

# 1985 MTT-S Awards

DON PARKER, FELLOW, IEEE

THE FOLLOWING AWARDS were presented at the Annual Symposium Banquet by MTT-S President, Harlan Howe, Jr.:

Microwave Career Award—Nathan Marcuvitz  
Harold M. Barlow  
Microwave Prize—Karl B. Niclas  
Brett A. Tucker  
Microwave Application Award—James Cheal  
Distinguished Service Award—G. P. Rodriguez  
Distinguished Microwave Lecturer—Paul Greiling  
Sander Weinreb

In addition to the above awards, Bruno Weinschel, IEEE President-Elect, presented Fellow Awards to two members of MTT-S. President Howe also presented the Past President's Pin to H. George Oltman. Certificates of Meritorious Service were given to Stephen Adam and Fred Rosenbaum for their many years of service to the Society. Certificates of Recognition were given to Tatsuo Itoh, past editor of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES (1983-1985), Stephen Adam, Steering Committee Chairman, and Ferdo Ivanek, Technical Program Chairman for the 1984 MTT-S Symposium. Norman Dietrich and Eikichi Yamashita were given Certificates of Recognition for their contributions as Associate Editor, Transactions Patent Abstracts, and Associate Editor, Transactions Asian Abstracts, respectively. Three retiring AdCom members were also given Certificates of Recognition for their past service: James Degenford, Robert Hicks, and James Roe.

## 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. Two Career Awards were presented in 1985, one to Nathan Marcuvitz and the other to Harold M. Barlow. Both have made contributions to the microwave field over the past fifty years and are active contributors today.

Dr. Marcuvitz has made major contributions in the microwave network formulation of electromagnetic-field problems. He helped to rephrase Schwinger's theoretical results in engineering terms. His work was very systematic and thorough. He exerted great influence through his seminars for colleagues and students. As an extension of this work, Marcuvitz also derived transmission-line formulations for nonuniform waveguides and for periodic structures. At the MIT Radiation Laboratory, he developed

precise microwave measurement methods for waveguide discontinuities. He showed that the results for small-aperture theory derived first by Lord Rayleigh and later by H. A. Bethe can be deduced rigorously from general theoretical considerations. He rephrased the small-aperture theory in simple and practical engineering form and derived theoretical expressions for many discontinuity structures. Almost one third of the discontinuities contained in the *Waveguide Handbook* were treated in this way by Dr. Marcuvitz.

Dr. Marcuvitz developed the radial transmission-line theory and the spherical transmission-line theory. He was the first to explain leaky waves and to show how to compute their properties. He has attempted to simplify problems in nonlinear and turbulent plasmas by using microwave network formulations.

Dr. Marcuvitz has contributed over thirty publications or paper presentations. He edited the *Waveguide Handbook*, Volume 10, wrote Chapter 8 of *Principles of Microwave Circuits*, Volume 8, of the MIT Radiation Laboratory Series. He coauthored the book *Radiation and Scattering Waves* with L. Felsen.

During 1963 and 1964, while on leave of absence from the Polytechnic Institute of Brooklyn, Dr. Marcuvitz became Assistant Director of Defense Research and Engineering for the Department of Defense. In 1965, he became an Institute Professor, the first appointment of this kind at the Polytechnic Institute of Brooklyn.

Dr. Marcuvitz's Career Award Citation reads, "For a Career of Meritorious Achievement and Outstanding Technical Contributions in the Field of Microwave Theory and Techniques." The award includes a plaque, a certificate, and \$2500.



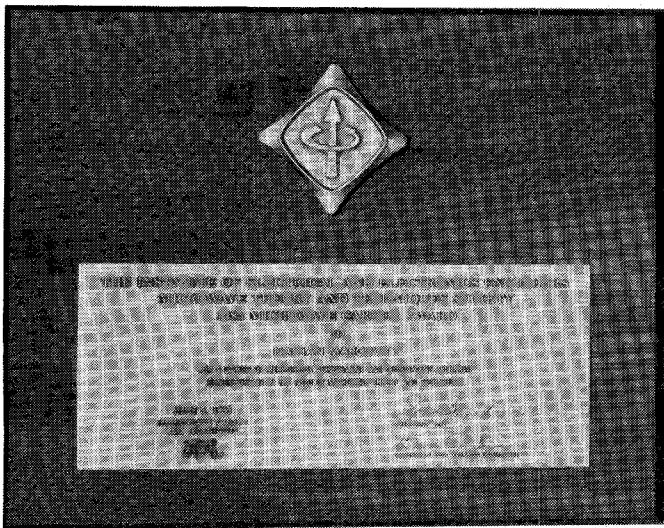
Nathan Marcuvitz (S'36-A'37-M'55-SM'57-F'58-LF'79) was born on December 29, 1913, in New York, NY. He received the B.S. degree in electrical engineering in 1935, the M.S. degree in 1941, and the Doctorate in electrophysics in 1947, all from the Polytechnic Institute of Brooklyn. He joined the RCA Laboratories as a Student Engineer in 1936 and performed research on electron tubes, iconoscopes, and orthicons for television applications. Dr. Marcuvitz joined the Radiation Laboratory of the Massachusetts Institute of Technology in December 1941, where he was engaged in microwave research until 1946.

Dr. Marcuvitz returned to the Polytechnic Institute of Brooklyn in 1946 as an Assistant Professor in the Department of Electrical Engineering. He obtained an Associate Professorship in 1949 and a Full Professorship in 1951. In 1957, he was appointed Director of the Microwave Research Institute, serving in this capacity until 1961, when he became Chairman of the newly formed Department of Electrophysics. Shortly thereafter and

until 1963, Dr. Marcuvitz served as Vice-President of Research as well as Acting Dean of the Graduate Center. He was appointed Dean of Research and Dean of the Graduate Center at the Polytechnic Institute of Brooklyn in 1965 and then became a Institute Professor.

In February 1966, Dr. Marcuvitz joined the faculty of the School of Engineering and Science at New York University as Professor of Applied Physics. He returned to the newly merged Polytechnic Institute of New York with the same position and is currently an Institute Professor.

Dr. Marcuvitz was elected to the National Academy of Engineering in 1978. He is a Life Fellow of the IEEE, a member of the American Physical Society, Tau Beta Pi, Eta Kappa Nu, and Sigma Xi.



### Microwave Theory and Techniques Society 1985 Microwave Career Award

to

**Nathan Marcuvitz**

for a career of meritorious achievement and outstanding technical contribution in the field of microwave theory and techniques.



June 5, 1985

*John S. Parker*  
President, MTT

*Don Parker*  
Chairman  
MTT Awards Committee

MICROWAVE THEORY  
AND TECHNIQUES



Dr. Harold M. Barlow founded at University College, London, the most important university center in microwaves in Great Britain after World War II. The laboratories had been completely bombed out during the war and he had to build up all the resources for this new research school. He trained many students who later became prominent in their own right.

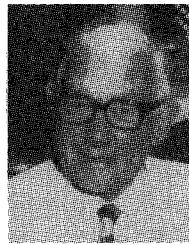
He has published about fifty papers including topics on microwave measurements, surface waves, and oversized circular waveguides for telecommunications. His pioneering contributions, both theoretical and experimental, on

surface waves were his most important. He wrote three books: *Microwaves and Waveguides*, 1950, *Microwave Measurements* (with A. L. Cullen), 1952, and *Radio Surface Waves* (with J. Brown), 1961.

Dr. Barlow holds Honorary Doctor of Science degrees from three universities: Heriot Watt University, Edinburgh University, and Sheffield University, England. He was the first person in microwaves to be elected a Fellow in the Royal Society.

Dr. Barlow's citation reads, "For a Career of Meritorious Achievement and Outstanding Technical Contributions in the Field of Microwave Theory and Techniques." His award consists of a plaque, a certificate, and a check for \$2500.

Because of his age and severe arthritis, it was not possible for Dr. Barlow to attend the Symposium. He was presented the award earlier in the year in England. He wrote, "I cannot tell you how sorry I am that I was unable to attend the award banquet and to receive my prize there. As you know, I value enormously the honor you have done me and I appreciate particularly the recognition you have so kindly given to my early work on microwaves at the University College, London.... With the \$2500 as part of the award, I have in mind to ask University College, London, if they would agree to set up a MTT lecture to be given perhaps every second year in my old department. Please accept...my warmest thanks for this most prestigious award, which I very deeply appreciate. With kindest regards, Harold M. Barlow."



Harold M. Barlow (SM'54-F'56-LF'78) was born on November 15, 1899 in London, England. He received the B.S. (engineering) degree in 1921 and the Ph.D. (science) in 1924 from London University. During the First World War, he served with the British Navy working on long-wave radio in submarines. For his work, he received from the Admiralty the citation "has performed valuable service in connection with the development of apparatus for naval communications." After graduating from London University, he joined his father in the family electrical contracting business, Barlow and Young Ltd. He began his long academic career in 1924, when he accepted a post at the College of London as Assistant Lecturer in Design of Electrical Machines. His career at London University was broken only by service with the British Air Ministry during the six years of the Second World War. During World War II, he worked on radio, including microwaves, and became Superintendent of the Radio Department at the Royal Aircraft Establishment, Farnborough, England.

Dr. Barlow is now Professor Emeritus of University College, London, having retired in 1967 after serving as Head of the Department of Electronic and Electrical Engineering for seventeen years. During his career, he has participated in most of the varied activities of professional electrical engineers. He was a Director of Marconi Instruments Ltd., a Consulting Engineer with his own firm Barlow, Leslie, and Partners, and involved in a wide variety of academic pursuits.

Dr. Barlow has received numerous honors and awards. He has Honorary Doctor of Science Degrees from Heriot-Watt University, Edinburgh, and Sheffield University, England. He is an IEEE Life Fellow and a Fellow of the Royal Society (1961). He is recipient of the Faraday Medal (IEE), 1967, Dellingen Gold Medal (International Radio Union), 1969, Harold Hartley Medal, (Institute of Measurement and Control), 1973, Mervin J. Kelly Award (IEEE), 1975, and the Kelvin Premium, Fleming Premium, J. J. Thompson Premium, and the Oliver Lodge Premium, all IEE awards. Dr. Barlow is also an Honorary Member of the Japanese Institute of

Electronics and Communications Engineers, a Foreign Associate of the U.S. National Academy of Engineering, 1979, and was Chairman of the British National Committee for Radio Science, 1968.



### Microwave Theory and Techniques Society 1985 Microwave Career Award

to

**Harold M. Barlow**

for a career of meritorious achievement and outstanding technical contribution in the field of microwave theory and techniques.



June 5, 1985

*St. John S.* *Don Parker*  
President, MTT  
Chairman  
MTT Awards Committee

MICROWAVE THEORY  
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### Microwave Prize

The Microwave Prize is awarded annually for the paper making the most significant contribution in the field of interest to the Society among those appearing in an IEEE publication during the year ending June 30th. The 1985 Microwave Prize was awarded for the paper, "On Noise in Distributed Amplifiers at Microwave Frequencies," IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES, vol. MTT-31, August 1983.

The authors, Karl B. Niclas and Brett A. Tucker, each received a certificate and a check for \$500. A biography of each author and copies of the certificates follow.



**Karl B. Niclas** (M'63-SM'80) was born on November 11, 1930, in Ludenscheid, Germany. He received the Dipl.-Ing. and the Doctor of Engineering degrees from the Technical University of Aachen, West Germany, in 1956, and 1962, respectively.

In 1956, he joined the Telefunken G.m.b.H., Ulma-Donau, West Germany, where he was engaged in research and development of low-noise and medium-power traveling-wave tubes. In 1958, he became Head of the TWT Section and Assistant Manager of the company's Microwave Tube Department. From April 1962 until November 1963, he was employed as Senior Project Engineer by the General Electric Microwave Laboratory at Stanford, CA. Subsequently, Dr. Niclas joined the Technical Staff of Watkins-Johnson Company, Palo Alto, CA, where he is presently a Consultant to the Vice-President, Devices Group. From 1967 until 1976, he was Manager of the company's Tube Division and prior to that he was Head of the Low-Noise TWT Research and Development Section. His research and development activities in the field of microwave tubes included the design of low-noise and medium-power TWT's, as well as the development of advanced permanent magnet focusing structures for low-noise TWT's and new concepts of achieving high efficiencies in power TWT's. His current efforts are focused on very wide-band GaAs FET amplifiers and power combining techniques.

Dr. Niclas received the 1962 Outstanding Publications Award of the German Society of Radio Engineers (NTG). He has published more than 30 papers on microwave devices and holds seven patents in the same field.



**Brett A. Tucker** was born in Elizabeth, NJ, on January 13, 1951. He received the B.S. degree in physics from the California Institute of Technology in 1973. From 1973 to 1975, he was Teaching Assistant and from 1975 to 1980 a Research Assistant in the Physics Department at the University of California at Berkeley. His area of research was the application of Josephson junctions in low-noise microwave receivers.

In 1980, he joined Watkins-Johnson Company, Palo Alto, CA, where he has been working on the design of monolithic GaAs MIC's as well as broad-band hybrid amplifiers. He is currently a Ph.D. candidate at the University of California, Berkeley.

Mr. Tucker is a member of Tau Beta Pi.



### Microwave Theory and Techniques Society

#### 1985 Microwave Prize

to  
**Karl B. Niclas**

for a significant contribution to the field of endeavor of the MEEE MTT Society in his paper, co-authored by Brett A. Tucker, entitled "On Noise in Distributed Amplifiers at Microwave Frequencies," published in the IEEE Transactions on Microwave Theory and Techniques, Volume MTT-31, Number 8, August 1983.



June 5, 1985

*St. John S.*  
President, MTT

*Don Parker*  
Chairman  
MTT Awards Committee

MICROWAVE THEORY  
AND TECHNIQUES



### Microwave Theory and Techniques Society

#### 1985 Microwave Prize

to  
**Brett A. Tucker**

for a significant contribution to the field of endeavor of the MEEE MTT Society in his paper, co-authored by Karl B. Niclas, entitled "On Noise in Distributed Amplifiers at Microwave Frequencies," published in the IEEE Transactions on Microwave Theory and Techniques, Volume MTT-31, Number 8, August 1983.



June 5, 1985

*St. John S.* *Don Parker*  
President, MTT  
Chairman  
MTT Awards Committee

MICROWAVE THEORY  
AND TECHNIQUES



### Microwave Application Award

The Microwave Application Award is presented aperiodically to an individual for an outstanding application of microwave theory and techniques. James Cheal was named recipient of the 1985 Microwave Application Award for contributions to the design, engineering development, and refinement of the OSM connector which came to be desig-

nated SMA. Mr. Cheal designed the prototype of the coaxial connector in 1958 to solve a systems need for broad-band stripline and microstrip circuits and components. He was the main contributor to the engineering development and refinement of the connector design. He also was largely responsible for coordinating and sorting the many suggestions and inputs from users and manufacturers, thereby enabling the final specification for the SMA design to be adapted with minimum difficulty in 1968. The attractiveness of the design was recognized soon after its introduction, and it is now widely used.

Mr. Cheal received a certificate and a check for \$1000. A brief biography of Mr. Cheal and a copy of the certificate follow.



James Cheal, (S'50-M'57) was born in 1924 at Sunfield, MI. He received his B.S.E.E. degree at Michigan State University in 1950. He worked for IBM for two years as a Field Engineer, and then joined Bendix Research Laboratories in 1952, where he was responsible for the development of missile guidance antennas. From 1955 to 1956, he was a Systems Engineer at the Burroughs Corporation and developed radar/computer interface equipment for the Sage System.

Mr. Cheal rejoined Bendix in 1956, where he worked on a wide range of microwave components including ferrite circulators, phase shifters, filters, mixers, directional couplers, and electronically scanned antennas. As the head of the Microwave and Antenna Group, he was responsible for the development of a miniaturized antenna and microwave subsystem.

Starting in 1962, Mr. Cheal was a Founder and Vice-President for Engineering of Omni Spectra, Inc. While at Omni Spectra, he continued development work on microwave integrated circuits, microwave subsystems, intrusion detectors, and microwave proximity fuse systems. Mr. Cheal left M/A-COM-Omni Spectra in 1983 to join Southwest Microwave, where he currently serves as a board member and a full-time Consultant.

Mr. Cheal was an active member of the Joint Military Industrial Committee which prepared the performance standards for RF connectors, including OSM (SMA) under MIL STD 39012. He was also member and Chairman of the Joint Industry Research Committee for Standardization of Miniature Precision Coaxial Connectors.

Mr. Cheal has published three papers and holds seven U.S. patents relating to antennas, phase shifters, and microwave intrusion alarms.

### Distinguished Service Award

The Distinguished Service Award honors an individual who has given outstanding service for the benefit and advancement of the Microwave Theory and Techniques Society.

The 1985 recipient of the Distinguished Service Award is G. P. "Pete" Rodrigue. Dr. Rodrigue has distinguished himself in meaningful service to the MTT-S and the IEEE for nearly twenty years. He helped institute exhibits at our Symposia and negotiated the first contracts with Horizon House. He was a strong proponent of page charges when the Society had a very limited budget. He began his service in 1965 as a member of the editorial board of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES and has served as a member of the Technical Program Committees for many International Microwave Symposia.

Dr. Rodrigue was first elected to AdCom in 1970 and served continuously through 1980. He was Vice-President in 1975 and President in 1976. He was Editor of the Newsletter for four years, Chairman of the Membership Services Committee, and Chairman of the Awards Committee for three years.

He was Chairman of the Steering Committee for the 1974 International Microwave Symposium in Atlanta. He was Keynote Speaker at the 1976 International Microwave Symposium in Cherry Hill, NJ. Pete was one of the organizers of the Atlanta Section joint MTT-S/AP-S Chapter and its first chairman.

Dr. Rodrigue has served as MTT-S representative on the IEEE Technical Activities Board and Division IV representative on the IEEE Publications Board. He has also served on several IEEE committees including the IEEE Board of Directors and its Executive Committee.

Dr. Rodrigue's citation reads "For his Outstanding and Dedicated Service to the Society." He received a plaque and a certificate.



G.P. (Pete) Rodrigue (S'56-M'65-SM'69-F'75) was born in Paincourtville, LA, in 1931 and received his undergraduate education at Louisiana State University. He received the Ph.D. degree in 1958 from Harvard University, working under Professor C. L. Hogan. From 1958 to 1968, he was with the Sperry Microwave Electronics Company in Clearwater, FL, where he worked on ferrite materials and devices, parametric amplifiers, ultrasonic devices, and microwave integrated circuits.

In 1968, he joined the faculty of the School of Electrical Engineering at Georgia Tech, where he is now a Regents' Professor. He teaches graduate and undergraduate courses in electromagnetics, solid state, and circuits. His research activities have included antenna measurements, and microwave devices. He was the recipient of Outstanding Teacher Award at Georgia Tech in 1971, 1971, and 1979. In 1984, he was awarded the first



### Microwave Theory and Techniques Society 1985 Microwave Applications Award

to

James Cheal

for contributions to the design, engineering, development and refinement of the OSM Connector which came to be designated SMA.



June 5, 1985

*Barbara S. Parker*  
President, MTT

MICROWAVE THEORY  
AND TECHNIQUES



Chairman  
MTT Awards Committee

IEEE Region 3 Outstanding Engineering Educator Award. He has served on a number of Institute Committees and was Chairman of the Georgia Tech Executive Board in 1981-82.

"Radio Astronomy—A Challenge to the Microwave Engineer." He has presented his lecture over thirty times to various chapters in the United States.

The award consists of a bronze plaque.

A brief biography of each Distinguished Lecturer along with a photograph of their plaques follow.



### Microwave Theory and Techniques Society

Presents this

#### Distinguished Service Award

to

**G. P. Rodriguez**

for his outstanding and dedicated service to the Society.



June 5, 1985

Charles A. Elton *President, IEEE*

MICROWAVE THEORY  
AND TECHNIQUES



### Distinguished Microwave Lecturer

The Distinguished Microwave Lecturer is selected annually by AdCom to present a lecture to MTT-S chapters on a subject of important and current interest to members. He must be an individual who has made significant contributions in the field of his talk. There were two Distinguished Microwave Lecturers during 1984-1985: Paul T. Greiling and Sander Weinreb.

The title of Dr. Greiling's lecture was "High Speed Digital IC Performance Outlook." He has presented his lecture over fifty times to chapters in the United States, Japan, and Europe. The title of Dr. Weinreb's lecture was

**Paul T. Greiling** (S'64-M'69-SM'82-F'85) received the B.S.E.E. degree in 1963, the B.S. degree in mathematics in 1963, the M.S.E.E. degree in 1964, and the Ph.D. degree in 1970 from the University of Michigan, Ann Arbor, MI.

He joined the faculty of Electrical Engineering at Northeastern University, Boston, MA, in 1970. While at Northeastern, he consulted for the MIT, Lincoln Laboratory in the area of IMPATT diodes. In 1972, he joined the faculty of Electrical Sciences and Engineering at the University of

California, Los Angeles, where he did research on the theoretical analysis and experimental characterization of microwave solid-state devices. He consulted for local industry on millimeter-wave semiconductor devices. In 1976, he did research on GaAs FET's at Sandia Laboratory, Albuquerque, NM, as a Visiting Faculty Member. In 1976, he joined the staff at Hughes Research Laboratory, Malibu, CA, where he has been responsible for the design, modeling, and testing of GaAs digital IC's. At present, he is Head of the GaAs IC Design and Analysis Section at Hughes Research Laboratories working on high-speed GaAs logic circuits and is an Adjunct Professor in the Electrical Sciences and Engineering Department at UCLA. Dr. Greiling plays a leading role in GaAs IC technology as evidenced by his list of invited talks, papers, and conference organizer/chairman positions. Dr. Greiling is a member of MTT-S ADCOM, Eta Kappa Nu, Tau Beta Pi, and Sigma Xi.



**Sander Weinreb** (S'56-M'63-SM'71-F'78) was born on December 9, 1936, in New York NY. He received the B.S.E.E. and Ph.D. degrees in electrical engineering from the Massachusetts Institute of Technology in 1958 and 1963, respectively. His thesis topic was a search for the galactic deuterium line using digital autocorrelation techniques.

From 1960 to 1963, Dr. Weinreb was a Research Assistant at M.I.T. engaged in investigations of varactor frequency multipliers and digital autocorrelation techniques. In 1963, he joined Lincoln Laboratory, where he was responsible for the radiometric equipment for the Haystack antenna.

In 1955, he joined the National Radio Astronomy Observatory (NRAO). Until 1977, he was Head of the Electronics Division and responsible for the development of radio astronomy equipment for the Green Bank, WV and Tucson, AZ observatories. In 1976, he took a two year leave to do research at the Radio Astronomy Laboratory of the University of California. He also taught at Berkley. He returned to NRAO to specialize in the development of low-noise devices.

Dr. Weinreb is the author of over 50 publications in the areas of radio astronomy observation, millimeter-wave receivers, and low-noise technology. He is a Fellow of the IEEE and a member of Sigma Xi, Eta Kappa Nu, Tau Beta Pi, and the International Scientific Radio Union. He is also an advisor to the European Institute for Millimeter-Wave Radio Astronomy and is a Research Professor at the University of Virginia.



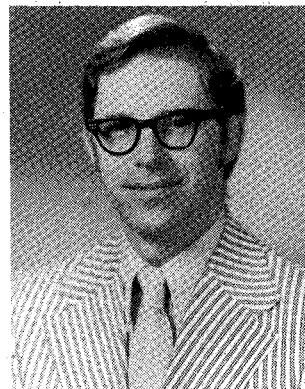


### IEEE Fellows

The IEEE Board of Directors elected 138 distinguished Senior Members to the grade of Fellow in 1984. Of these, six were endorsed by the Microwave Theory and Techniques Society.

The grade of Fellow is conferred in recognition of unusual professional distinction. It is awarded only at the initiative of the IEEE Board of Directors after a rigorous nomination and evaluation process. Fellow grade is one of unusual professional distinction conferred only by the Board of Directors upon a person of extraordinary qualifications and experience, who has made important individual contributions to one or more of the fields of electrical engineering, electronics, computer engineering and science, allied branches of engineering, and related arts and sciences. This grade is not conferred automatically upon nomination; only a fraction of those nominated are honored by elevation to Fellow.

The following members of MTT-S were elected Fellows of IEEE and chose to have their Fellow Certificates presented at the 1985 Symposium banquet. Bruno Weinschel, IEEE President-Elect, presented the Fellow Awards.



Edgar J. Denlinger

"For studies of microstrip transmission line characteristics, and the development of microwave solid-state devices and circuits."



Paul T. Greiling

"For contributions to the development and analysis of high-speed GaAs digital integrated circuits."

The following were elected Fellows with the endorsement of MTT-S but were presented their Fellow Awards elsewhere.

**Charles R. Boyd**, "For contributions to the advancement of the state-of-the-art of microwave ferrite control components."

**David C. Chang**, "For contributions to electromagnetic theory and applications."

**Toshio Makimoto**, "For development of optical guide-wave circuits and measurement techniques."

**Paul J. Meir**, "For pioneering the development of finline transmission medium and related components using photolithographic techniques."