

# The 1987 MTT-S International Microwave Symposium

STEVEN L. MARCH, SENIOR MEMBER, IEEE

**R**ECENTLY, Las Vegas, Nevada, was the site of the 1987 IEEE MTT-S International Microwave Symposium. This year marked the thirty-first occasion that the MTT Society's Microwave Symposium was held and the first time that the annual conference was held in a location void of a local MTT Society Chapter.

The Symposium's technical activities, the historical exhibit, and the commercial exhibition were all accommodated in the spacious Bally's Grand Hotel. Several social functions and some of the numerous corporate activities, which typically surround the International Microwave Symposium, took place diagonally across the intersection of Las Vegas Boulevard and Flamingo Road at the magnificent Caesars Palace. Besides these two properties, Symposium attendees also occupied rooms at the Flamingo Hilton, the Dunes Hotel, and other hotels located along the Las Vegas "Strip". The majority of these hotels were within short walking distance of the Symposium headquarters hotel, a definite plus considering the daytime temperature exceeded 100 degrees Farenheit daily.

## MICROWAVE WEEK

Microwave Week activities began on Sunday evening, June 7, with a reception for the 1987 IEEE Microwave and Millimeter-Wave Monolithic Circuits Symposium attendees and their guests. This event was held in the ornate and spacious Nero and Galba Rooms in Caesars Palace. The International Microwave Symposium was held Tuesday, June 9, through Thursday, June 11. The Monolithic Circuits Symposium, attended by a record 950 persons, met all day Monday, June 8, and jointly with the MTT-S Symposium on Tuesday morning, June 9. During Microwave Week, there were numerous other technical activities, including four midday panel discussions with box lunches available on the three days of the International Microwave Symposium. Eight specialist workshops surrounded the Symposium; three were held on Monday and five took place on Friday, June 10. The week's technical activities continued through Saturday, when the 29th Automatic RF Techniques Group Conference, for which 149 technologists registered, concluded its one and one-half day meeting.

## ATTENDANCE

The attendance at the 1987 Microwave Symposium broke all previous records, except one. The final count showed a total attendance of 6604, a slight decrease from last year's record attendance of 6671. The small drop of participation was due to the lack of local microwave activity, which was



Microwave Symposium Chairman Steven L. March during Plenary Session.

reflected in the number of people who attended the Symposium using complimentary, exhibits-only passes provided by the exhibitors. In Baltimore, 1252 individuals used this venue for attending the conference; in 1987 only 833 availed themselves of the complimentary exhibits-only registration—one-third less than in 1986.

The excellent technical program attracted 2077 engineers and scientists to the 1987 Microwave Symposium. This is the first time the participation at an MTT-S Symposium exceeded 2000 technical attendees. As mentioned above, 950 registered for the Monolithic Circuits Symposium and 149 registered for the ARFTG Conference, both numbers establishing new attendance records. The eight workshops were attended by 767 participants, 230 on Monday and 537 on Friday. The Awards Banquet attracted 709 persons, while the Industry-Hosted Cocktail Reception, which preceded the banquet, attracted an estimated 1100 conference attendees, exhibitors, and their guests.

In addition, the commercial exhibition drew 3226 exhibitors and manufacturers' representatives, while an additional 297 paid to attend the commercial exhibition only.

## PLENARY SESSION

The 1987 International Microwave Symposium was officially opened Tuesday morning by the Steering Committee Chairman, Steven L. March, at a well-attended Plenary Session in the Ziegfeld Room of Bally's Grand Hotel. Dr. David N. McQuiddy, Jr., MTT Society President, offered additional welcoming remarks and commented on the



Les Besser presenting the Keynote Address at the opening ceremony.



Symposium Chairman Steven March receiving gubernatorial proclamation declaring "Microwave Week" in Nevada.

health and financial status of the MTT Society and on recent activities of the Society's Administrative Committee. This was followed by an address by 1986 IEEE President, Dr. Bruno O. Weinschel. Dr. Weinschel related some of the findings and concerns relative to productivity and the health of the electronics industry in the United States as expressed, discussed, and reported during the 1987 IEEE Annual Meeting.

The Keynote Address was delivered by Les Besser, President of Besser Associates and Vice Chairman of the Symposium. Mr. Besser delivered a series of biographical sketches on key microwave engineers from the 1930's to the present. His address was laced with humorous anecdotes from the lives of each of these individuals. Those whose careers were highlighted included Philip Smith (1930's), William Hewlett and David Packard (1940's), Dean Watkins and Richard Johnson (1950's), Leo Young (1960's), Charles Leichti (1970's), and Robert A. Pucel (1980's).

A gubernatorial proclamation declaring the week of June 7 through June 13 as Microwave Week in the state of Nevada was presented to Chairman Steven March by Ms. Jenny DeVaux, Administrative Assistant to Nevada Governor Richard H. Bryan. Mr. Richard Blue from the Office of the Mayor of Las Vegas presented the Key to the City to Mr. March, who accepted on behalf of the Symposium and its attendees. Dr. Reynold S. Kagiwada, the MTT-S Symposium Technical Program Committee Chairman, summarized the technical activities taking place during the Microwave Symposium and the other technical events which comprised Microwave Week.



Technical Program Committee Chairman Reynold S. Kagiwada speaking at the Opening Ceremonies.

from 18 countries for presentation at the Microwave Symposium.

In addition, the Program Committee added an additional ten invited papers to round out the technical presentations. When 12 papers, presented jointly by the International Microwave Symposium and the Monolithic Circuits Symposium are also included, a record 235 papers were finally accepted for presentation at the MTT-S Symposium. This total includes one late paper accepted only one week before the Conference. The papers were presented in 32 separate technical sessions, not counting the Tuesday morning plenary session. The two Open Forum Sessions, on Tuesday and Wednesday afternoons, contained 46 papers in each session. Of the remaining 143 papers, 110 were 20 minutes long and 33 were 10 minutes long.

Contained within the technical program were four Focused Sessions covering two technologically "hot" areas—the frontiers of millimeter waves with emphasis on

#### TECHNICAL PROGRAM

When all of the submissions were finally counted, the Symposium's Technical Program Committee had received 416 potential papers from 21 countries. From this record number of submissions, the 105-member Technical Program Committee ultimately selected the 212 best papers



MTT Symposium Chairman Steven March receives Key to the City from Richard Blue, representative of the city of Las Vegas.



MTT Vice-President Barry Spielman addresses 1987 Monolithic Circuit Symposium.

60 GHz and above and the exciting field of microwave/optical interactions. The four Focused Sessions were *Optical Techniques for Microwave Applications*, *Optical Generation and Control of Microwaves and Millimeter-Waves*, *Advances in Millimeter-Wave Technologies*, and *Advanced Millimeter-Wave Systems*. As part of the reciprocal exchange between the International Microwave Symposium and the European Microwave Conference, the program included one session consisting of three invited papers by prominent European scientists from France, Sweden, and the Federal Republic of Germany. The Technical Program Sessions and their chairmen are listed below.

*Session A:* Opening Ceremony

*Session B:* MMICs—Nonlinear and Power Circuits  
D. R. Chen, Microwave Monolithics, Inc.  
Z. J. Lemnios, Ford Microelectronics

*Session C:* Computer-Aided Design, Analysis and Synthesis  
U. L. Rohde, Compact Software Company

*Session D:* Microwave Filters and Multiplexers  
R. V. Snyder, R. S. Microwave Company

*Session E:* MMICs—Low Noise Techniques  
V. Nair, Motorola, Inc.  
S. Moghe, Pacific Monolithics Corporation

*Session F:* Microwave Integrated Circuits  
C. Buntschuh, Narda Microwave Corporation

*Session G:* Couplers and Power Dividers  
P. LaTourette, Consultant

*Session H:* MMIC Manufacturability  
J. Schellenberg, Hughes Aircraft Company

*Session I:* Biomedical Aspects of Microwaves  
A. Rosen, SRI Sarnoff Research Center

*Session J:* Open Forum I  
J. C. Rautio, Syracuse University



Derry Hornbuckle addressing 1987 IEEE Microwave and Millimeter-Wave Monolithic Circuits Symposium attendees.

*Session K:* Millimeter-Wave Technology and Applications  
G. Thoren, Raytheon Company

*Session L:* Microwave Measurements  
H. G. Oltman, Jr., Tecom Industries

*Session M:* Communications Systems  
P. G. Petrelis, TRW Electronic Systems Group

*Session N:* Advances in Millimeter-Wave Systems (60–230 GHz)  
J. C. Wiltse, Georgia Tech Research Institute

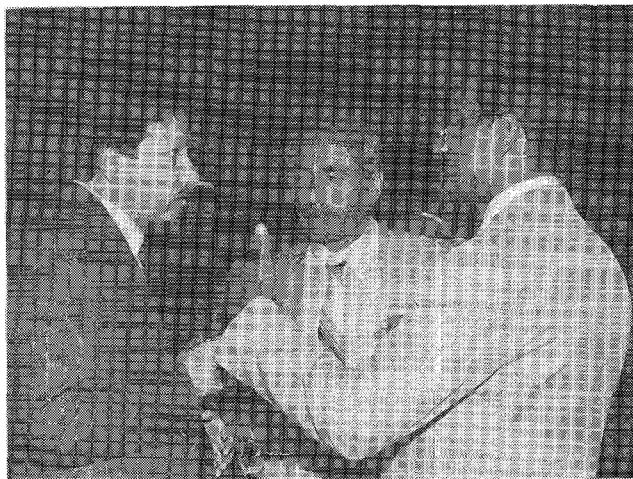
*Session O:* Noise Measurements  
S. F. Adam, Adam Microwave Consulting Company

*Session P:* Radar Systems  
K. Tomiyasu, General Electric Co.

*Session Q:* Open Forum II  
J. C. Rautio, Syracuse University



MTT-S Adcom members Tatsuo Itoh and Martin Schneider during a Symposium break.



Bernard Geller, Marvin Cohn, and Pradeep Wahi, 1986 Symposium Technical Program Committee leaders, meet again during the MMIC Symposium reception at Caesars Palace.

**Session R:** Guided Waves  
J. B. Knorr, U.S. Naval Postgraduate School

**Session S:** Advances in Millimeter-Wave Technology (60–230 GHz)  
J. C. Wiltse, Georgia Tech Research Institute

**Session T:** European Exchange Session  
R. A. Sparks, Raytheon Company

**Session U:** Waveguide Discontinuity Structures  
J. W. Mink, U.S. Army Research Office

**Session V:** Microwave Acoustics: Developments and Applications  
T. Lukaszek, U.S. Army LABCOM

**Session W:** Optical Techniques for Microwave Applications I  
T. Itoh, University of Texas at Austin

**Session X:** FET Amplifiers  
E. D. Cohen, Defense Logistics Agency

**Session Y:** Solid-State Devices & Circuits I  
M. Dydyk, Motorola, Inc.

**Session Z:** Optical Techniques for Microwave Applications II  
N. R. Dietrich, AT&T Bell Laboratories

**Session AA:** Nonlinear FET Applications  
E. C. Nienke, Westinghouse Electric Corp.

**Session BB:** Solid-State Devices & Circuits II  
C. M. Krown, Naval Research Laboratory

**Session CC:** Phased and Active Array Techniques  
E. H. Gregory, Hughes Aircraft Company

**Session DD:** HEMT and MESFET Applications  
B. D. Geller, Comsat Laboratories

**Session EE:** Solid-State Devices & Circuits III  
R. L. Eisenhart, Hughes Aircraft Company

#### **Session FF:** Microwave Ferrites

W. E. Hord, Microwave Applications Group

#### **Session GG:** HEMT Amplifiers and Devices

B. Berson, Berson and Associates

In addition to the 12 papers presented jointly by the Microwave Symposium and the Monolithic Circuits Symposium, the 1987 Microwave and Millimeter-wave Monolithic Circuits Symposium contained an additional 20 presentations. In order to accommodate all 32 papers, the MMIC Symposium held, for the first time, parallel sessions on Monday afternoon.

By the time the 29th Automatic RF Techniques Group Conference concluded on Saturday afternoon, the 149 attendees had heard a record 25 technical presentations centered around the Conference theme, *Noise Parameter Characterization*.

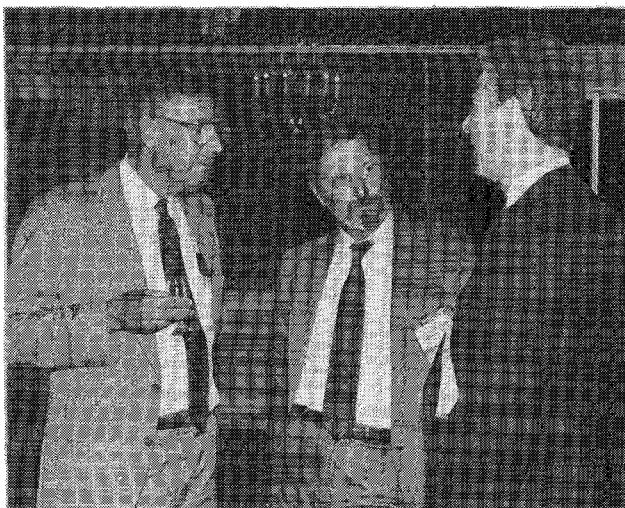
#### WORKSHOPS AND PANEL SESSIONS

Eight workshops and four panel discussions complemented the technical program. Three of the workshops (M-1, M-2, and M-3) were held on Monday, June 8, while the remaining five (F-4 through F-8) took place on Friday, June 10. The workshop and panel session topics (P-1 through P-4) are listed below, along with their organizers. Attendance figures are shown in parentheses.

M-1: Numerical Techniques for Microwave Field Problems and Their Implementation on Personal Computers (139)  
Wolfgang J. R. Hoefer, University of Ottawa, Ottawa, Canada  
Y.-C. Shih, MM-Wave Technology Co., Torrance, CA

M-2: Amplification in High-Power Systems (57)  
John B. Horton, TRW Electronic Systems Group, Redondo Beach, CA

M-3: Non-Invasive Microwave Sensing of Physiological Signatures (34)  
James C. Lin, University of Illinois, Chicago, IL



Harlan Howe, Fred Rosenbaum, and Bert Berson in serious discussion during a cocktail reception.



Roger Pollard, Ken Bradley, and Harold Stinehelfer, Sr., at the ARFTG Banquet reception.

F-4: Optical-Microwave Interactions (105)  
Chi H. Lee, University of Maryland, College Park, MD

F-5: Nonlinear CAD and Associated Modeling (219)  
Barry S. Perlman, Stanford Research Institute, Princeton, NJ  
Galin Brehm, Texas Instruments, Dallas, TX

F-6: Quasi-Planar Millimeter-Wave Components and Subsystems (79)  
Arvind K. Sharma, TRW Electronic Systems Group, Redondo Beach, CA

F-7: Dielectric Resonators in Microwave Oscillators (86)  
Krishna K. Agarwal, Sage Laboratories, Natick, MA

F-8: Planning and Packaging for the Next Generation of Integrated Circuits (48)  
Bert Berson, Berson & Associates, Mountain View, CA  
Fred J. Rosenbaum, Washington University, St. Louis, MO  
Douglas W. Maki, Tachonics Corp., Plainsboro, NJ

P-1: GaAs Microwave Monolithic Integrated Circuits (400)  
Krishna K. Agarwal, Sage Laboratories, Natick, MA

P-2: Financial Planning for Engineers—Implications of the New Tax Law (150)  
Robert A. Moore, Westinghouse Electric Corp., Baltimore, MD

P-3: Applications of HEMT Devices and Circuits (300)  
H. John Kuno, Hughes Aircraft Company, Torrance, CA  
Douglas W. Maki, Tachonics Corp., Plainsboro, NJ

P-4: Solutions to Problems Existing in Educating Microwave Engineers (175)  
Les Besser, Besser Associates, Palo Alto, CA

#### 1987 TECHNICAL PROGRAM COMMITTEE

The Technical Program Committee, under the able leadership of Dr. Reynold S. Kagiwada, has done a magnificent job in soliciting submissions and selecting the "cream of the crop," those 235 papers which describe the most significant advances in the state of the art in microwave technology. Due to the record 416 submissions this year, the 105-member Technical Program Committee, divided into 19 areas of specialization, had a difficult task evaluating and selecting the papers for presentation. The quality of this year's Technical Program is a tribute to the hard work performed by the Technical Program Committee. The members of the Committee were:

S. F. Adam	G. L. Heiter	H. Ogawa
K. K. Agarwal	H. Hieslmair	S. Okwit
N. G. Alexopoulos	S. Honickman	A. A. Oliner
A. E. Atia	W. E. Hord	H. G. Oltman, Jr.
J. S. Barrera	J. B. Horton	J. M. Owens
H. C. Bell	H. Howe, Jr.	B. S. Perlman
C. R. Boyd	T. Itoh	S. T. Peng
L. Q. Bui	F. Ivanek	P. G. Petrelis
C. Buntschuh	R. S. Kagiwada	R. D. Pollard
K. J. Button	M. Kim	R. A. Pucel
A. G. Cardiasmenos	R. H. Knerr	J. E. Raue
R. L. Carter	J. B. Knorr	U. C. Rohde
H. Chilton	C. M. Krowne	A. Rosen
N. Chrisstomos	C. Kudsia	F. J. Rosenbaum
A. Clavin	M. Kumar	C. T. Rucker
E. D. Cohen	H. J. Kuno	J. M. Schellenberg
M. Cohn	J. Lane	A. K. Sharma
N. W. Cox	P. LaTourrette	H. Sobol
E. J. Crescenzi	C. H. Lee	R. V. Snyder
J. E. Degenford	J. P. Letellier	R. A. Sparks
N. R. Dietrich	R. Levy	B. E. Spielman
D. Dodson	J. C. Lin	P. W. Staeker
M. Dydyk	T. Lukaszek	D. Steinbrecher
R. L. Eisenhart	D. W. Maki	J. J. Taub
B. D. Geller	R. Malbon	S. J. Temple
O. P. Ghandi	S. L. March	G. R. Thoren
V. G. Gelnovatch	G. L. Matthaei	K. Tomiyasu
R. Gilson	M. A. Maury, Jr.	R. Van Wagoner
J. Goel	B. R. McAvoy	P. K. Wahi
E. Gregory	D. N. McQuiddy, Jr.	D. Webb
P. T. Greiling	J. B. Mink	R. Weck
K. C. Gupta	K. B. Niclas	J. J. Whelehan
R. Ham	E. C. Niehenke	L. R. Whicker

J. F. White  
A. E. Williams

H. A. Willing  
J. C. Wiltse

K. Yano  
K. H. Yen

### SOCIAL PROGRAM

In addition to the Technical Program, an excellent Social Program was planned to acquaint Symposium guests with some of the scenic and cultural aspects of Las Vegas and to provide them with an enjoyable time when they were not working.

On the Sunday evening prior to the Symposium, over 500 Monolithic Circuits Symposium registrants and their guests attended a reception at Caesars Palace. The following evening, nearly 1000 people attended a complimentary poolside reception hosted by the *Microwave Journal*. Complimentary continental breakfasts were served to all technical attendees each morning prior to the start of the technical sessions and the workshops. This feature of the Symposium has proved to be very successful. The Industry-Hosted Cocktail Reception preceding the Annual Awards Banquet on Wednesday evening was attended by over 1100 people.

The guests' activities contained a complete daytime program of exciting tours, which included a visit to the world-famous Hoover Dam, one of the seven man-made Wonders of the World. Other locations that the Symposium guests had the opportunity to visit included the Liberace Museum, the scenic Red Rock Canyon area, the Ethel M Chocolate Factory and Cactus Garden, and backstage at one of Las Vegas' fabulous revue shows. Each tour was well attended, with a total of 313 participants during the three days.

### AWARDS BANQUET

The annual Awards Banquet was the highlight of the social events during the Microwave Symposium. It was held in the Garland Ballroom of Bally's Grand Hotel on Wednesday evening, following the Industry-Hosted Cocktail Reception. The gala Awards Banquet was attended by 709 persons, all of whom dined well, enjoyed string quartet music during the gourmet dinner, and witnessed the presentation of awards to those who have generously served our profession and contributed to our industry.

This year the Microwave Career Award, the highest award presented by the MTT Society, was presented to Dr. Robert W. Beatty "for a career of meritorious achievement and outstanding technical contribution in the field of microwave theory and techniques". The 1987 Microwave Prize was then presented to Dr. Christen Rauscher for his paper "Microwave Active Filters Based on Transversal and Recursive Principles," (*IEEE Transactions on Microwave Theory and Techniques*, vol. MTT-33, no. 12, pp. 1350-1360, December 1985). The Distinguished Service Award was established by the MTT Society in 1983 in order to properly honor those individuals whose service to the IEEE and to MTT-S has been extraordinary. For 1987, the Administrative Committee of the Microwave Theory



Robert Beatty receiving the Microwave Career Award from MTT President David N. McQuiddy, Jr.



Christen Rauscher receives the Microwave Prize from MTT President McQuiddy.

and Techniques Society has selected Dr. Kiyo Tomiyasu as the recipient of the 1987 Distinguished Service Award "for his outstanding and dedicated service for the benefit and advancement of the Microwave Theory and Techniques Society". Dr. Tomiyasu had previously been awarded the Microwave Career Award in 1980. As an interesting tidbit, Dr. Tomiyasu was born in Las Vegas. All of these awards were presented by MTT-S President, Dr. David N. McQuiddy, Jr.

Next, Dr. Bruno O. Weinschel, 1986 IEEE President, presented this year's IEEE Fellow Awards to those who chose to receive them at the Symposium. These were presented to Dr. Ali E. Atia, Dr. Donald M. Bolle, and Dr. Albert E. Williams.

Distinguished Microwave Lecturer certificates and plaques were presented to Mr. Edward C. Niehenke and Dr. John H. Bryant. Certificates of Recognition were awarded to Mr. Edward C. Niehenke for serving as Chair-



Dr. Kiyo Tomiyasu receives the Distinguished Service Award from MTT President McQuiddy.



MTT President David N. McQuiddy, Jr., presents Distinguished Microwave Lecturer certificate to Edward C. Niehenke.



1986 IEEE President, Dr. Bruno O. Weinschel, during the Symposium's Awards Banquet.



Dave McQuiddy presents Distinguished Microwave Lecturer citation to Dr. John H. Bryant.

man of the Steering Committee for the 1986 International Microwave Symposium and to Dr. Marvin Cohn and Mr. Bernard Geller for having served as Chairman and Co-Chairman, respectively, of the Technical Program Committee for last year's Symposium. A Certificate of Meritorious Service was given to Dr. H. John Kuno for having served nine years on the Administrative Committee of the MTT Society. Dr. Reinhart H. Knerr, 1986 MTT Society President, next received the Past President's Pin from Dr. McQuiddy.

Recently the MTT Society approved the granting of two graduate fellowships. These first two fellowships were awarded at the Awards Banquet by Dr. Gary A. Thiele, IEEE Division IV Director. The recipients were Mr. T. Scott Martin of Texas A&M University and Mr. R. Steven Brozovich of Washington University.

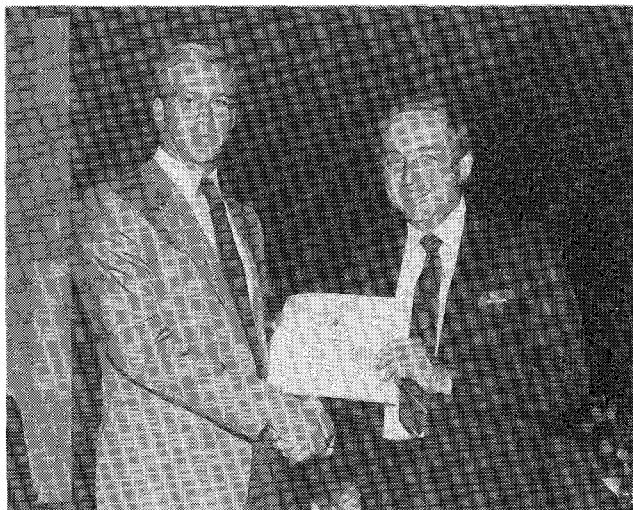
Following the award presentations, the audience was treated to the comedic and magical talents of Harry Anderson, star of the popular television show *Night Court*.



John Kuno receives award for service on the MTT Administrative Committee.



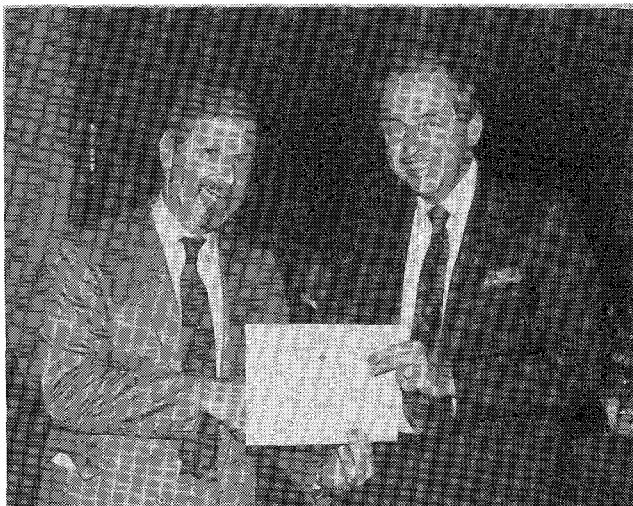
MTT President Dave McQuiddy "pins" past President Reinhart H. Knerr (or Reinhart Knerr receives his past President's pin).



T. Scott Martin receives the first MTT-S Graduate Fellowship from IEEE Division IV Director Gary A. Thiele.



IEEE Division IV Director Gary A. Thiele addressing the Awards Banquet attendees.



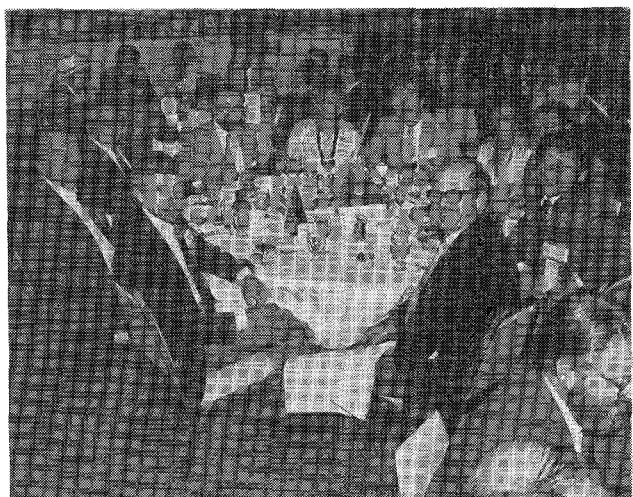
Fred Rosenbaum accepts MTT-S Graduate Fellowship on behalf of R. Steven Brozovich from Gary Thiele, IEEE Division IV Director.

#### HISTORICAL EXHIBIT

The Microwave Historical Exhibit, located in a place of prominence within the commercial exhibition, proved to be very popular with both the exhibitors and the technical registrants. The number of artifacts contained in the Historical Exhibit continues to grow annually, thanks to contributions from many microwave companies and the efforts of the collection's curator, Theodore S. Saad. In addition to the many exhibits, there was a separate reading area with comfortable seating for browsing through books and a cinema area complete with a large screen monitor for viewing the many historic films presented throughout the day. Fresh popcorn was served all day in the cinema area.

#### COMMERCIAL EXHIBITION

The commercial exhibition allowed manufacturers an opportunity to display and discuss the latest advances in microwave hardware, software, and services. This year's Microwave Exhibition was the largest ever, with 271 companies occupying 437 booths. In fact, over a dozen ad-



At the International Microwave Symposium's Awards Banquet.



1989 MTT Symposium Chairman Chuck Swift hams it up with Harry Anderson, the Awards Banquet entertainer.



ARETG Conference Chairman, Dr. Peter Lacy, receives award from toga-clad ARFTG President, Raymond Tucker, during the ARFTG Banquet, held at Caesars Palace (naturally).

ditional exhibitors had to be denied space due to a lack of room. This massive exhibition occupied both the Grand Ballroom and the Goldwyn Ballroom in Bally's Grand Hotel with all available booth space being occupied. Howard Ellowitz of Horizon House—Microwave is to be commended for organizing and skillfully managing the Commercial Exhibition, an important part of the Microwave Week activities. Even though the Symposium was not held in an area of intense microwave activity and a large local attendance was not to be expected, most of the exhibitors felt that the quality of the traffic through the exhibit area more than compensated for the slightly reduced attendance.

#### SYMPOSIUM DIGEST

The Symposium Digest was edited and prepared by the Publications Committee under the leadership of Dr. Jeffrey B. Knorr of the U.S. Naval Postgraduate School, Monterey, CA. Because of the large number of papers presented at this year's Symposium, the Digest was, for the

first time, divided into two volumes. Additional copies of the Digest are available from the Institute of Electrical and Electronic Engineers Incorporated, Publications Order Department, 445 Hoes Lane, Piscataway, NJ 08855-1331. The IEEE catalog number is 87CH2395-2. In addition, the Library of Congress catalog card number is 77-645125 and the ISSN number is 0149-645X.

#### 1987 SYMPOSIUM STEERING COMMITTEE

The success of the 1987 IEEE MTT-S International Microwave Symposium was made possible by the outstanding work and dedication of the members of the Steering Committee. Those of us who attended this year's International Microwave Symposium and witnessed the fruits of their labors owe all of them our sincere gratitude for their professionalism, devotion, and desire to make the 1987 International Microwave Symposium *The Best Ever* and the one to which all future Symposia will be compared. I think they succeeded and I thank all of them for the excellent job they did. I feel honored and privileged to have worked with this wonderful group of people and to have served as their Chairman. A list of the Steering Committee members and their employers follows.

*Chairman:*

Steven L. March, Tracor Aerospace, Austin, TX

Les Besser, Besser Associates, Palo Alto, CA

Al Clavin, Retired, Past President MTT-S, Delmar, CA

Reynold S. Kagiwada, TRW ESD, Redondo Beach, CA

Ken Yano, TRW ESD, Redondo Beach, CA

*Technical Program Chairman:*

Tatsuo Itoh, University of Texas, Austin, TX

James C. Rautio, Syracuse University, Syracuse, NY

*Open Forum Chairman*

John B. Horton, TRW Space Technology Group, Redondo Beach, CA

*Focused Sessions Chairman:*

John M. Owens, University of Texas, Arlington, TX

*Local Arrangements Vice-Chairman:*

Ronald L. Carter, University of Texas, Arlington, TX

*Local Arrangements Committee:*

Krishna K. Agarwal, Sage Laboratories, Natick, MA

John Wassel, Texas Instruments, Dallas, TX

Karl R. Varian, Texas Instruments, Dallas, TX

Alan Davis, University of Texas, Arlington, TX

*Guest Program**Chairperson**Guest Program:**Gifts Chairman:**Publicity Chairman:**Publicity Vice-Chairman:**Publicity Committee:**Finance Chairman:**Finance Vice-Chairman:**Publications Chairman:**Publications Committee:**Registration Chairman:**Registration Committee:**Historical Exhibit**Chairman:**Historical Exhibit**Co-Chairman:*

Gail March, Austin, TX  
 Darlene Payette, Maury  
 Microwave Corp., Cuca-  
 monga, CA  
 Nance Cohen,  
 Calabasas, CA

Ron Ham, Clemson Uni-  
 versity, Clemson, SC  
 Robert Weck, U.S. Army  
 LABCOM, Ft. Mon-  
 mouth, NJ

Arvind K. Sharma, TRW  
 ESD, Redondo Beach, CA  
 David Leiss, EEsosf,  
 Manasas, VA

Ulrich C. Rohde, Compact  
 Software, Patterson, NJ

Arye Rosen, Stanford  
 Research Institute,  
 Princeton, NJ

Richard V. Snyder, R. S.  
 Microwave, Butler, NJ  
 Vladimir G. Gelnovatch,  
 U.S. Army LABCOM,  
 Ft. Monmouth, NJ

H. John Kuno, Hughes  
 Aircraft Co., Torrance, CA  
 Long Q. Bui, MM-Wave

Technology, Torrance, CA  
 Jeffrey B. Knorr, U.S.  
 Naval Postgraduate

School, Monterey, CA  
 Carol Gentile, Krytar,  
 Sunnyvale, CA  
 A. P. S. Khanna, Avantek,

Santa Clara, CA  
 Mark Roos, EIP Micro-  
 wave Corp., San Jose, CA  
 Phil Chen, Microelec-  
 tronics Technology, Inc.,

Mt. View, CA  
 George Szentirmai, DGS  
 Associates, Santa Clara, CA

Ferdo Ivanek, Communi-  
 cations Research, Palo  
 Alto, CA

Robert L. Eisenhart, Hughes  
 Aircraft Co., Canoga  
 Park, CA

Clifford M. Krowne, Naval  
 Research Laboratory,  
 Washington, DC

George Jerinic,  
 Raytheon Company,  
 Wayland, MA



Members of the Microwave Symposium Steering Committee, Reynold Kagwada, Steven March, Karl Varian, and John Owens, in discussion.

*Exhibits Manager:*

Howard I. Ellowitz,  
 Horizon House—Micro-  
 wave, Canton, MA  
 Harlan Howe, Jr.,  
 M/A-COM, Inc.,  
 Burlington, MA

*Exhibits Chairman:*

Vijai K. Tripathi,  
 Oregon State University,  
 Corvallis, OR

*ARFTG Liaison:*

Stephen F. Adam, Adam  
 Microwave Consulting Co.,  
 Los Altos, CA

*MMIC Symposium*

Yalcin Ayasli, Hittite  
 Microwave Corp.,  
 Woburn, MA

*Liaison:*

Rolf H. Jansen, Industrial  
 Microwave and RF

*Conference Liaison:*

Techniques, Ratingen,

*West Germany*

Lawrence R. Whicker,

LRW Associates, Arnold,  
 MD

*Conference Management*

Barry E. Spielman, Naval  
 Research Laboratory,

Washington, DC

**POSTSCRIPT**

In January 1983, a group of concerned MTT Society Administrative Committee members decided to propose a radical departure from the conventional venue for the Society's annual Symposium. They decided to attempt to garner MTT-S Adcom approval to hold the 1987 International Microwave Symposium in a controversial location having only a handful of MTT Society members—in Las Vegas. In late May 1983, the Society's Administrative

Committee agreed to gamble on both the proposed location and the nucleus of the Symposium Steering Committee and voted to select Las Vegas as the site for the 1987 edition of the MTT-S Symposium. It should be remembered that the members of the Steering Committee were located in all parts of the country and that regular Steering Committee meetings would be virtually impossible.

The May 1983 gamble paid off. The Steering Committee grew from its original nine members to a final membership

of 45 dedicated, hard-working individuals. The MTT-S Administrative Committee was not disappointed. Their faith in the 1987 Symposium Steering Committee was rewarded a few months ago when they and the 6604 technical registrants, exhibitors, and guests who gathered in Las Vegas for Microwave Week experienced *The Best Ever*—The 1987 IEEE MTT-S International Microwave Symposium.

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