

1989 MTT-S Awards

F. J. ROSENBAUM, FELLOW, IEEE

THIS YEAR the MTT-S Awards were presented in two different venues: the Plenary Session of the Symposium and the Awards Banquet. Presentations were made by MTT-S President Walt Gelnovatch to the following awardees:

Microwave Career Award	Harry F. Cooke and Alexander L. Cullen
Microwave Prize	Stephen A. Maas
Microwave Application Award	Kenneth L. Carr
Distinguished Service Award	Don Parker
N. Walter Cox Award	Richard A. Sparks
Distinguished Microwave Lecturers	Reinhard H. Knerr and Arnold H. Silver

Several society members received Service Awards. The Past Presidents Pin and a plaque were presented to Barry E. Spielman, and Martin V. Schneider was honored with the Meritorious Service Award. Other presentations included Certificates of Recognition to Charles Buntschuh, 1988 Symposium Steering Committee Chairman, and to Technical Committee Co-Chairmen Jesse Taub and James J. Whelehan, Jr. Derry Hornbuckle was recognized as 1988 Monolithic Circuits Symposium Chairman. Two retiring MTT-S Administrative Committee members were noted for their contributions to the Society: Paul Greiling and Ralph Levy, who is also the past Editor of the TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES.

MTT SOCIETY AWARDS

Microwave Career Award

The Microwave Career Award is presented aperiodically to worthy individuals for careers of meritorious achievement and outstanding technical contributions in the microwave field. Two such individuals were acclaimed this year.

Harry F. Cooke has been involved in microwaves since the 1940's. He is a pioneer in microwave semiconductor devices, first in Si bipolar transistors and later in GaAs FET's. He worked on the first solid-state radar and, with colleagues, holds the basic solid-state radar patent. He has been a strong contributor to microwave technology, both as a manager and as a working engineer, having authored

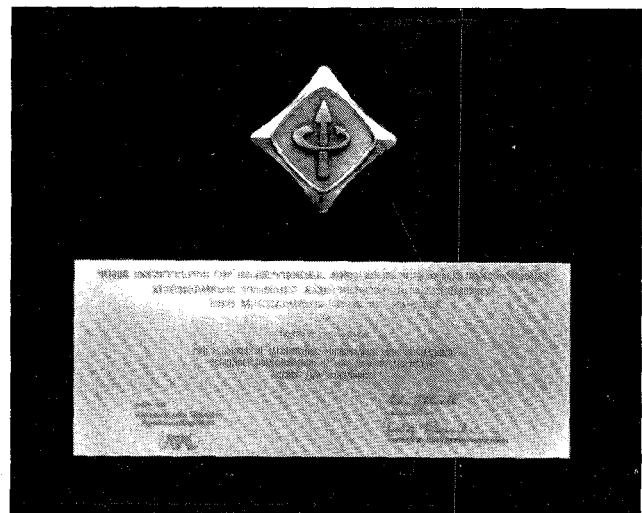
over 50 papers and 14 patents. Mr. Cooke's Career Award citation reads, "For a Career of Meritorious Achievement and Outstanding Technical Contributions in the Field of Microwave Theory and Techniques." The award consists of a plaque, a certificate, and \$2000.



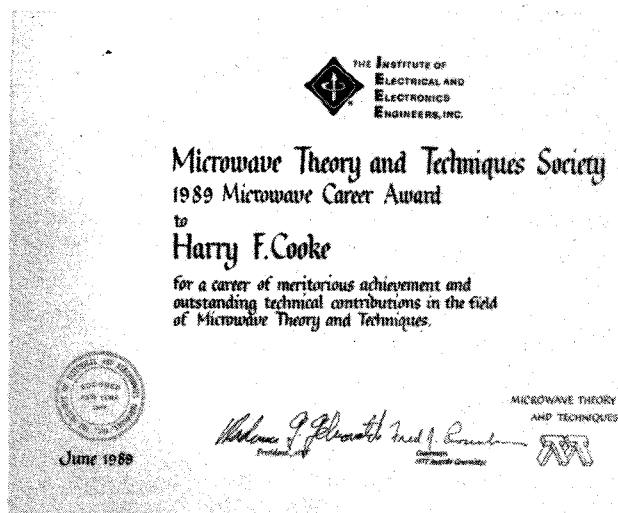
Harry F. Cooke (S'47-A'50-M'55-LM'87) was born in Little Rock, AR, in 1921. After serving with the R.A.F. and the U.S.A.A.F. (1941-1945), he graduated from the University of Arkansas in 1948 with the B.S.E.E. degree. His postgraduate work, at Southern Methodist University, was in the field of microwaves and nonlinear circuits. While at the University of Arkansas, his senior paper, on locked oscillators, won the Southwestern IEEE student prize.

Between 1948 and 1957 he worked in the area of instrumentation (U.S.D.A.), proximity fuzes, and low-noise vacuum tube amplifiers. In 1957 he joined the Semiconductor Research and Development Laboratory at Texas Instruments. While at T.I. he initially managed the applications group. Following this he worked with Roger Webster on the first solid-state TV receiver, FM receiver, and hand-held transceiver. He was a member of the team which developed the first bipolar microwave transistor and the first solid-state radar. In conjunction with two other team members, he holds the basic solid-state radar patent. From 1970 to 1979 he was manager of device design and analysis at Avantek. While at Avantek he published a number of tutorial papers, including one in the PROCEEDINGS OF THE IEEE on bipolar microwave transistors. In 1979 he joined Varian Associates as a senior scientist working on GaAs FET design and testing. He retired from Varian in 1987 and now works as an independent consultant in the design of microwave devices and test systems for amplifiers and devices. He also writes software for device design and automated test.

Mr. Cooke is the author of over 50 papers in the fields of VHF to MM devices and circuits and has 14 patents covering devices, circuits, and systems. He is a member of Tau Beta Pi.



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Alexander L. Cullen's microwave career also spans five decades. He was introduced to radar in England and worked on microwave antennas during the early days of World War II. After the war, he entered academic life and embarked on a course of developing microwaves in England, with an emphasis on antennas and microwave measurements. His Career Award citation reads, "For a Career of Meritorious Achievement and Outstanding Technical Contributions in the Field of Microwave Theory and Techniques." The award consists of a plaque, a certificate, and \$2000.



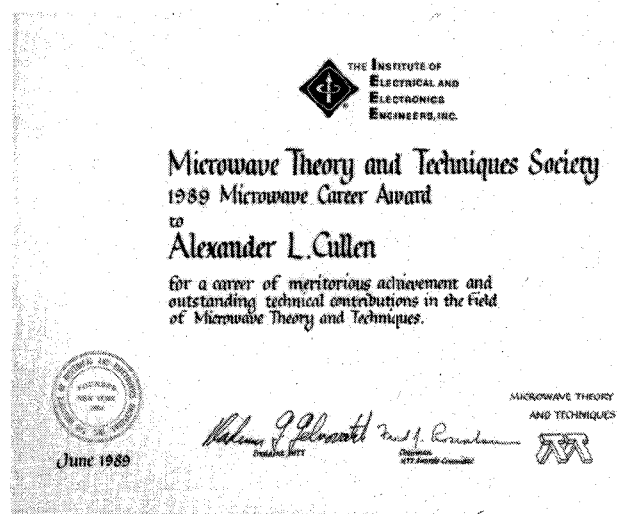
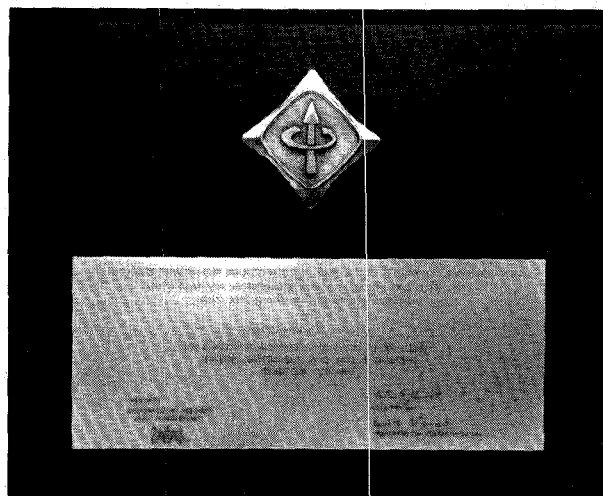
Alex L. Cullen (M'56-SM'60-F'67-LF'89) was born in Wood Green, London, in 1920. He was educated at Lincoln School and Imperial College London. Imperial College had at that time an excellent option in communications engineering. One of the lecturers on that course, David Tomba, gave a special lecture one day on the klystron. This was hot-off-the-press stuff since the classical Varian and Webster papers had only just been published, so it was tremendously exciting, and was the start of an enduring love of

microwave engineering in all its varied aspects.

In July 1940, he joined the staff of the Royal Aircraft Establishment in Farnborough, where he worked on radar. After a brief period touring the original "CH" chain of ground radar stations with a small team responsible for phasing the "aerials," as they were known as in the U.K. at that time, he returned to base at Farnborough to work on the newer 1.5 m wavelength "GCI" (ground control interception) radars, which he found more to his taste than the 5 to 10 m wavelengths used in the CH stations. Microwaves were coming nearer! At last he was put onto real microwave work in an antenna group working on shaping radiation patterns. The need to measure the result of theoretical design work held an interest for him as strong as the design work itself, and his subsequent research work has been largely in the two fields of microwave antennas and microwave measurements.

In 1946 he joined the staff of the Electrical Engineering Department at University College London at the invitation of Professor Harold Barlow, who had been Head of Radio Department at RAE, Farnborough, and had taken an interest in his work during that period. He helped Professor Barlow establish a research school in microwaves at UCL and collaborated with him in writing the book *Microwave Measurements*. In 1955 he was appointed to the first Chair in Electrical Engineering at Sheffield University, building up another microwave research group there. In 1967 he was invited to return to UCL as Pender Professor of Electrical Engineering on the retirement of Professor Barlow, who, however, re-

mained in the Department as an Honorary Research Associate. In 1980 Prof. Cullen was awarded a Senior Fellowship, tenable at UCL, which enabled him to concentrate wholly on research. He is currently an Honorary Research Associate in the Department of Electronic and Electrical Engineering at UCL, where he continues his research in antennas and measurements at microwave and millimeter-wave frequencies.

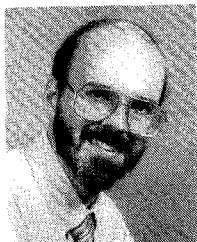


Microwave Prize

The Microwave Prize is awarded annually to the author or authors of a paper published in the MTT-S TRANSACTIONS, IEEE PROCEEDINGS, or other IEEE journal which is judged to be the most significant contribution to the society's field of interest. The award consists of a certificate, \$1000, and a feature publication in the MTT-S TRANSACTIONS.

The 1989 Microwave Prize was awarded to Dr. Stephen A. Maas for his paper "Two-Tone Intermodulation in Diode Mixers," which appeared in the March 1987 issue of

the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES (vol. MTT-35, pp. 307-314).



Stephen A. Maas (S'80-M'83) received the B.S. and M.S. degrees in electrical engineering from the University of Pennsylvania in 1971 and 1972, respectively, and the Ph.D. degree, also in electrical engineering, from UCLA in 1984. His dissertation research involved the analysis of GaAs MESFET mixers, and was one of the first applications of harmonic-balance analysis to microwave FET circuits.

From 1973 to 1974 he developed instrumentation for lidar studies of the atmosphere at the

U.S. National Oceanic and Atmospheric Administration's Environmental Research Laboratories in Boulder, CO. In 1974 he joined the National Radio Astronomy Observatory in Socorro, NM, where he was responsible for the development of the cryogenic low-noise receivers for the Very Large Array (VLA) radio telescope program. Since 1978 he has been involved in the research and development of microwave and millimeter-wave systems and components for space applications, first at the Hughes Aircraft Company and later at TRW. The components he developed include FET and HEMT amplifiers, millimeter-wave diode mixers, active FET and HEMT mixers (including a 45 GHz HEMT mixer), and integrated millimeter-wave down-converters using HEMT low-noise amplifiers. In 1985 he joined the Aerospace Corporation as a Research Scientist, working on the analysis of nonlinear microwave circuits and systems. At Aerospace his primary interests are in the application of Volterra-series techniques to nonlinear microwave CAD, and in practical means for improving the dynamic range of microwave systems and components. He also teaches electronics and microwave courses at UCLA and consults for companies in the Los Angeles area.

Dr. Maas is the author of two books on microwave subjects, *Microwave Mixers* and *Nonlinear Microwave Circuits*, published by Artech House Books (Norwood, MA) in 1986 and 1988, respectively.

ter to the staff of the Eastern Virginia Medical School at Norfolk, VA. A second system was installed in Japan in 1984 at the Nippon Medical School Hospital. Results from these and later systems have shown that microwave thermography is effective in monitoring the course of treatment, and that the application of heat, regardless of the technique or frequency, can be used to enhance detection. Other medical applications have developed from his work. One is a microwave sterilizing device for use in kidney dialysis. This patented device is intended to reduce the risk of contamination and infection in dialysis patients.



Kenneth L. Carr (S'53-A'54-M'59-SM'81-F'86) was born in Cambridge, MA, on February 15, 1932. He received the B.S. degree in electrical engineering from Tufts University in 1953.

During the past thirty-six years, he has worked at Philco, Sylvania, and Airtron. In 1958 he cofounded Ferrotec, Inc., serving initially as Technical Director and later as President. Following the acquisition of Ferrotec in 1970 by M/A-COM, Inc., he became Senior Vice President and Technical Director. In January 1985,

while maintaining his position at M/A-COM, he cofounded Microwave Medical Systems, Inc., serving as its Chairman and Technical Director.

Mr. Carr is currently a Trustee of Wentworth Institute of Technology, Boston, MA; a Director of the East Coast Aeronautical Technical School, Bedford, MA; a Member of the staff of the Eastern Virginia Medical School, Norfolk, VA; and a member of the Engineering Advisory Council for Southeastern Massachusetts University, North Dartmouth, MA. He is also serving as Technical Advisor to both the University of Pennsylvania and the Medical Physics Department at Tufts New England Medical Center. In conjunction with his duties at the University of Pennsylvania, Mr. Carr is now serving as Chairman of their Bioengineering Advisory Council. He also maintains membership in the AAPM, NAHG, BEMS, IMPI, RRS, and the Association of Old Crows. He was the MTT Distinguished Microwave Lecturer for 1985-1986. He recently accepted a position on the newly formed Health Care Engineering Policy Committee of the IEEE.

Mr. Carr presently holds 15 patents with two patents pending, and is widely published in refereed journals. He was the recipient of the 1978 IR-100 Award for the TERRASCAN Underground Utility Locator. Much of his recent work has been on the development and application of microwave techniques to medicine, in particular, the detection and treatment of cancer, for which he received NASA's Certificate of Recognition in 1980 and again in 1983 for his technical innovations and scientific contributions.

Microwave Theory and Techniques Society 1989 Microwave Prize

to
Stephen A. Maas

for a significant contribution to the field of endeavor of the IEEE MTT Society in the paper entitled:
"Two-Tone Intermodulation in Diode Mixers" published in the IEEE Transactions on Microwave Theory and Techniques, Volume MTT-35, March 1987.



June 1989

William J. Flannery
President, MTT

Frederick J. Rombach
Chairman, MTT Award 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. The eligibility requirements are creation of a new device, component, or technique, novel use of components, or both. This year's recipient is Mr. Kenneth L. Carr. His citation reads, "For the Application of Microwave Technology to the Detection and Treatment of Cancer."

Mr. Carr has been involved in the application of microwave technology to medicine for many years. In 1979, under NASA support, he delivered a microwave radiome-

Microwave Theory and Techniques Society 1989 Microwave Applications Award

to
Kenneth L. Carr

For the Application of Microwave Technology to the Detection and Treatment of Cancer.



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President, MTT

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Chairman, MTT Award Committee

MICROWAVE THEORY
AND TECHNIQUES



Distinguished Service Award

The Distinguished Service Award honors an individual who has given outstanding service over a sustained period for the benefit and advancement of the Microwave Theory and Techniques Society. This year's recipient is Dr. Don Parker, Assistant Manager, Radar Microwave Laboratories, Hughes Radar Systems Group.

Dr. Parker has been a mainstay of MTT-S. His first association was as Secretary to the Administrative Committee (AdCom) in 1972, then as elected member from 1973 through 1982. He served as Editor of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES from 1975 to 1977 and has been a member of the editorial review board since 1970. As a member of AdCom, Dr. Parker had many assignments, including MTT-S representative to the Solid State Circuits Council (1973-1975); Meetings and Symposia Committee (1973-1974); Chairman, Publications Evaluation Committee (1982); Long Range Planning (1982). He was Vice President of the Society in 1978 and President in 1979. He was Chairman of the Awards Committee from 1983 to 1986. Dr. Parker is presently Chairman of the MTT-S Past President Council.

He has been involved in the International Microwave Symposium management as Chairman of the Technical Program Committee for the 1981 Symposium and as a member of the Technical Program Committee of many MTT-S symposia. He was Vice-Chairman of the 1989 International Microwave Symposium and is Chairman of the 1994 event. He has also served IEEE as a member of the IEEE Technical Advisory Board (TAB) Awards Review Committee.

Don Parker has contributed to MTT-S in a variety of ways, many visible, some less obvious. His opinions are invariably well reasoned, and his style is warm and cooperative. He is one of those rare contributors who gives much and asks little. We are proud to recognize him with the 1989 Distinguished Service Award, whose citation reads, "For His Outstanding and Dedicated Service to the Society."



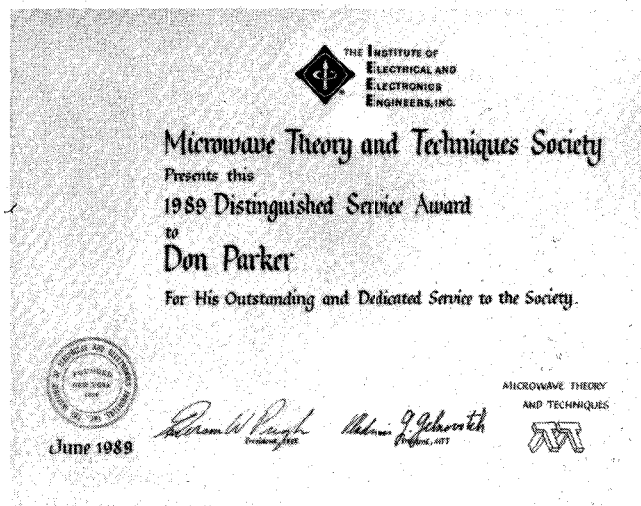
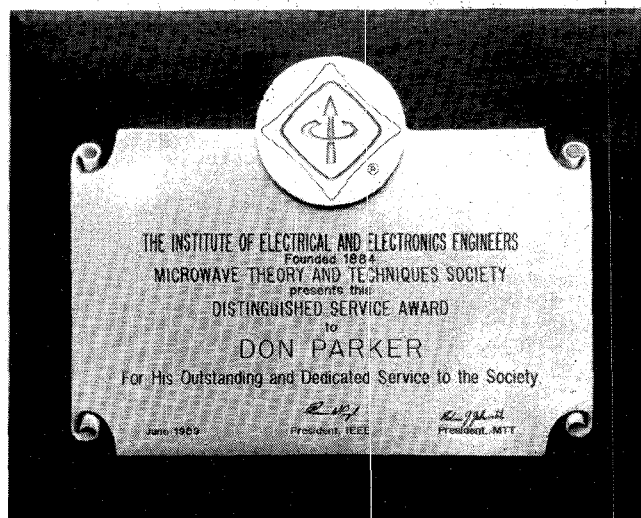
Don Parker (S'61-M'63-SM'73-F'82) was born in Ogden, UT, in 1933 and received his undergraduate education in electrical engineering at Brigham Young University. He received the M.S. degree from Harvard University in applied physics in 1957, and a doctorate of science (D. Sc.) in electrical engineering from the Massachusetts Institute of Technology in 1964.

He was a member of the Technical Staff of MIT Lincoln Laboratories from 1956 to 1961 and from 1964 to 1969. He designed and devel-

oped solid-state microwave power sources including frequency multipliers and IMPATT diode oscillators. From 1961 to 1964, he served as a lieutenant in the U.S. Air Force and assisted in the development of an R&D program in the Electronic Systems Division at Hanscom Field, Bedford, MA. Dr. Parker joined the Stanford Research Institute in October 1969 and became manager of the Electromagnetic Techniques Laboratory in 1970. The laboratory developed state-of-the-art microwave components, antennas, and subsystems for radar and communication systems. He helped develop the use of automatic network analyzers for

making rapid broad-band radar cross-section measurements. Dr. Parker joined Hughes Aircraft Company in 1976 as manager of the Microwave Department in the Missile Systems Group. Later he became manager of the Radar Laboratory, where he directed a staff of 150 scientists, engineers, and technicians in the design and development of RF subassemblies for tactical missile radars. He managed the design teams that developed the solid-state transmitter for the Phoenix missile, the solid-state transmitter, guidance antenna, fuze antenna, data link, and RF processors for the AMRAAM validation missile. The millimeter-wave sensor for the WASP missile was developed by design teams under his direction. Dr. Parker transferred to Hughes Radar Systems Group in 1986 as an Assistant Manager, Radar Microwave Laboratories, and is responsible for all active array programs in the Engineering Division.

Dr. Parker was awarded the Centennial Medal by the IEEE Microwave Theory and Techniques Society in 1985.



N. Walter Cox Service Award

The N. Walter Cox Award honors a contributor to MTT-S who is cited "For Exemplary Service Given in a Spirit of Selfless Dedication and Cooperation." It has been established in recognition of the qualities of N. Walter Cox and his service to the society prior to his untimely death on June 29, 1988. The Award was presented for the first time, at the 1989 Awards Banquet, by his wife, Mrs. Mary Ann Cox, and their daughters Carolyn and Anna.

Walter Cox approached every person or problem with a positive and enthusiastic attitude. He was diligent, courageous, flexible, and untiringly gave support to others. The N. Walter Cox Award is given aperiodically to a society volunteer whose efforts on behalf of MTT-S best exemplify the spirit and dedication of Walter Cox.

The first recipient of the Award is Richard A. Sparks, a long-time member of the MTT-S Administrative Committee and a past President (1982) of the society. Even after achieving the highest elective office of the Society, Dick has continued to serve on both technical and administrative committees, most recently as MTT-S International Liaison Chairman. His selection had the unanimous support of the Awards Committee and of AdCom.

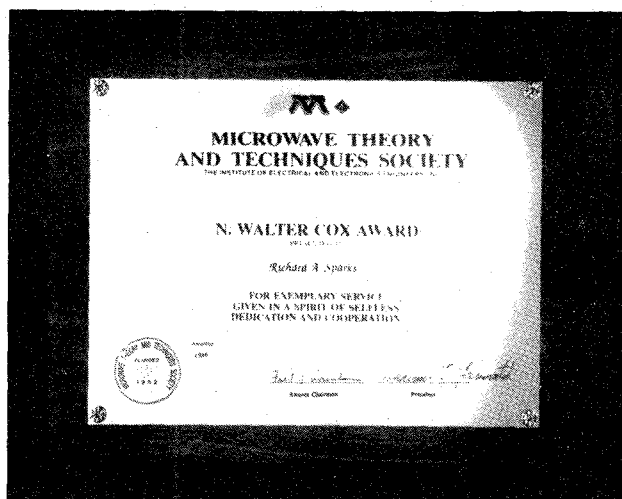


Richard A. Sparks (M'60-SM'76) was born in Philadelphia, PA, on December 16, 1931. He graduated from the Central High School and spent four years in the U.S. Navy during the Korean War. He received the B.A. degree in physics from Temple University in 1958 and the M.S. degree in physics from the University of Maryland in 1962.

His early professional employment at Johns Hopkins Applied Physics Laboratory in microwave receiver and transmitter design was followed by several years with Litton Systems, Inc., in EW component development and a one-year stint at Microwave Associates as YIG product line manager. Since 1967, he has been at the Raytheon Company, Missile Systems Laboratories, initially as a Principal Engineer in the Microwave and Antenna Systems Department and subsequently as the Department Manager for five years. He currently is a Consulting Engineer on the staff of the Radar Systems Laboratory Manager engaged in advanced technology programs and MMIC applications.

Mr. Sparks has been a member of the IEEE Microwave Theory and Techniques Society since 1960 and served as Program Chairman of the Washington, DC, Chapter in 1964-1965. On moving to the New England area in 1966 he was a member of the Local Arrangements Committee for the 1968 International Microwave Symposium and Secretary-Treasurer, Vice Chairman, and Chairman of the Boston MTT-S Chapter during the period 1967-1970. He was an appointed member of the MTT-S Administrative Committee from 1970 to 1973 and an elected member from 1974 to 1982, serving as Vice President and President in 1981 and 1982, respectively. Following three years as ex-officio member of AdCom, Mr. Sparks has been Chairman of the International Liaison Committee since 1984. He was a recipient of the IEEE/MTT-S Centennial Medal in 1984 and the MTT-S Meritorious Service Award in 1986.

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Distinguished Microwave Lecturers

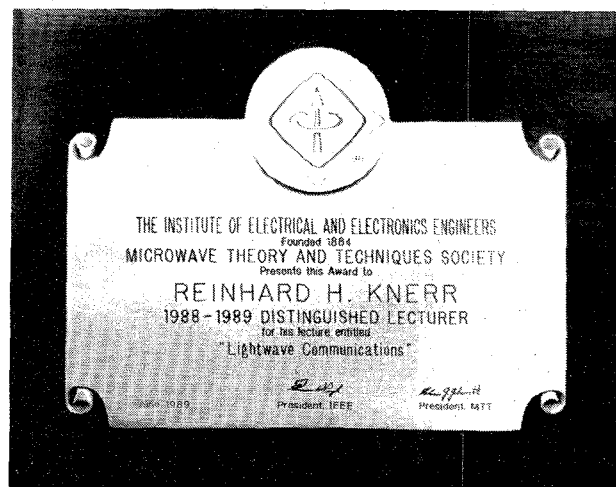
The Distinguished Microwave Lecturers are selected annually to present lectures to MTT-S chapters on subjects of importance and current interest to members. The person selected as a Distinguished Lecturer must have made significant contributions in the field of his talk. The assignment is challenging, since each lecturer presents from 40 to 60 talks around the world during the year. The 1989 Distinguished Lecturer Awards were presented to Reinhard H. Knerr for his lecture entitled "Lightwave Technology" and to Arnold H. Silver for his lecture entitled "Microwave and Gigabit Superconductivity Electronics."



Reinhard H. Knerr (M'71-SM'73-F'80) is a native of Pirmasens, Germany. He received the Ph.D. and M.S. degrees in electrical engineering from Lehigh University, Bethlehem, PA, the Dipl. Ing. degree from the Ecole Nationale Supérieure d'Electrotechnique, d'Electronique et d'Hydraulique in Toulouse, France, and the B.S. degree from the Technical University of Aachen, Germany.

He joined AT&T Bell Laboratories as a Member of the Technical Staff in 1968. He was involved in research and development work on circulators, IMPATT power amplifiers, and low-noise and low-power GaAs FET amplifiers and satellite receivers. He has published extensively in the field and holds six patents. He has also supervised work in lightwave passive components, integrated optics, lightwave local area networks, and lightwave data interfaces.

Dr. Knerr was editor of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES from 1980 to 1982. He served as president of the MTT Society in 1986.



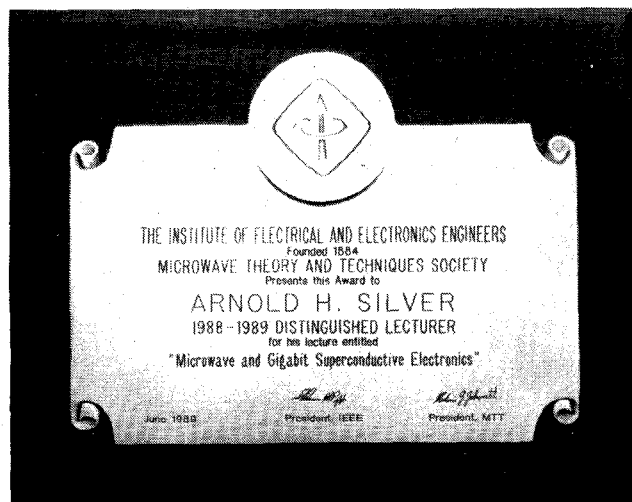
Arnold H. Silver (M'74) received the B.S., M.S., and Ph.D. degrees in physics from Rensselaer Polytechnic Institute. His dissertation was on the application of nuclear magnetic and quadrupole resonance effects in the study of the structure of solids. He continued that research at Ford until his work on superconductive devices. He joined TRW Space & Technology Group in 1981 after serving as Director of the Electronics Re-



search Laboratory at the Aerospace Corporation for 10 years. Prior to that, he was with the Scientific Laboratory of the Ford Motor Company at Dearborn, MI, for 12 years. He has been active in the development and application of superconductive electronics since his invention of the SQUID at Ford in the early 1960's. At Aerospace, his laboratory pioneered the development of low-noise millimeter-wave mixers and detectors, including the superconducting Schottky diode. At TRW, his group has pioneered the

development of low noise microwave amplifiers and oscillators, analog-to-digital converters, a niobium-based integrated circuit technology, and now the development of a high-temperature superconductive technology.

Dr. Silver has authored more than 50 publications and numerous patents. He is a Fellow of the American Physical Society, and has been active in the superconductive electronics community including service as Technical Program Chairman of the 1976 Applied Superconductivity Conference and a member of the Organizing Committees of the Workshop on Superconductive Electronics and the U.S.-Japan Workshop on Josephson Electronics.



IEEE Fellows

Twenty-nine MTT-S members were elected to the grade of Fellow effective January 1, 1989. Of these, 12 were evaluated by MTT-S and 17 by other societies.

The grade of Fellow is conferred in recognition of unusual professional distinction. It is awarded at the initiative of the IEEE Board of Directors after a rigorous nomination and evaluation process. Individuals receiving this distinction have demonstrated extraordinary contributions to one or more of the fields of electrical engineering, electronics, computer 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.

Eleven recipients chose to receive their Fellow Certificates at the 1989 International Microwave Symposium. Dr. Kiyo Tomiyasu made the presentation at the Plenary Session.

Mohammed N. Afsar

"For contributions to the development of measurement techniques for determination of complex dielectric and optical parameters of solid, liquid, and gaseous materials at millimeter frequencies and above."

Inder J. Bahl

"For contributions to microstrip technology, and to the theory and design of hybrid and monolithic microwave integrated circuits."

Prakash Bhartia

"For contributions to the development of microwave and millimeter wave transmission lines and microstrip antennas."

Harold C. Bowers

"For leadership in the development of microwave devices, components and systems, and in the establishment of major businesses in the areas."

Chung-Kwang Chou

"For contributions to the understanding of biological effects and medical applications of microwave energy."

Madhu S. Gupta

"For contributions to the characterization and modeling of noise in high-frequency semiconductor devices in microwave integrated circuits."

Tom M. Hytlin

"For contributions to monolithic microwave integrated circuits and solid-state, phased-array radar systems."

Reynold S. Kagiwada

"For contributions to low-temperature ultrasonics and technical leadership in the development and insertion of microwave acoustic devices in space."

Charles F. Krumm

"For contributions to the development of ultrahigh-performance GaAs devices and circuits."

Bruce R. McAvoy

"For leadership in microwave acoustics with contributions to high-frequency resonators and signal processing devices."

Edward C. Niehenke

"For contributions to the development of low-noise microwave oscillators and amplifiers."

The following were elected to the grade of Fellow with endorsement of MTT-S but received their Fellow Awards elsewhere.

Rolf H. Jansen

“For contributions to field-theoretical analysis of microwave IC structures and the development of advanced CAD tools.”

Christen Rauscher

“For contributions to linear and nonlinear circuit applications of microwave field-effect transistors.”

Herbert L. Thal, Jr.

“For contributions to the application of computer-aided procedures in the development of microwave components.”
