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## MTT Awards for 1974

JOHN B. HORTON

THE highlight of the 1975 annual MTT Symposium banquet was the presentation of MTT Society Awards and IEEE Awards for 1974. MTT President H. W. Cooper presented the Society awards to:

Harold A. Wheeler—Microwave Career Award  
Charles A. Liechti }—Microwave Prize  
Robert L. Tillman }  
Dean F. Peterson, III—Microwave Application Award  
Philip H. Smith—Special Microwave Application Award  
Seymour Okwit—National Lecturer Plaque

IEEE Past President J. J. Guerrera (1974) presented the IEEE Awards to:

Bernard C. DeLoach, Jr.—1975 David Sarnoff Award  
Gordon R. Harrison }  
George P. Rodrigue }—IEEE Fellow Grade Certificates

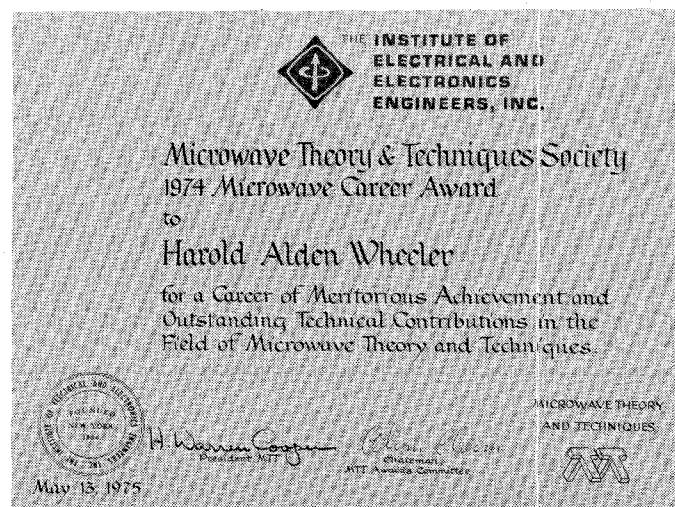
Information about the awards, biographies of the award recipients, and photographs of the presentation of the awards follow.

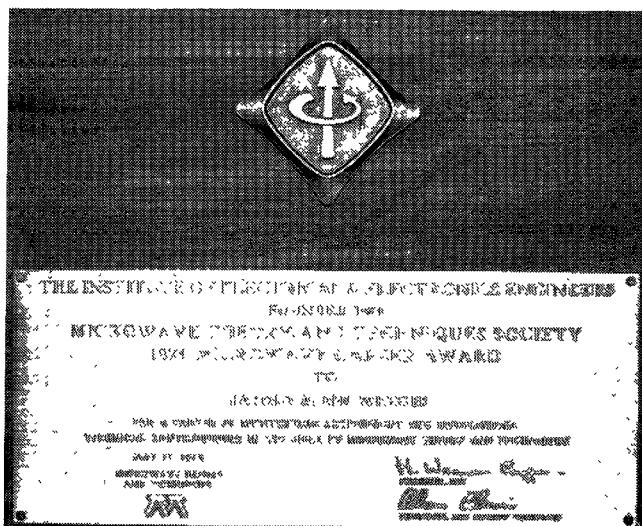
### MTT SOCIETY AWARDS

#### *Microwave Career Award*

The Microwave Career Award is presented aperiodically to an individual for a career of meritorious achievement and outstanding technical contributions in the field of

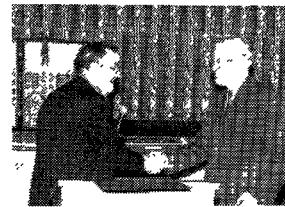
microwave theory and techniques. Harold A. Wheeler received the 1974 Microwave Career Award for his many contributions during his career which began in 1925 with his graduation from George Washington University and extends to his present position of Chairman of the Board of Hazeltine Corporation, L. I., N.Y. As can be seen from his biography, he has been one of the truly outstanding contributors to the microwave field. Dr. Wheeler received a certificate, a plaque, and a cash sum of \$500. A photograph of his certificate and plaque, and his biography are shown.





Harold A. Wheeler received the B.S. degree in physics from George Washington University, Washington, D.C., in 1925, and received the honorary degree of Doctor of Science in 1972.

He is a long-time active member of the IRE-IEEE engineering community on Long Island. He was one of the founders of the Long Island Section and served as its second chairman just 25 years ago. His career is linked with Hazeltine Corporation, a company which has been active on Long Island for many years. The company has just passed its fiftieth anniversary, and he was employed at the beginning (part time while continuing his college work). He is now serving as Chairman of the Board and as Chief Scientist in the Research Laboratories. In the latter function, he is devoting most of his time to the development of the Microwave Landing System (MLS) of the future. While in college, he became acquainted with Professor Hazeltine of Stevens Tech, who was then designing the "Neutrodyne" receiver. This design captured the market, and its success led to the formation of Hazeltine Corporation as a patent licensing and engineering organization. Shortly afterward, he invented and demonstrated the diode AVC which was generally adopted for broadcast receivers and is still used in all AM and TV receivers. Until World War II, he was active in designing and testing broadcast receivers. From 1930, he was in charge of the company's Bayside Laboratory, and from 1939 was Vice-President and Chief Consulting Engineer at the newly commissioned Little Neck Laboratory. There he was active in FM and in the TV developments for which he was awarded the Morris Liebmann Prize by IRE in 1940. During World War II, he continued in this capacity in the Navy program of IFF (Interrogation Friend or Foe) which was an accessory to radar. The engineering and leadership by Hazeltine Corporation enabled the wartime production of this equipment. It laid the groundwork for the present generation of Mark XII IFF for radar, as well as DME transponder beacons for air navigation. He is the author of many technical papers presented in IRE-IEEE forums and published in their periodicals. His specialties before the war were related to radio receivers for AM, FM, and TV. During and after the war, he specialized in the fields of microwaves and of antennas for a great variety of applications. He has been awarded about 180 U.S. patents and many foreign patents. He is probably best known for his 1939 IRE paper entitled, "The interpretation of amplitude and phase distortion in terms of paired echos," which was related to TV. He has served as chairman of many committees and was elected a Director of IRE for two terms, 1940-1946. After the war, he formed an independent engineering group, Wheeler Laboratories, Inc., which achieved recognition in the engineering of microwave circuits, tracking-radar antennas, and phased arrays for military and aerospace applications. This company, with laboratories in Great Neck and Smithtown, was acquired by Hazeltine Corporation in 1959 as a subsidiary. In 1971, the WL staff was merged into the Research Laboratories of Hazeltine in Greenlawn, where they are now active in antenna developments for various purposes, especially for the Doppler MLS and other applications in air traffic control.



Warren Cooper presents Microwave Career Award to Harold A. Wheeler.

### Microwave Prize

The Microwave Prize is awarded annually for the best paper on a microwave subject published during the previous year. The 1974 Microwave Prize was awarded to Charles A. Liechti and Robert L. Tillman for a very significant contribution to the field of endeavor of the IEEE MTT Society in their paper entitled "Design and performance of microwave amplifiers with GaAs Schottky-gate field-effect transistors," published in the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, Vol. MTT-22, pp. 510-517, May 1974. The recipients each received a certificate and a cash sum of \$150. A photograph of the certificate and biographies of the recipients are shown.



### Microwave Theory & Techniques Society 1974 Microwave Prize

to  
Charles A. Liechti  
Robert L. Tillman

for a very significant contribution to the field of endeavor of the IEEE MTT Society in their paper entitled "Design and Performance of Microwave Amplifiers with GaAs Schottky-Gate Field-Effect Transistors," published in the IEEE Transactions on Microwave Theory and Techniques, Volume MTT-22, Number 5, May 1974.

*H. Warren Cooper*  
President, MTT  
May 15, 1975

*Charles A. Liechti*  
Chairman, MTT Awards Committee

MICROWAVE THEORY  
AND TECHNIQUES



Charles A. Liechti received the M.S. degree in physics and the Ph.D. degree in electrical engineering from the Swiss Federal Institute of Technology, Zurich, Switzerland, in 1962 and 1967, respectively.

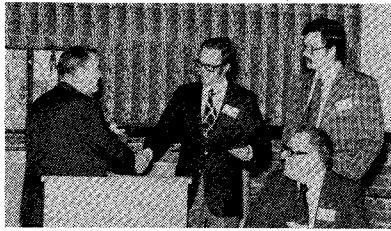
While at the Swiss Institute of Technology, he was engaged in applied research on microwave solid-state circuits with emphasis on varactor-controlled wide-band phase shifters. In 1968 he joined the Hewlett-Packard Company, Palo Alto, Calif., where he has been concerned with the design and development of IMPATT oscillators and frequency converters with Schottky-barrier diodes. Since 1971 he has been in charge of GaAs field-effect transistor devices, microwave amplifiers, and GaAs digital integrated-circuit developments at the Solid State Laboratory.

Dr. Liechti received outstanding contributed paper awards at the International Solid-State Circuits Conference in 1973 and 1974.

Robert L. Tillman was born in El Paso, Tex., in 1947. He received the S.B. (E.E.) degree from the Massachusetts Institute of Technology, Cambridge, and the M.S.E.E. degree from Stanford University, Stanford, Calif., in 1969 and 1971, respectively.

In 1969 he joined Texas Instruments Incorporated, Dallas, Tex.,

where he worked on the development of integrated power amplifiers in the 1-3 GHz frequency range. Since 1971 he has been with Hewlett-Packard Company, Palo Alto, Calif., and has worked in the areas of wide-band amplifiers, YIG-tuned oscillators, and the microwave application of GaAs FET's. At present, he is with the Microwave Technology Center, Hewlett-Packard Company, where his interests include fabrication and application of GaAs FET's.



Microwave Prize awarded to Charles A. Liechti and Robert L. Tillman.

#### Microwave Application Awards

Two Microwave Application Awards were presented at the banquet. The Microwave Application Award is presented aperiodically to an individual for an outstanding application of microwave theory and techniques. Dean F. Peterson, III, received the 1974 Microwave Application Award for the "Application of Mierowave Theory and Techniques to the Design of Practical, Reliable, High Power IMPATT Amplifiers." Dr. Peterson's award is based on his design and construction of *Ka*-band (35-40-GHz) transmitters for the LES-8 and LES-9 satellites. He received a certificate and a cash sum of \$100. A photograph of the certificate and Dr. Peterson's biography are shown.



**Dean F. Peterson, III**, was born in Melbourne Beach, Fla., on March 28, 1945. He received the B.S. degree in electrical engineering from Utah State University, Logan, in 1967, and the M.S. and Ph.D. degrees from the Massachusetts Institute of Technology, Cambridge, in 1969 and 1971, respectively.

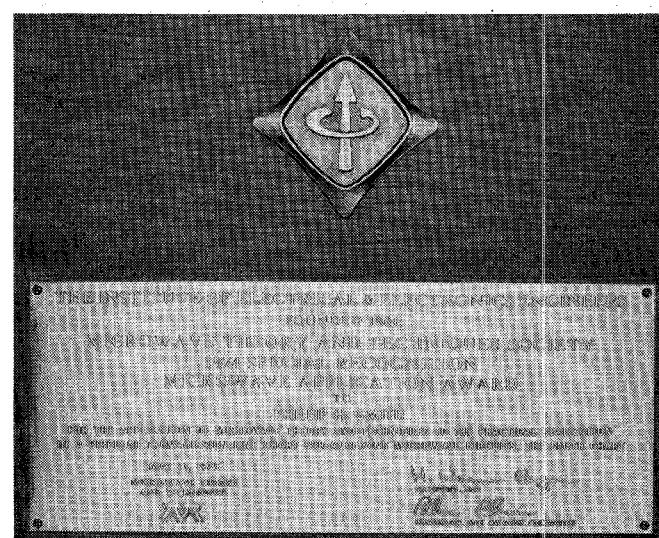
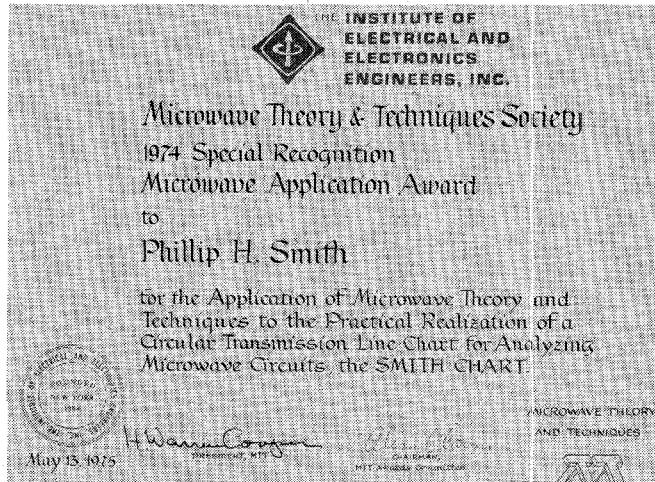
From 1968 to 1971 he worked as a Research Assistant in the Solid-State Microwave Electronics Group, Research Laboratory of Electronics, M.I.T., Cambridge, Mass., where he was engaged in the characterization and modeling of avalanche diodes for use in microwave amplifiers and oscillators. Since 1971 he has been a Staff Member at M.I.T. Lincoln Laboratory in the satellite communications group. At Lincoln he has been involved in the development of flight-qualified multiple-diode millimeter wave IMPATT amplifiers and the

characterization and testing of tracking antennas for the IES 8/9 communications system.



Dean F. Peterson, III, receives the Microwave Application Award.

A special Microwave Application Award was presented to Phillip H. Smith for the "Application of Microwave Theory and Techniques to the Practical Realization of a Circular Transmission Line Chart for Analyzing Microwave Circuits; The SMITH CHART." Mr. Smith's award is a special recognition for the invention and application of the Smith Chart, one of the most widely used design tools in the microwave field. A photograph of the certificate and Mr. Smith's biography are shown.

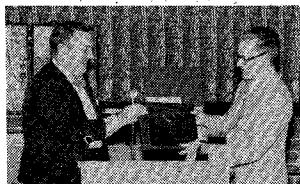


**Phillip H. Smith** (A'30-SM'46-F'52-LF'70) was born in Lexington, Mass., on April 29, 1905. He received the B.S.E.E. degree from Tufts University in electrical communications in 1928.

In 1928 he joined the technical staff of Bell Telephone Labora-

tories with the Radio Research Department, Deal, N.J., where he became involved in the early development of transmission lines and directional antennas for the Bell System's shortwave overseas radio telephone. During this time he developed early forms of the "Smith Chart." From 1935 to the outbreak of World War II, he was engaged in the design and installation of directional antenna equipment for commercial AM radio broadcasting, and during World War II with the design and development of microwave antennas and components for a number of Navy radar systems. Following World War II he worked on commercial FM radio broadcasting antenna designs and invented the "Cloverleaf" antenna merchandised by Western Electric Company. Subsequently he has been involved in military weapon system studies, and supervised groups responsible for their high-frequency components. He has 20 U.S. patents in the microwave field including the basic patent on the transmission-line matching stub, the Cloverleaf antenna, and the optimum power ratio coaxial transmission line. He has published more than 35 papers on antennas and transmission lines, and is the author of a book entitled *Electronic Applications of the Smith Chart—in Waveguide, Circuit, and Component Analysis* (New York: McGraw-Hill, 1969). He also authored an article on the Smith Chart for *The Encyclopedia of Electronics* (New York: Reinhold, 1962). Since his retirement from Bell Laboratories in 1970 he has organized a small company—Analog Instruments Company of New Providence, N.J.—which initially merchandised simple navigational instruments for light aircraft, but more recently his charts and a dozen or more chart related items. His charts, currently selling at the rate of about a ton per year (9 million copies to date) reach nearly every civilized country on earth.

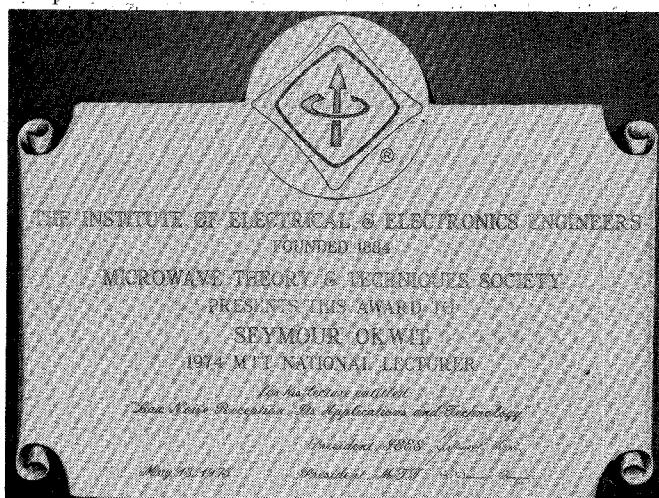
Mr. Smith has served on and chaired numerous IEEE committees including technical standards Committee 2 on Antennas and Waveguides. He is a past member of Commission 6 of URSI and a member of the Delta Chapter of Tau Beta Pi.



Special Microwave Application Award presented to Phillip H. Smith.

### *National Lecturer's Plaque*

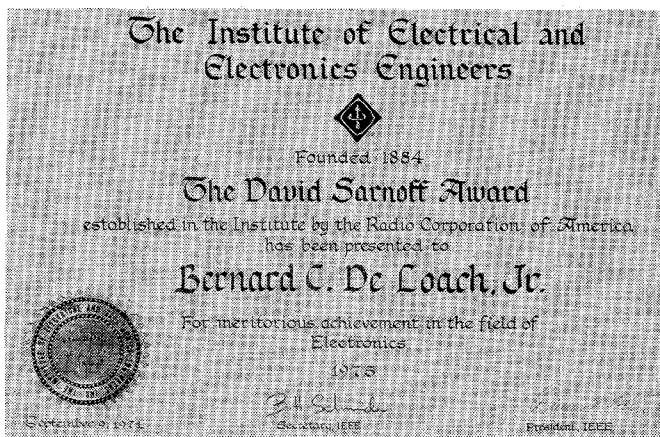
Seymour Okwit, 1974 MTT National Lecturer, was presented, in absentia, the National Lecturer's Plaque for his lecture entitled: "Low Noise Reception, Its Applications and Technology." Mr. Okwit spoke at 16 MTT chapters during 1974 and 2 chapters in 1975. A summary of his talk is included in the December 1974 issue of the IEEE TRANSACTIONS ON MICROWAVE THEORY and TECHNIQUES. A photograph of the National Lecturer's Plaque is shown.



## IEEE AWARDS

### *David Sarnoff Award*

Bernard C. DeLoach, Jr. (F), head of the Gallium Arsenide Department at Bell Laboratories, Murray Hill, N.J., received the 1975 David Sarnoff Award "for contributions to, and leadership in the development of the impact avalanche and transmit-time (IMPATT) device." Dr. DeLoach received a certificate, a bronze medal, a gold medal, and a cash sum of \$1000. Presentation of the award was made by John J. Guerrera, past President of the IEEE (1974). Photographs of the certificate and medal, and Dr. DeLoach's biography are shown.



**Bernard C. DeLoach, Jr. (F'72)**, was born in Birmingham, Ala., on February 19, 1930. He received the B.S. degree in physics from Alabama Polytechnic Institute, the M.S. degree in physics from Auburn University, Auburn, Ala., and the Ph.D. degree in physics from Ohio State University, Columbus (where he was an Ohio State University Fellow), in 1951, 1952, and 1956, respectively.

He joined Bell Laboratories in 1956 as a member of the Radio Research Department, Holmdel, N.J. He has been concerned with the study of microwave filters, microwave parametric devices and solid-state microwave power sources, and light-emitting diodes. In February 1973 he assumed his present position as Head of the Gallium Arsenide Laser Department, Bell Laboratories, Murray Hill, N.J., and is concerned with the development of solid-state lasers. These devices are potentially useful as sources for optical communication systems. He has made significant contributions to microwave solid-state devices and their circuit applications. In particular, he was responsible for initiating the program which led to the first report of IMPATT operation and to many significant advances in IMPATT device development. He is the author of numerous published technical articles and has been granted eleven patents for his inventions.

Dr. DeLoach is a member of Pi Mu Epsilon, Sigma Xi, and Sigma Pi Sigma. He has served in many areas of IEEE activities and is

currently Chairman of the Physics Subcommittee of the Physical Sciences and Mathematics at Auburn University.

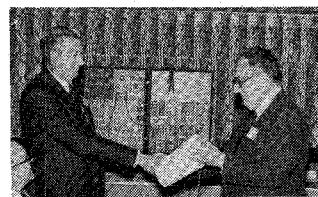


Bernard C. DeLoach, Jr., receiving the David Sarnoff Award from John Guerrera.

#### *Fellow Certificates*

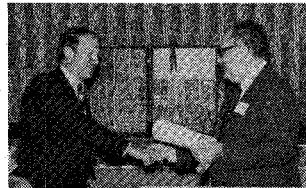
Two MTT members were presented Fellow Grade Certificates at the 1975 banquet. These were:

Gordon R. Harrison: For contributions and technical leadership in the development of microwave ferrimagnetic compounds and their applications in microwave components and integrated circuits.



Gordon R. Harrison receiving his Fellow Grade Certificate.

George P. Rodrigue: For contributions to the characterization and application of ferrimagnetic garnets in microwave devices.



George P. Rodrigue receiving his Fellow Grade Certificate.