PGM TT.