

## In Memoriam

THE YEAR 1972 marks the end of an era, for it was during this year that we learned of the passing of two of our great microwave people, Mr. Andre G. Clavier and Dr. George C. Southworth. Their pioneer contributions to our technology are known to most of us and have been recited countless times.

Mr. Clavier played a major role in the first successful demonstration of microwave transmission across the English Channel in 1931. Dr. Southworth was one of the first experimentalists to discover, identify, and apply microwave propagation in hollow metal pipes.

In addition to their technical contributions, which covered a span of decades and influenced two generations of microwave people, they were also active in our Professional Society. When the Microwave Theory and Techniques Group was formed in 1952, they were members of the first National Administrative Committee. Mr. Clavier was Vice-Chairman of the first Ad Com and Chairman of the second. Although Dr. Southworth chose not to be an officer, he was active at the Ad Com meetings and in discussions and correspondence with other members. They were both instrumental and influential in helping to set the pattern for what many of us like to believe is one of the IEEE's most dynamic groups.

Recognizing their contributions as scientific pioneers and as concerned professionals, the National Administrative Committee, in 1959, established the status of Honorary Life Member to both honor contributions and to retain participation of the giants in our technology. Dr. Southworth was unanimously chosen our first Honorary Life Member, in 1959, and Mr. Clavier was chosen a year later.

Although they had both been retired for several years, they retained their interest in the Microwave Theory and Techniques Group almost to the end. We mourn their passing, but are grateful to have had them as leaders, contributors, and friends.

—THEODORE S. SAAD

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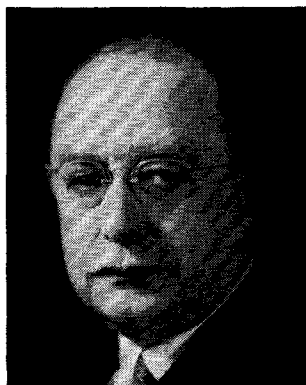


**Andre G. Clavier** (M'30-F'39-LF'64) was born in Cambrai, France, on February 15, 1894. He graduated from the Sorbonne as "Licencie en Sciences Physiques et Mathématiques," in 1918, and received the diploma of Electrical Engineer from l'École Supérieure d'Électricité, Paris, France, in 1920.

He started his career in radio research as the head of one of the Laboratories of the French Signal Corps, where he was in charge of military developments in the higher part of the radio-frequency spectrum. He was a member of the French jury supervising the famous amateur contest in 1923 for short-wave transatlantic communication. He was Secretary of the Redaction of "Onde Electrique" during its first years of existence, from 1923 to 1925. After a short stay with International Western Electric in London, 1925, and the Société Française Radioélectrique in Paris, he joined the International Telephone and Telegraph System in 1929 as a member of the staff of the Laboratoire Standard, which later became the Laboratoire Central de Télécommunications. He was Assistant Research Director in 1946, when he was transferred to the Federal Telecommunication Laboratories. He was named a Technical Director of the Federal Telecommunication Laboratories in 1952, and a Vice-President in 1955, acting as general coordinator for research and development activities, a position he held until his retirement in 1959. He then acted as a technical consultant to the International Telephone and Telegraph System for subsequent several years. He is widely recognized as a pioneer in the development of microwave communication. He played a major role in the first successful demonstration of microwave transmission across the English

Channel from Calais to Dover in 1931, and directed the project which led to the opening of the world's first microwave radiotelephone and teleprinter link between England and France in 1934. He contributed to the theory and applications of waveguides and their relationship with coaxial cables (1937), and was among the first to recommend the use of electron transit times in microwave vacuum tubes (1939). In 1941 he conducted, with V. Altovsky, a series of beyond-the-horizon propagation over the Mediterranean between Toulon and the Spanish and Algerian coasts. This work remained unpublished because of French military classification. With the same co-worker, he established in 1945 a microwave transmission for 12 telephone channels using frequency division and frequency modulation at 3000 MHz between Paris and Montmorency. He taught field theory and applications of ultrahigh frequencies at l'École Supérieure d'Électricité from 1942 to 1945. He wrote extensively on HF, UHF, and SHF radio communication and on microwave vacuum tubes, as well as electromagnetic theory. He was the author of some 70 patents in the field of telecommunications.

Mr. Clavier was a member of the French Society of Radio Engineers, a Membre Lauréat of the Société Française des Électriciens, a member of the Institution of Electrical Engineers of Great Britain, and a Vice-President of the American Section of the Société des Ingénieurs Civils de France. He was made a fellow of the American Institute of Electrical Engineers in 1953 for "pioneer work in research, development and engineering in the microwave field."



**George Clark Southworth** (M'26-F'41-LF'58) was born in Little Cooley, Pa., on August 24, 1890. He received the B.S. degree from Grove City College, Grove City, Pa., in 1914, and the M.S. and Ph.D. degrees, both from Yale University, New Haven, Conn., in 1916 and 1923, respectively.

He was a teacher for ten years, and for many more years a research worker on the various frequency frontiers of radio. Beginning with experimental work at Grove City College prior to World War I, and continuing with research work at the Bureau of Standards and Yale University during World War I, he was with the Bell System from 1923 until his retirement. He was the author of a score or more of scientific papers on such diversified subjects as ultrashort waves, the dielectric properties of water at ultrahigh frequencies, radio wave propagation, antenna arrays, earth currents, and radio astronomy, as well as that for which he was best known, waveguides. His work culminated in 1950 in a 675-page textbook on microwave techniques, *Principles and Applications of Waveguide Transmission*. For his work in waveguides, he received the 1938 Morris Liebmann Prize of the Institute of Radio Engineers, and in 1947 he received the Stuart Ballantine Medal of the Franklin Institute. For his work on microwave radiation from the sun, he received the Louis Levy Medal of the Franklin Institute in 1946. During his long experience in radio, he was active in the development of several new frequency frontiers.

Dr. Southworth was a fellow of the American Physical Society and the American Association for the Advancement of Science.