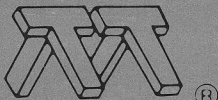


IEEE SOCIETY ON
MICROWAVE THEORY
AND TECHNIQUES




Number 136
Winter 1993

Bylaws and
Constitution on Page 19

NEWSLETTER



Professor Arthur Oliner, 1993
Distinguished Educator Award.


**MICROWAVE THEORY
AND TECHNIQUES SOCIETY**
THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

1993 Distinguished Educator Award

presented to

Dr. Arthur A. Oliner

For an Exemplary Career in Education and Research
and Dedicated Service to MTT-S.




June, 1993


President, MTT-S


Awards Chairman, MTT-S

Continued coverage of 1993 Award winners on page 3.
Index to this issue, page 2.


**MICROWAVE THEORY
AND TECHNIQUES SOCIETY**
THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

1993 Microwave Application Award

presented to

John L. Carter

For Gas Discharge and Ferrite Duplexer
Applications to Military Radar.



June, 1993


President, MTT-S


Awards Chairman, MTT-S



Walt Gelnovatch, 1989 MTT-S President, presents his
long-time colleague and good friend, John Carter,
with the 1993 Microwave Applications Award at the
IMS Awards Banquet in Atlanta, GA, June 1993.

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Master Calendar

MTT-S Sponsored Conferences¹

1994

| | | |
|---|---|-----------------------|
| • Optical Microwave Electronic Circuits Workshop (workshop part of the Optical Fiber Communication Conference; MTT has no involvement with OFC) | February 20 San Jose, CA | (C) |
| • European GaAs Applications Conference | April | (C) (*) |
| • Topical Meeting on Electrical Performance of Electronic Packaging | April | (S) (*) |
| • 2nd International Conference on Ultra-Wideband, Short-Pulse Electromagnetics | April 5-7 Brooklyn NY | (CS) |
| • MTT-S International Microwave Symposium | May 23-27 San Diego, CA | (S) (*) |
| • Microwave & Millimeter Wave Monolithic Circuits Symposium | May 23-27 San Diego, CA | (S) (*) |
| • Automatic RF Techniques Group | May 23-27 San Diego, CA | (C) (*) Affiliated |
| • National Telesystems Conference | May 23-27 San Diego, CA | (CS) |
| • MIKON '94 | May 30-June 2 Warsaw, Poland | (C) |
| • Asia-Pacific Microwave Conference | August | (C) (*) |
| • IEEE Conference on the Computation of Electromagnetic Fields | | (C) (*) |
| • Topical Workshop on Heterostructure Transistor Technology and Physics | August 17-19 Mt. Fuji Resort Area, Japan | (C) |
| • European Microwave Conference | September | (C) (*) |
| • IEEE GaAs IC Symposium | October | (CS) (*) |
| • 19th Int'l Conference on Infrared and Millimeter Waves | October 17-21 Sendai, Japan | (CS) |
| • Microwaves '94 | October 25-27 London, England | (C) |
| • Int'l Conference on Computational Electromagnetics and Its Applications | November 1-4 Beijing, P. R. China | (C) |
| • INTELCOM | November 2-5 Turin, Italy | (CS) |
| • Automatic RF Techniques Group | December | (C) (*) Affiliated |
| • National Radio Science Meeting | | (C) (*) |

¹Meetings listed are those that have been officially sponsored by MTT-S (i.e., AdCom approved). There are many other microwave related meetings (chapter sponsored, commercial, etc.) that are not listed.

²MTT-S conference involvement:

(S) Sponsor, (CS) Co-sponsor, (T) Technical Co-sponsorship, (C) Cooperate, (*) Continuous MTT-S involvement approved by AdCom

Correction

In the Fall 1993 issue of the *MTT-S Newsletter*, Professor Herbert Döring, winner of the 1993 Microwave Career Award, was incorrectly identified as Hubert Döring.

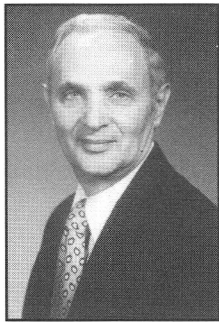
Our apologies.

The Editor

The MTT Newsletter staff is interested in obtaining feature articles dealing with current topics in the technical and professional areas of interest to MTT members. These articles should provide members with a general understanding of the topic and its significance in current and future activities in the microwave field. I would like to emphasize, however, that these special articles should cover topics in a broad, general sense. Specific design techniques and applications will be covered in the papers appearing at the MTT Symposium and in the *Transactions*.

If you know of a topic that is current and/or you are willing to contribute an article to the Newsletter, please contact:

John Eisenberg
25 Parson Way • Los Altos, CA 94022 • (415) 941-7426



**Irving Reingold
1993 Microwave
Application Award**



**MICROWAVE THEORY
AND TECHNIQUES SOCIETY**
THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

1993 Microwave Application Award

presented to

Irving Reingold

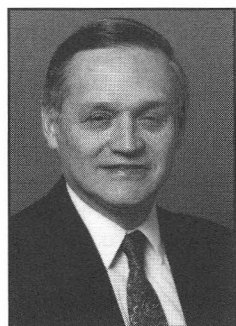
*For Gas Discharge and Ferrite Duplexer
Applications to Military Radar.*



June, 1993

Peter Staecker
President, MTT-S

Reinhard H. Kneer
Awards Chairman, MTT-S



**J. E. Degenford
1993 N. Walter
Cox Award**



**MICROWAVE THEORY
AND TECHNIQUES SOCIETY**
THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

N. Walter Cox Award

Presented to

Dr. J. E. Degenford

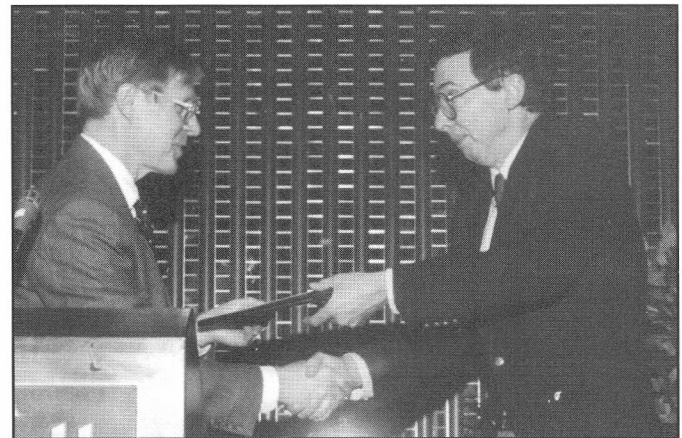
*For Exemplary Service
Given in a Spirit of Selfless
Dedication and Cooperation*



June, 1993

Peter Staecker
Peter Staecker
President, MTT-S

Reinhard H. Kneer
Reinhard H. Kneer
Awards Chairman, MTT-S



*Dr. David Rutledge accepts the 1993 Microwave Prize
from MTT-S President Peter Staecker at the Annual
Awards Banquet in Atlanta, June 1993.*



**MICROWAVE THEORY
AND TECHNIQUES SOCIETY**
THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.

1993 Microwave Prize

presented to

Dr. D. B. Rutledge

*For a significant contribution to the field of endeavor of the
IEEE MTT Society in the paper entitled "A 100-MESFET Planar
Grid Oscillator" published in the IEEE Transactions on Micro-
wave Theory and Techniques, Volume MTT-39, No 2, pp. 193 - 199,
February 1991.*

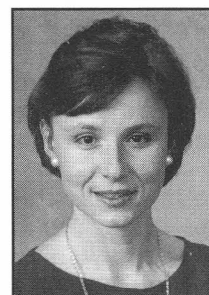


June, 1993

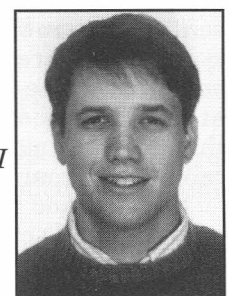
Peter Staecker
Peter Staecker
President, MTT-S

Reinhard H. Kneer
Reinhard H. Kneer
Awards Chairman, MTT-S

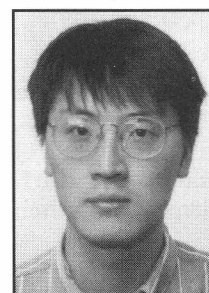
*Other 1993 Microwave Prize winners sharing the award
with David Rutledge are:*



Dr. Z. Basta-Popovic



R. M. Weilke II



M. Kim

1993 in Retrospective: Outgoing President's Report



by Peter Staecker

The business backdrop for the microwave industry in 1993 was unchanged from the previous year . . . consolidate and improve productivity; face the market and respond to its demands; know the customer. DoD cutbacks in the United States continued to affect Region 1-6 membership adversely. Membership in Regions 8-10 is growing, however, and the strong financial condition of MTT is allowing some initiatives to support potential members in eastern Europe, where the annual IEEE membership fee equivalence is measured in months of salary.

For the second year, your MTT-S Administrative Committee is building for the future, having elected four new members to the six available positions. International AdCom membership continues at 3 of 18, reflecting the continued need for global participation in Society affairs.

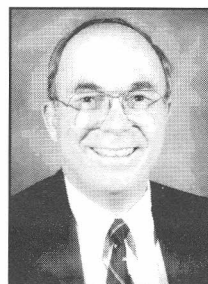
Your successful IEEE MTT-S International Microwave Symposium is booked into the year 2000 and continues to prosper. While international attendance and participation is high, this conference will remain US-based into the foreseeable future. Efforts to locate or sponsor topical meetings in international cities are beginning to show progress, however . . . and by the time you read this article, two such proposals should be close to finalized.

That your Society's financial position is one of strength has allowed continued investment in the publication of *Microwave and Guided Wave Letters* (now completing its third year), whose page count and subscribers are growing together with its technical reputation for timely reporting of microwave progress. By the end of 1993, the transition to all-electronic publishing at IEEE headquarters should be complete, which means that by the time you read this, you should have received all of your 1993 copies of the *MTT Transactions*.

1993 marked the trial year of the MTT Society Administrator. Dick Sparks, our 1982 MTT President, brings instant corporate knowledge to the position, and after reviewing the Institute administrative charges, already has identified and implemented a number of cost-saving actions. Building on this successful start, the Administrator in future years will provide much

(continued on page 8)

Incoming President's Message



by E. James Crescenzi, Jr.

The MTT Society strives to provide an especially constructive organizational environment for its volunteers activities—one that encourages and recognizes the contributions of individuals, yet facilitates their application and integration with the work of others. The results of past volunteer efforts have been exceptionally satisfying. The quality of MTT publications, conferences and meetings, awards programs, and the overall value of services provided relative to cost to members are exceptional. The recent leadership by Peter Staecker and contributions by the 1993 MTT-S volunteer committees continued the rich heritage of our society. We owe them our appreciation and "thanks" for their service.

One senses that our professional environment is being challenged. The economic uncertainty face by our companies and institutions seems to have reduced discretionary time available for volunteer activities. In spite of this concern, I believe 1994 is likely to be a very good year for our society. This is largely due to the resourcefulness of our strong volunteer base, and to the foundation so carefully developed by past administrations. We are benefiting from the dedication of current editors, chapter and committee chairpersons, and International Microwave Symposium Steering Committees. Just as the work leading to a successful symposium in 1994 in San Diego began in 1987, the new 1994 Administrative Committee's task is to prepare for the year 2000 and beyond.

In preparing our society for the challenges and opportunities of the future, a primary objective will be to provide the professional services most critically needed by tomorrow's active microwave technologists. We must be viewed as highly relevant to the work of this next generation of contributors. Some of the elements necessary to maintain and enhance relevance are well understood. We must provide the meetings and publications (or other media) where "the best work" is known to be presented. These will be forums where individual and institutional contributions can be shared and acknowledged—where our "theory and techniques," as well as applications, can be reported and discussed. Access to these forums must continue to be based on the merit of the technical contribution rather than its source. Similarly, although we serve a competitive marketplace, our society must educate by way of examples

(continued on page 11)

1994 MTT-S Awards

by Reinhard Knerr, Chairman
Awards Committee

The committee that evaluates the nominations for our awards consists of 10 senior MTT people including one from Europe and one from Japan. After carefully reviewing all applications the following awards were approved unanimously by AdCom at the October 1993 meeting. They will be presented at the 1994 International Microwave Symposium:

- **Microwave Career Award**—Dr. Yoshihiro Konishi
“For a career of meritorious and outstanding contributions to the field of microwave theory and techniques.”
- **Pioneer Award**—Dr. Michiyuki Uenohara
“For his pioneering contributions to the development of low-noise microwave parametric amplifiers.”
- **Distinguished Educator Award**—Dr. Paul D. Coleman
“For an exemplary career in education and research and dedicated service to the microwave profession.”
- **Applications Award**—Dr. Martin Schneider
“For outstanding contributions to the development and implementation of subharmonically pumped homodyne and heterodyne mixers.”
- **Microwave Prize**—P. Chris Grossman, John Choma, Jr.
“Large Signal Modeling of HBT's Including Self-Healing and Transit Time Effects”
- **Distinguished Service Award**—Mr. John B. Horton
“For his outstanding and dedicated service to the society.”
- **N. Walter Cox Award**—Mr. Chuck W. Swift
“For exemplary service, given in a spirit of selfless dedication and cooperation.”

Fellow Awards

IEEE members elected to Fellow grade as of January 1, 1994, as evaluated by Microwave Theory and Techniques Society:

- **Colin S. Aitchison**—“For contributions to the design of microwave active circuits.”
- **Yalcin Ayasli**—“For contributions to the design and development of wide band gallium arsenide (GaAs) monolithic microwave integrated circuits (MMICs).”
- **Tibor Berceli**—“For contributions in the fields of microwave photonics and millimeter-wave high-power components.”
- **Ronald J. Gutmann**—“For contributions in microwave semiconductor technology.”
- **Charles C. Huang**—“For engineering contribution and technical leadership in the development of high-volume GaAs MMICs for commercial applications.”
- **Harry F. Lenzing**—“For contributions to improvement of microwave line-of-sight communications links.”
- **Robert W. McMillan**—“For development of phase and frequency control techniques for millimeter-wave electromagnetic sources.”
- **Tom Yasuo Otoshi**—“For contributions to deep space communications.”
- **Antti V. Raisanen**—“For contribution to and leadership in millimeter-wave receiver technology.”
- **Vittorio Rizzoli**—“For contributions to the simulation and design of nonlinear microwave integrated circuits.”
- **Peter H. Russer**—“For fundamental contributions to noise analysis and low-noise optimization of linear electronic circuits with general topology.”
- **Hiroshi Shigesawa**—“For contributions to basic guided-wave effects and structures at millimeter and submillimeter wavelengths.”
- **Robert J. Weber**—“For contributions to microwave solid-state circuit design applied to high-power sources.”
- **Gerard T. Wrixon**—“For contributions to millimeter-wave and photovoltaic systems technology, and for leadership in education and academic research.”

The Awards Committee is proud to present those colleagues who distinguished themselves in our profession and in their service to our profession.

The following elected IEEE Fellows were enrolled in MTT and evaluated by another Society:

- **Arlon T. Adams**—“For contributions to the development and application of the method of moments to antenna theory.”
- **Gerald F. Dionne**—“For contributions to the theory and development of ferrimagnetic materials and microwave ferrite devices.”
- **Lawrence N. Dworsky**—“For contributions to piezoelectric and transmission line resonators and band pass filters for telecommunications applications.”
- **James Cheng-Min Hwang**—“For contributions to development of molecular beam epitaxy manufacturing and heterostructure devices and materials.”
- **Koichi Inada**—“For contribution to the development of low-loss, high-reliability optical fiber and cables.”
- **Takashi Katagi**—“For contributions to the theory of reflector and horn antennas, as applied to communication satellites.”
- **Johannes A. G. Malherbe**—“For contributions to the development of education in electromagnetics, and to microwave design techniques.”
- **Louis N. Medgyesi-Mitschang**—“For contributions to computational techniques for modeling electro-

(continued on page 8)

1993 MTT AdCom Elections



by K. Tomiyasu
Chairman, Nominations and Appointments
Committee

During its 9 October, 1993, Fall Meeting, the MTT-S Administrative Committee chaired by President Peter Staecker, elected the following: 1994 President, E. James Crescenzi, Jr.; 1994 Vice-President, Eliot D. Cohen; 1994-1996 Term Members, John T. Barr, IV, R. E. "Skip" Bryan, Eliot D. Cohen, J. Michael Golio, Manfred J. Schindler, Denis C. Webb.

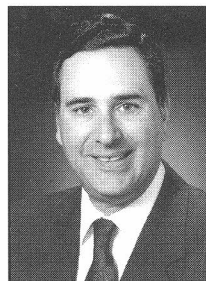
E. James Crescenzi, Jr.

Jim Crescenzi (S '61, M '62, SM '84) received the BS degree at University of California at Berkeley in 1961 and MS and PhD degrees at the University of Colorado in 1962 and 1969. His advanced degree work was separated by a tour of duty as a lieutenant in the Air Force at Rome Air Development Center. He joined Watkins-Johnson Co. in 1970, where his work has ranged from solid state process development to microwave subsystems and receivers. He is currently a Principal Scientist in the Microwave Products Division of W-J. In the last several years he has been involved in the development of two microwave landing subsystems for military applications; a miniaturized 1-8 GHz Up/Down converter ESSM subsystem; and most recently high speed logarithmic/limiting amplifiers for microwave signal processing.

Jim served in various positions in San Francisco/Santa Clara Valley MTT-S Chapter including Chapter Chairman in 1981-1982. He has been on the Technical Program Committees of the MTT-S International Microwave Symposium (IMS) since 1983, and was first elected to the MTT-S Administrative Committee in 1987. He has served as chairman of the Operations and Publications Committees, and is currently Co-Chairman of the Meetings and Symposia Committee. He is also Chairman of the Steering Committee responsible for the International Microwave Symposium to be held in San Francisco in 1996. (Pictured on page 4.)

Eliot D. Cohen

Eliot Cohen (S '62, M '63, SM '78, F '91) received the BEE and MSE degrees from The George Washington University, Washington, D.C., in 1963 and 1966, respectively. Since then, he has completed additional graduate work at the George Washington University. He is an IEEE Fellow, an elected member and 1994 Vice-President of the IEEE Microwave Theory and Techniques Society Administrative Committee (ADCOM), and the Advanced Research Projects Agency (ARPA)



Member of the OSD Advisory Group on Electron Devices (AGED).

Mr. Cohen is the Executive Director for Microwave and Millimeter Wave Technology at the ARPA, Electronic Systems Technology Office (ESTO). A key responsibility of this position is overall responsibility for the Microwave/Millimeter Wave Monolithic Integrated Circuits

(MIMIC) Program. Mr. Cohen is also presently serving as the manager of two additional programs: High Density Microwave Packaging for Next Generation Aircraft and Space-Based Phased Array Radars (HDMP) and Active Electronically Scanned Arrays (AESA). He played a key role in the development of the Rapid prototyping of Application Specific Signal Processors (RASSP) program and served as the manager of that program between January, 1992, and May 1993.

Between February, 1990, and May, 1991, Mr. Cohen served as Deputy Director of the Defense Manufacturing Office at DARPA. Mr. Cohen shared responsibility with the Director of the Defense Manufacturing Office for guiding and directing key technological and analytic programs in support of Department of Defense requirements for advanced manufacturing capabilities. The overall program included projects on semiconductor manufacturing, infrared focal plane array production, high definition display technology, x-ray lithography, microwave/millimeter wave monolithic integrated circuits and intelligent processing of semiconductor materials. The office also had responsibility for administering the Department of Defense grant to the Semiconductor Manufacturing Technology Consortium (SEMATECH). During that time period Mr. Cohen concurrently served as Manager, Microwave/Millimeter Wave Monolithic Integrated Circuits (MIMIC) Program.

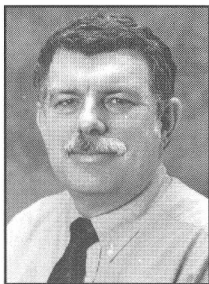
Between April, 1986, and December, 1988, Mr. Cohen served as Deputy Director for Microwave and Millimeter Wave Programs in the Department of Defense's Technology Analysis Office (DTAO). In this capacity, he had primary responsibility for most aspects of the MIMIC Program.

Between November, 1980, and April, 1986, Mr. Cohen served as the Navy Director of the Very High Speed Integrated Circuits (VHSIC) Program at the Space and Naval Warfare Systems Command (Formerly: Naval Electronic Systems Command). Under this program, two generations of high speed, high density, silicon digital circuits were developed for advanced signal processing applications.

From 1972 to 1980, he was Head of the High Frequency Devices Section at the Naval Research Laboratory where he performed and directed research on microwave and millimeter wave solid state devices and circuits. From 1963 to 1972, he was an electronic engineer at the Naval Research Laboratory.

John T. Barr, IV

John Barr (S '69, M '74, SM '84) received a BSEE from Georgia Institute of Technology in 1971, a MSEE in 1974 from Stanford University, and a MS in Engi-

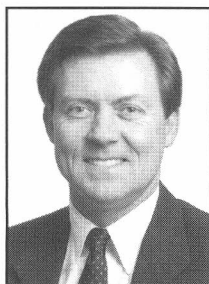


neering Management in 1982, also from Stanford. After co-opting from 1967-70 with Scientific Atlanta, he joined Hewlett Packard in 1971. He is a R&D Section Manager in the Stimulus Response Solutions Section of Hewlett Packard's Santa Rosa Systems Division in Santa Rosa, California.

John has been involved in the development and design of RF and Microwave Vector Network Analyzers (HP8505, HP8501, HP8510A/B/C). He has participated in the design of RF downconverters, intermediate frequency detectors and in the automation of these systems. This has included work in the area of vector error correction, time domain conversion and multi-parameter measurement systems. This work in conventional and six-port network analyzers has lead to five patents and seven published papers. More recently, he has concentrated in the development of RF and Microwave Manufacturing Test Systems for RF and microwave components and subsystems.

John is a Senior Member of the IEEE and was a founding member (1982) and later chairman of the Redwood Empire IEEE Subsection. He has served as Membership Development Chair, reviewer for the *MTT-S Transactions*, member and presently Co-Vice Chair of MTT-11 Technical Committee and member of 1990 through 1994 IMS TPC. Additionally, he has been active in Automatic Radio Frequency Techniques Group (ARFTG) since 1979 and has been a member of the ARFTG Executive Committee since 1984. He was on the host Committee for the 23rd ARFTG Conference, Chairman for the 28th December, 1986, and 36th December, 1990, Conference. He served as the ARFTG Digest Chairman from 1984 to 1986, Vice-President from 1986 to 1987, President to 1989 and is presently the ARFTG-MTT-S Coordinator.

R. E. "Skip" Bryan



Skip Bryan (S '69, M '69) received his Bachelor's and Master's degrees in Electrical Engineering from the University of Southern California, in 1969 and 1972.

He is currently Director of Engineering at ST Systron Donner Corp., a Signal Technology company, in Sylmar, California, where he is re-

sponsible for the technical direction of the company including the development of new microwave amplifiers, synthesizers, microwave subsystems and instrumentation.

From 1966 to 1979, Skip was with Hughes Aircraft Company's Space and Communications Group, where he was responsible for the design of various microwave components for satellite communications including parametric amplifiers and mixers, leading to subsystem hardware development in high-reliability satellite systems as the design manager for the Ku-band ANIK-C and SBS communication receivers. From 1979 to 1993, he was with the Radar Laboratory at Hughes' Missile

Systems Group where he managed the Antenna and Microwave Subsystems Department in the development of low cost missile systems as the design manager for the AMRAAM Frequency Reference subsystem and the value engineering design of the AMRAAM Microwave Assembly and the Target Detection Device RF Head.

Skip has been a member of the IEEE Microwave Theory and Techniques Society since 1968 and a member of the Administrative Committee of the MTT-S since 1991 where he is currently Society Treasurer. He served as the Treasurer of 1989 MTT-S International Symposium and as a Past Chairman and Treasurer of the San Fernando Valley Chapter of the MTT-S.

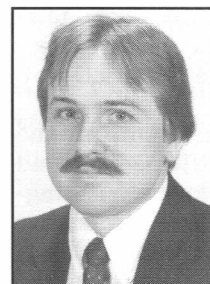
J. Michael Golio

Mike Golio (S '78, M '83, SM '88) received his BSEE degree from the University of Illinois in 1976 and the MSEE and PhD degrees from North Carolina State University in 1980 and 1983 respectively. He worked for Watkins-Johnson Company in their microwave tunable devices group between his undergraduate and graduate studies. He performed post-doctoral work in Italy as part of the NATO Advanced Studies Institute and also at North Carolina State University. He served as an assistant professor at Arizona State University prior to taking a position with Motorola's Government Electronics Group. In 1980 he moved to Motorola's Semiconductor Products Sector where he has contributed primarily to the development of a commercial GaAs facility.

Mike became involved in the Phoenix IEEE Waves and Devices Chapter in 1985 and served in several officer roles. He began serving the MTT-Society as Chapter Activities Coordinator in 1989 and continued in that capacity till 1993. At the 1990 IEEE Sections Congress, he served as a representative of the MTT-Society. He has served on the Technical Program Committee for the MTT-Symposium and as a Session Chairperson at both the Symposium and the European Microwave Conference. He has also helped develop and organize several panel sessions at MTT-Symposia.

His technical work of the past several years has focused on large signal device modeling for circuit design applications. As an outgrowth of this work, he collaborated on a book and software package titled *Microwave MESFETs and HEMTs*, and "GASMAP" respectively. He has also authored or co-authored a number of articles for IEEE Journals and presented work at IEEE conferences. (Pictured on page 15.)

Manfred J. Schindler

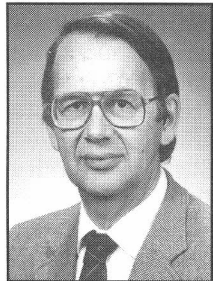


Manfred Schindler (S '80, M '82, SM '92) was born in Vienna, Austria in 1957. He received the BS degree in Electrical Engineering from the Columbia University School of Engineering and Applied Science in 1979. He received the MS in Electrical and Computer Engineering, concentrating in Microwave Engineering, from the University of Massachusetts, Amherst, in 1982.

Upon completing his undergraduate studies, he joined the Raytheon Company, Equipment Division, where he

worked on the development of communications related RF and Microwave circuitry. He entered the University of Massachusetts in 1980, returned to Raytheon in 1981, and worked on X-band MICs and Q-band IMPATT power amplifiers. Since 1984 he has been with the Research Division of Raytheon in Lexington, Massachusetts. He has been involved in the design and development of microwaves and millimeter wave GaAs monolithic circuits, particularly for broadband applications. Since 1993 he has been Manager of the Microwave Semiconductor Laboratory, at the Raytheon Company Research Division.

From 1989-1991 he served on the GaAs IC Symposium Technical Publications Committee. Since 1992 he has organized the MMIC Historical Exhibit for the MTT. In 1993 he served as the MTT AdCom Secretary. He has published over 30 technical papers and holds 10 US patents.



Denis C. Webb

Denis Webb (M '62) was born in Skowhegan, Maine, and attended the University of Michigan where he received the BSEE in Engineering Physics and MS in Physics. In 1961 he joined the Westinghouse Defense Center in Baltimore, Maryland. His principal R&D projects here involved microwave magnetic devices and millimeter wave propagation structures. In 1966 he returned to academia to attend Stanford University. His thesis research at the Hansen (now Ginzton) Labs was in the area of microwave magnetics (magnetostatic wave devices) and acoustics (acoustical imaging) under the guidance of Bert Auld. Upon receipt of a PhD in Engineering Physics in 1971, Dr. Webb joined the Physical Electronics Lab in Menlo Park, California where he developed YIG tuned oscillators and limiters. He assumed a research position at the Naval Research Laboratory in 1972, the focus of his initial work being on analog signal processing using SAW and MSW devices. In 1973, he became Head of that activity at NTL and expanded into the areas of millimeter wave devices and superconducting circuits. In 1987 he became Head of the Microwave Technology Branch, a position he currently holds. He directs a broad research and development program—spanning active and passive microwave devices and circuits utilizing III-V and widebandgap semiconductors, ferrites, ferroelectrics and superconductors. He is also active in the planning and monitoring of many DOD microwave programs and currently is Chairman of the Technical Committee of the ARPA Ferrite Development Consortium.

IEEE activities have included membership in the technical program committees for the Ultrasonics and MTT Symposium, President of the Baltimore/Washington/North Virginia Chapter of the SU Society, member of MTT-S Group-13 (ferrites) and most recently Chairman of the Intersocietal Liaison for MTT-S. He will be Vice-Technical Chairman of the 1998 MTT Symposium to be held in Baltimore, Maryland.

1993 MTT-S Awards

(continued from page 5)

- magnetic radiation and scattering from complex objects."
- **Michael A. Morgan**—"For theoretical contributions to finite element techniques applied to electromagnetic scattering, and for academic leadership."
- **Jose Perini**—"For contributions to the advancement of electromagnetic compatibility in the topside design of navy ships."
- **Sembiam R. Rengarajan**—"For contributions to the analysis and synthesis of slot array antennas and electrical engineering education."
- **Yasutaka Shimizu**—"For contributions to research and development in the field of educational technology, electromagnetic compatibility, and surface acoustic waves."
- **Tasuku Takagi**—"For contributions in the field of electromagnetic compatibility, specifically electric contact phenomena."
- **Richard J. Temkin**—"For leadership in the development and application of millimeter-wave and infrared coherent sources."
- **Rory L. Van Tuyl**—"For contributions to the development of gallium arsenide integrated circuits."
- **Werner Wiesbeck**—"For contributions to wide-band polarimetric radar metrology."
- **Richard W. Ziolkowski**—"For contributions to the theory of localized waves and their realization in pulse-driven arrays and for contributions to computational electromagnetics."

1993 in Retrospective: Outgoing President's Report

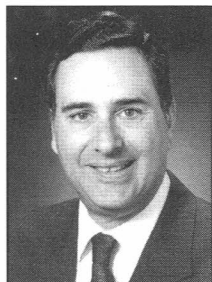
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needed continuity among the financial committees of the International Symposium.

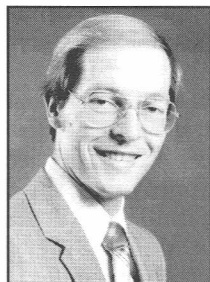
1993 has been a challenging year for "volunteers," as the staffers at IEEE headquarters like to call us. As we struggle to provide our employers with a market advantage over the competition, we also recognize our commitment to an open technical forum among professionals . . . who include our competitors¹. Tricky business, but by succeeding in our efforts at the volunteer level, we will have formed a Society which is relevant to and needed by its members. Each year, through the efforts of MTT members serving as Chapter Chairs, Technical Committee members, Symposium Steering Committee members, an yes, even AdCom members, we get closer to relevance. As Jim Cresenzi assumes the office of 1994 MTT President, these thoughts are on his mind also.

¹ *Is this the IEEE (or MTT-S) intellectual equivalent of NAFTA?*

MTT-S Meetings & Symposia Committee Report



E. D. Cohen



E. A. Rezek

Following is a summary of the Committee business concluded at the October 8-9, 1993, AdCom meeting in Denver, Colorado.

Meeting Sponsorship

MTT-S is continuing its effort to reach out to its members outside of the United States. Major advances have taken place in Regions 8, 9, and 10.

- **Region 8:** A new wireless communications meeting called INTELCOM '94 is being organized by Horizon House and will be held in Turin, Italy on November 2-5, 1994. It includes both technical sessions and exhibits. At the October AdCom meeting, it was agreed that MTT-S would organize a "track" of sessions within this conference and become a co-sponsor. We believe this to be an excellent opportunity to participate in a very exciting MTT-S sponsored activity in Europe that can grow over time and benefit European members. For further information please contact Harlan Howe of Horizon House, Norwood, MA, Tel. No. (617) 769-9750, fax: (617) 762-9230. Cooperative sponsorship was approved for two other European meetings: MIKON '94 and Microwaves '94. MIKON '94 will be held in Warsaw from May 30 to June 2, 1994; Microwaves '94 will be held in London, England from October 25-27, 1994. The point of contact for MIKON '94 is Professor E. Sedek, Telecommunications Research Institute; fax: +48-22-102571. The point of contact for Microwaves '94 is Professor Peter J. Clarricoats, Queen Mary & Westfield College. Prof. Clarricoats' telephone number is +44-71-975-5330; fax: +44-81-981-0259.
- **Region 9:** The MTT-S also approved a recommendation to begin upgrading our involvement in the International Microwave Conference/Brazil (SBMO) from cooperative sponsorship to full co-sponsorship.
- **Region 10:** Cooperative sponsorship was approved for the 1994 International Conference on Computa-

tional Electromagnetics and its Applications. This conference will be held November 1-4 in Beijing and represents the first sponsorship of an event in the People's Republic of China, a landmark extension for our Society. The point of contact for all correspondence and additional information is Mr. Zhou Mengqi. He can be reached at 861-5005938; fax 861-5005233. Cooperative sponsorship was also approved for the 19th International Conference on Infrared and Millimeter Waves, which will be held in Sendai, Japan on October 17-21, 1994. The point of contact for all correspondence and additional information is Miss Reiko Sasaki, Tohoku University. Miss Reiko's telephone number is +81-22-228-2124; fax: +81-22-228-2128. Cooperative sponsorship was also approved for the Topical Workshop on Heterostructure Transistor Technology and Physics, which will be held in the Mt. Fuji Resort Area, Japan, on August 17-19. The US point of contact for all correspondence and additional information is Dr. Fritz Schuermeyer. Dr. Schuermeyer's telephone number is (513) 255-8649, fax: (513) 255-4544, email: fritz@el.wpafb.af.mil. The Japan point of contact is Prof. Toshiaki Ikoma at Tokyo University. Continuing cooperative sponsorship of the Asia-Pacific Microwave Conference was reaffirmed in response to an inquiry. The point of contact for all correspondence and additional information is Prof. Shizuo Mizushina; he can be reached at the Research Institute of Electronics, Shizuoka University, 3-5-1 Johoku, Hamamatsu 432, Japan.

- Co-sponsorship of the 19th International Symposium on Signals, Systems and Electronics was also approved at the October AdCom meeting. The ISSSE will be held in San Francisco, California, on October 25-27, 1995. The general chairman who may be contacted for additional information is Dr. J. W. Mink, Army Research Office, P.O. Box 12211, Research Triangle Park, NC 27709-2211; telephone (919) 549-4240; fax (919) 549-4310.

2001 IMS

We are still awaiting letters of intent from prospective sponsors of the International Microwave Symposium in the year 2001. Even though this seems far off, planning for this conference is overdue and should begin immediately. As mentioned in the last Newsletter, it would be preferable to hold the 2001 conference in the middle or western part of the United States. Please contact Eliot Cohen if you need further information at: ARPA/ESTO, 3701 North Fairfax Drive, Arlington, VA 22203-1714, Tel. No. (703) 696-2214, fax No. (703) 696-2203.

AdCom Meeting Highlights

by Jim Crescenzi and Fred Schindler

The October AdCom meeting was notable for progress reported in several areas, and especially for the voting record established. It was the first time in recent memory that the AdCom passed every motion put before it! Meeting minutes show there were only two no-votes cast for the twenty-two motions considered—which may be a record for affirmative response!

The results of a membership survey conducted at the Atlanta IMS were compiled and presented by Derry Hornbuckle, providing a valuable (and highly complimentary) insight as to how members view our meetings and publications. The *MTT-S Transactions* and *Microwave & Guided Wave Letters* were each given very high ratings relative to other journals. A strong preference was expressed for “experimental” and “applications” papers, which may have been predictable, considering that the survey was conducted at the symposium.

Another survey by the Long Range Planning Committee which queried Chapter Chairmen, Technical Committee Chairmen, and AdCom members was reported, and numerous specific suggestions and comments were received as well.

New MTT-Society Bylaws and a new Procedures Manual were prepared by the Operations Committee, distributed before the AdCom meeting for review, and approved by AdCom vote. These will also be published in the *Newsletter*, and the Bylaws must be submitted to the IEEE TAB for approval. These new Bylaws and the Procedures Manual were a major overhaul of our existing documents, and were structured to achieve needed administrative clarity. The Bylaws are now more concise, and details of implementation of various committees and procedures are moved to the Procedures Manual. Since the Bylaws require a fairly lengthy process for change and approval, it was appropriate that details of policy implementation and committee structure be separated out in a manual that was easier update to reflect current practice. Preparation of these documents was a monumental effort, and a much appreciated contribution by Bob Moore (Chairman of the Operations Committee), Aditya Gupta, and Kiyo Tomiyasu.

The Membership Services report projected that MTT-S membership will be down slightly for 1993, ending at about 10,000 members. The downward trend has slowed, and there is some room for optimism.

Recruiting activities at the IMS in Atlanta were definitely successful with 110 sign-ups—thanks to John Barr and all who organized the membership booth. The global trend shows growth of membership in Regions 8-10, almost offsetting the drop in Regions 1-7. Mario Maury reported on Chapter Officers meetings in Madrid and San Paulo. Mike Golio reported a favorable response by chapter chairpersons to the new Chapter

Newsletter—the *TranscieveR*. On a slightly negative note, the number of chapters filing timely chapter reports is down.

The Education Committee, under the leadership of Barry Perlman, presented a motion defining the charter of a new Microwave Engineering Graduate Scholarship Fund, which was unanimously adopted. This fund provides a needed mechanism by which individuals and corporations can contribute to microwave engineering scholarships. It assures that 100% of contributions will be distributed to students (your society will provide administrative services). This motion requires approval by the IEEE, and the fund should be formally established in the second quarter of 1994.

Mario Maury (Membership Services) and Rolf Jansen (Transnational Committee) reported progress by the ad hoc committee to facilitate membership and chapter formation in the Former Soviet Union and Eastern Europe (FSU/EE). Mario offered a motion to fund financial support to reduce individual membership dues in FSU/EE, for the express purpose of encouraging critical chapter formation. This was accepted by the AdCom “in principle”—meaning additional details need to be worked out before specific implementation. The MTT Society will work with the Electron Device Society to determine if a coordinated effort can be defined in a timely manner. There are also IEEE initiatives being considered in this area. It is widely recognized that the level of IEEE dues relative to typical engineering incomes constitutes a barrier to membership in these areas.

1993 IMS Steering Committee Chairman Pete Rodrigue presented a preliminary report to the AdCom, underscoring the outstanding success in Atlanta. Items of note included:

- Registration (IMS/MMWMC/Workshops/Panel Sessions): 1546/523/1027/727
- Exhibit Booth Revenue: Strong (excellent considering industry trends)
- Hotel Room Nights: Up 12% from 1992 (reversing a 3-year downward trend)
- Projected Record Net Surplus

All attendees can attest to the outstanding program, facilities, and overall organization. The Atlanta Steering Committee should be justifiably proud of the outstanding record for the 1993 IMS. The estimated record surplus is a welcome contribution to the Society.

1994 IMS Steering Committee Chairman Don Parker left no doubt, in his report to the AdCom, that the 1994 IMS will be an outstanding event. Registrants can look forward to an ideal location with world renowned facilities, a very extensive program of activities including twenty workshops, numerous focused and panel sessions, and an inviting guest program. The IMS shares a very full week with MMWMC, NTC, and ARFTG.

The IMS Call for Papers was expanded compared to previous years, as will be the IMS program, representing two of the many innovations by the San Diego team.

The AdCom voted to co-sponsor the ISSSE (International Symposium on Signals, Systems, and Electronics) with URSI, to be held in San Francisco in 1995.

It had voted by mail ballot in August to upgrade cooperative sponsorship to co-sponsorship for the Conference on Ultra-Wideband/Short Pulse Electromagnetics held at the Polytechnic University in Brooklyn, New York on April 5-7, 1994.

Cooperative sponsorship was voted for the 19th International Conference on Infrared and Millimeter Waves in Sendai, Japan, Oct. 17-21, 1994, as well as for Microwaves '94 (formerly Military Microwaves) to be held in London on October 25-27, 1994, and for ICCEA '94 (the International Conference on Computational Electromagnetics and its Applications) in Beijing, P.R.China on November 1-4, 1994.

The highlight of the meeting was the election of new AdCom voting members, reported elsewhere in this issue. The society continues to benefit from the abundance of outstanding candidates willing to serve on its Administrative Committee.

This AdCom meeting was held in beautiful Denver, Colorado, and provided a fitting conclusion to a productive year for our society. We all look forward to returning to Denver in 1997 for the International Microwave Symposium.

Incoming President's Message

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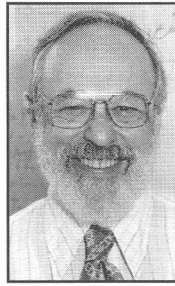
of professional service, and by honoring exemplary contributions.

How will we accomplish this? The challenge is multifaceted. Our membership on the whole is undergoing a demographic transition. Many of our members joined the profession in the 50s and 60s, and more and more of these cherished friends will become less active. The new generations of microwave technologists must be recruited, made welcome, and experience the rewards of professional involvement and of volunteer service.

The emphasis of our publications and technical meetings must shift with the times to enhance relevance and value. The format and location of our events should be adapted to the needs of our membership and of industry. Alternatives for accessing and exchanging technical information are expanding rapidly. We should begin to explore, apply and adapt these alternatives according to the needs and preferences of our membership.

We may find it necessary to become more skilled in "marketing" (or is it "communications?") in order to convince future technologists of the value of our activities. Clearly it will benefit us to be fully aware of the composition of our membership and its needs and expectations. The MTT Society will draw upon its outstanding chapter organization as a special resource in this area.

The tools of tomorrow will likely involve "break-throughs." If one only compares today's CAD with the slide rules of yesteryear, anything seems possible. If we participate in such change, contribute to it, and achieve indispensable relevance for the leaders of the new technology; the future will be ours. Is that really so new?



Dr. Meyer Gilden

We note with sadness the passing of Dr. Meyer "Mickey" Gilden, who died on July 4, 1993, after a two year battle with lymphoma. Dr. Gilden's name is widely known for his work in a number of aspects of the microwave field.

After starting a teaching career at Illinois Institute of Technology, Dr. Gilden joined the University of Illinois as Assistant Professor, where he continued teaching and graduate study. Following the completion of the PhD for work dealing with microwave field interactions with gas discharges, he pursued radar research in the Control Systems Laboratory of the University. In 1956 he joined the General Electric Microwave Laboratory, where he carried out R&D on the microwave applications of gas discharges, as well as on such components as phase shifters and filters. He continued the latter for some time at Stanford Research Institute. In 1961 he joined Microwave Associates where, as Project Engineer and Group Leader, he was responsible for a number of research projects and related product development and design. The successful completion of several projects resulted in the publication of the widely distributed handbook *High Power Capability of Waveguide Systems*.

In 1969 Mickey joined the Monsanto Company, where he built a team that pioneered in the development and use of solid state microwave active components and integrated circuits.

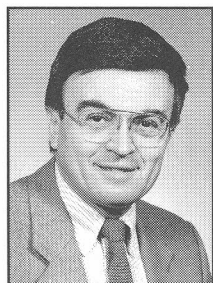
He was Scientist in Charge, Microwave Physics, at United Technologies, during the last twenty-two years of his life. His activities there encompassed solid state sources, microwave acoustic devices, microwave-optical devices, the microwave properties of materials at high temperatures, and devices for automotive applications.

Dr. Gilden's contributions to the various aspects of the microwave field are documented in a number of publications and patents.

Those of us who were fortunate enough to know Mickey will remember him not only for his technical work, but also for his positive attitude toward life. We will certainly miss seeing his cheerful face at the annual Microwave Symposia.

*Irving Kaufman
Arizona State University
Tempe, Arizona*

Call for Nominations to MTT-S Awards



Reinhard Knerr
Chairman, Awards Committee

I hope that you read my column about 1994 MTT-S Awards Winners. If you did, you probably can think of individuals who would also deserve one of the awards. In order to get awards, nominations have to happen and I urge you to nominate your deserving peers. Chapters are encouraged to nominate individuals! I am pleased to report that one of the 1994 winners was nominated by a Chapter. Please be assured that every nomination will be judged fairly and automatically reconsidered, for at least another year, if not successful the first time.

If you need information forms, please contact me:

**SUBMISSION DEADLINE FOR ALL AWARDS
NOMINATIONS IS JULY 1!!!!!!**

Dr. Reinhard Knerr
AT&T Bell Laboratories
9999 Hamilton Blvd.
Breinigsville, PA 18031
Phone: 215-391-2346
Fax: 215-391-2236
E-mail: rhknerr@alux3.att.com
or r.knerr@ieee.org

To refresh your memory about the different awards that MTT-S offers, please take a look at the subsequent awards descriptions:

Distinguished Service Award

Prize: Plaque

Eligibility: Significant contributions and outstanding service to the Microwave Theory and Techniques Society and microwave profession over a sustained period of time.

Basis for Judging: Service to ADCOM and IEEE.

Award Recipients:

| | |
|---------------------|------------------------|
| 1983 Theodore Saad | 1989 Don Parker |
| 1984 Alvin Clavin | 1990 H. George Oltman |
| 1985 G.P. Rodrigue | 1991 Charles T. Rucker |
| 1986 Harold Sobol | 1992 Richard Sparks |
| 1987 Kiyo Tomiyasu | 1993 Stephen F. Adam |
| 1988 Fred Rosenbaum | 1994 John B. Horton |

Microwave Career Award

Prize: Certificate, plaque and \$2000

Eligibility: A career of meritorious achievement and outstanding technical contribution by an individual in the field of microwave theory and techniques; individual must be a member of IEEE.

Basis for Judging: Publications in technical journals, presentation of lectures, contributions to the advancement of microwave technology and other technical contributions considered in conjunction with any or all of these areas of contribution; nominations are considered annually; award is made aperiodically.

Award Recipients:

| | |
|-------------------|------------------------|
| 1973 W. Mumford | 1986 G. L. Matthaei |
| 1974 H. Wheeler | 1987 R. W. Beatty |
| 1975 H. Riblet | 1988 Leo Young |
| 1976 J. Whinnery | 1989 A. Cullen |
| 1977 E. Weber | H. F. Cook |
| 1978 A. G. Fox | 1990 R. A. Pucel |
| 1979 S. Cohn | 1991 Sogo Okamura |
| 1980 W. Kleen | 1992 Theodore S. Saad |
| K. Tomiyasu | 1993 Leonard Lewin |
| 1982 A. Oliner | Herbert Döring |
| 1983 M. Hines | 1994 Yoshihiro Konishi |
| 1984 J. R. Pierce | |
| 1985 N. Marcuvitz | |
| H. M. Barlow | |

Pioneer Award

Prize: Plaque and \$1000

Eligibility: Publication of contribution in an archival journal, an individual or team not exceeding three persons. Deceased persons are ineligible for nomination. Preference may be given to IEEE members.

Basis for Judging: Proposed award is to recognize an individual(s) who has made a major, lasting contribution in the field of interest of MTT-S at least 20 years prior to the year of the award.

Award Recipients:

| | |
|------------------------|-------------------------|
| 1990 Hatsuaki Fukui | 1993 Claude Cleeton |
| 1991 Robert H. Dicke | Lester Hogan |
| 1992 Robert M. Barrett | 1994 Michiyuki Uenohara |

Microwave Application Award

Prize: Certificate and \$1000

Eligibility: Outstanding application of microwave theory and techniques by an individual to create a new device, component or technique; novel use of a device or component; or any combination of the above.

Basis for Judging: The most outstanding application of microwave theory and techniques by an individual; nominations must be submitted by a member of the Society; nominations are considered annually; award is aperiodic.

Award Recipients:

| | |
|----------------------------|--------------------------|
| 1974 Dean F. Peterson, III | 1986 C. Burke Swan |
| 1975 James F. White | 1988 L. S. Napoli |
| 1976 Martin G. Walker | 1989 Kenneth L. Carr |
| 1977 Stephen I. Long | M. Fukuta |
| 1978 Dale H. Claxton | 1990 Allen F. Podell |
| 1979 Erwin F. Belohoubek | 1991 Eric W. Strid |
| 1980 Julius Lange | K. Reed Gleason |
| 1982 Charles R. Boyd, Jr. | 1992 Bernard Hershenov |
| 1983 L. Besser | 1993 Irv Reingold |
| 1984 Paul Meier | John Carter |
| 1985 James Cheal | 1994 Martin V. Schneider |

(Continued on next page)

TAB Report

by Peter Staecker

The Technical Activities Board met in Raleigh-Durham, N.C. during the week of November 15. Their busy schedule featured additional excitement due to the strike of the Institute's selected carrier, American Airlines.

Of interest to our Society were the following items:

- A metric policy was recommended to TAB by the Periodicals Council and was adopted during the TAB Business meeting. Reviewers and editors will be empowered to bring the metric system to the consciousness of those (mostly US) readers who are not yet users. Look for task force activity in the coming year to define and address the issues. This reinforces Dick Snyder's comments which appeared in the Fall 1993 MTT Newsletter.
- The problems of the publishing schedule of the *Transactions* continue to occupy the energies of the Pubs staff. While about half of the *Transactions* had only two more issues to ship, a sizeable fraction were farther behind. As for myself, I remember receiving the August issue of T-MTT just the week before going to TAB. The goal is to have everyone caught up in January '94, which is just about the time you should get this *Newsletter*. Let me know (p.staecker@ieee.org) if you are still behind, and I will pass your comments on to headquarters.
- A number of Societies have begun to reach out to the countries of the former Soviet Union (FSU). Information Theory has supported the IEEE dues of 20 Russian scientists for 2 years already. The Computer Society described a pilot program of similar structure which required TAB funding, but withdrew its request. MTT and the Electron Devices Society have similar interests, and may join forces to sponsor additional engineers in countries where the IEEE dues may represent as much as 3 months' salary. The results of these pilot programs will be compared to determine the most effective means of support. In the meantime, elsewhere in this issue you will find a request for donations of your libraries of MTT or ED journals so that libraries in the FSU may be stocked and engineers have ready reference to current results.
- The issue of "unbundling" mailing costs was discussed. A somewhat sobering fact of our US based publishing enterprise is that 80-85% of the cost of Society membership is mailing cost, and that those costs are 7 times as much to ship to regions 7-10 (Canada, Europe, South America, Far East) as they are to regions 1-6 (US). So US members are subsidizing offshore members, or as Martin Schneider mentioned a few years ago as Division IV Director, the US is guilty of "dumping" Institute memberships abroad.

Well, justice prevails, as offshore members wait longer for their periodicals. Could a system be devised (as used by the *Wall Street Journal*) where a number of global publishing centers could simultaneously produce IEEE journals? This is not a simple matter.

- There is a move to guarantee financial autonomy to the Individual Chapters within a Section (Chapter Officers take note!). The resolution passed by TAB stated: "If upon petition by a Chapter to maintain a separate bank account, the Section withholds its approval, or if the Section decides to eliminate an existing account, the Section shall promptly inform the VPs of TAB and RAB."
- At the same time, TAB recommended to the IEEE Board of Directors that "IEEE policy should require that all IEEE publications that discuss IEEE elections shall provide balanced information on candidates by permitting presentations by the candidates and/or their supporters."
- The TAB AdHoc Committee on Intelligent Vehicle Highway Systems became the TAB Committee on Intelligent Vehicle Highway Systems. MTT is one of the key contributors to this committee.

Call for Nominations to MTT-S Awards

(continued from previous page)

N. Walter Cox Award

Award Recipients:

| | | | |
|------|-------------------|------|--------------------|
| 1989 | Richard Sparks | 1992 | Barry Speilman |
| 1990 | Peter Staecker | 1993 | James E. Degenford |
| 1991 | Helmut E. Schrank | 1994 | Chuck Swift |

Distinguished Educator Award

Description and Background: The creation of this award was inspired by the untimely death of Prof. F. J. Rosenbaum (1937-1992), an outstanding teacher of microwave science and a dedicated MTT-S Member/contributor.

Prize: a plaque and honorarium of \$1000

Eligibility: The candidate must be a member of IEEE and MTT-S at the time of nomination.

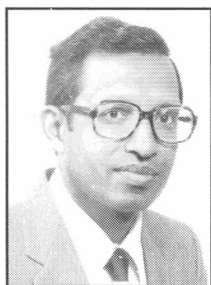
Basis for Judging: The awardee must be a distinguished educator, recognized, in general, by an academic career. It is desirable for the candidate to have received other teaching awards. The effectiveness of the educator should be supported by a list of graduates in the field of microwave science, who have become recognized in the field. Relevant letters of support are encouraged. The candidate shall also have an outstanding record of research contributions, documented in archival publications. The candidate shall have a record of many years of service to MTT-S

Presentation: When presented—at the annual IMS Awards Banquet.

Award Recipients:

| | | | |
|------|------------------|------|-----------------|
| 1993 | Arthur A. Oliner | 1994 | Paul D. Coleman |
|------|------------------|------|-----------------|

Distinguished Microwave Lecturer Program



by Kris Agarwal

MTT-S Society has three active Distinguished Microwave Lecturers that service the MTT-S Chapters globally. Dr. Martin V. Schneider of AT&T Bell Laboratories, Holmdel, N.J., is the newly elected MTT Society Distinguished Microwave Lecturer for 1994-1996. He will be lecturing on the topic of Wireless Communications. Dr. Schneider fills the slot that becomes available as Dr. Paul Goldsmith completes his term officially at the end of 1993. Congratulations Dr. Schneider.

Dr. Goldsmith has been lecturing on two topics for three years: "Quasioptical System Design at Millimeter Wavelengths" and "Radiometric Imaging Systems and Applications."

He recently visited Milwaukee and Boston MTT Chapters. Dr. Goldsmith writes:

"In September, I had a very enjoyable trip to Milwaukee, Wisconsin, where I was hosted by Professor Shri Joshi of the Department of Electrical and Computer Engineering at Marquette University. In addition to visiting laboratories on campus in the Departments of Physics and Electrical Engineering, I saw some very impressive microwave activities in the biomedical arena in several hospitals in the Milwaukee area, while being chaperoned by Jim Richie, Head of the Milwaukee Section. The variety of research was particularly interesting. The lecture 'Radiometric Imaging Systems and Applications' was delivered in the Marquette University Electrical Engineering Department. In October, I delivered the same lecture to the MTT Chapter of the Boston Section of IEEE. The meeting was hosted by Hewlett Packard, in Burlington, MA."

Dr. Goldsmith is at the National Astronomy & Ionosphere Center, Cornell University, Ithaca, N.Y. He is still receiving invitations to lecture at MTT Chapters in St. Louis, Seattle, Los Angeles and San Diego that he hopes to fit in his busy schedule. Thanks, Paul, for providing the MTT members the long three years of service.

Professor Tsukasa Yoneyama of Tohoku University, Sendai, Japan, is MTT-S Distinguished Microwave Lecturer for Region 10. Dr. Yoneyama has been on a lecture tour of Peoples' Republic of China. The extensive list of lectures he delivered is as follows:

- 8/30: Leaving Japan for Shanghai
- 9/1: Lecture at University of Science & Technology of China

- 9/8: Lecture at ISAE'93 held in Southeast University
- 9/11: Lecture at Huazhong University of Science and Technology
- 9/13: Two Lectures at Huazhong University of Science and Technology
- 9/16: Lecture at Xidian University
- 9/20: Two Lectures at Tsinghua University
- 9/21: Lecture at Tsinghua University
- 9/23: Lecture at 6th National Symposium on MMW & Sub-MMW held in Nanjing University of Posts & Telecommunications
- 9/24: Lecture at Southeast University
- 9/29: Lecture at Meeting of Shanghai Subsection of IEEE held in East China Normal University
- 9/30: Leaving Shanghai for Japan

The third Distinguished Microwave Lecturer is Dr. Ferdo Ivanek from Palo Alto, California, USA, an expert in Microwave Systems. He has been on a lecture tour of Australia. His experiences of the trip are published separately in this issue of the Newsletter.

All four MTT-S Distinguished Microwave Lecturers deserve our thanks for the excellent lectures and for supporting MTT Society members and Chapters.

And Martin, welcome to the Distinguished Microwave Lecturers community. Dr. Martin Schneider can be reached at AT&T Bell Laboratories, 791 Holmdel Keyport Road, P.O. Box 400, Holmdel, N.J. 07733-0400. Ph.: (908) 888-7122 Fax: (908) 888-7074 and e-Mail: mvs@hoh-1.att.com

Chapters are encouraged to contact him to schedule lectures for their meetings.

MTT Society Ombudsman

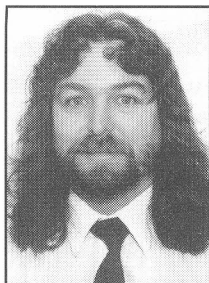


by Ed Niehenke
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Phone: (410) 765-4573
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As your Ombudsman, I have received one inquiry from an MTT-S member since the last reporting in the Summer 1993 *MTT-S Newsletter*. This request was from a member who prepaid his 1994 membership and was billed additional money for 1994 because of membership dues increase. Also the amount of the requested payment was too large. IEEE was contacted and the member will receive all MTT-S publications for 1994 with no additional cost. Any member who prepaes his dues is not responsible for additional payment due to dues increase.

Please feel free to contact me by letter of telephone concerning any complaint you may have or any assistance you may need in obtaining membership services from IEEE and MTT-S.

Technically Challenged or Minor Deity?



by Mike Golio, IEEE Press Liaison

I was completely lost in thought—not serious, intense thought or anything. I was simply absorbed. Probably thinking about lunch. At any rate, I had managed to completely blot out the whistling coming from down the hall. At the moment, I was walking directly toward the source of the sound.

"Psst! . . . Psst! . . . Hey, Golio, don't you hear that?" An engineer was whispering to me from just inside the office doorway. It was Jill Forsythe. I paused and listened. I heard the whistling and immediately leapt out of the hallway and into the room. The tune being whistled was from the movie, *The Wizard of Oz*. It was the scarecrow's song—"If I Only Had a Brain." That could only mean one thing. Bubba Auto was coming this way. For as long as I could remember, there had been an unwritten agreement among thinking engineers throughout the plant: If you see Bubba, it is your responsibility to begin whistling the scarecrow's song. This would serve as a signal for others to stay clear. I guess it's kind of like hanging a bell around the bull's neck.

As soon as I had gotten out of sight, I turned to Jill. "Gee, thanks."

"What on earth were you thinking?" Jill asked. "You were in serious danger of being spotted and bored to death with mindless drivelt." She was right, of course. She continued to look at me as if she were expecting an answer to her query.

"Oh, I guess I was thinking about what I could do to recruit MTT-Society authors, reviewers, and editors for the IEEE Press." It was a lie, but I was anxious to forget about my near brush with imbecility, and to change the subject. Besides, the IEEE Press issue was a topic I needed to deal with. "Got any good ideas?"

It turns out that Jill did have some good ideas. As we discussed them, Bob Brownwaters, Jimmy Maxwell and several others joined us. We talked about some of the books each of us had found useful during our careers. We were discussing promising topics for new books when the door opened. Bubba Auto and Leary McFly walked in. McFly was one of the only engineers in the plant that didn't know to whistle the scarecrow's

song when Bubba was nearby. In fact, I'm not sure why we don't have a similar signal for McFly—maybe we could hum "Social Disease" by Bon Jovi.

Bubba looked around at the four of us standing near the door. He seemed lost. "Oh my," he finally said, "is this where our meeting is? No chairs. We'll have to stand." After a second he added, "At least my jacket won't get wrinkled." Apparently Leary and Bubba were on their way to a meeting.

McFly snorted, "No, Bubba. This is just the office area. The conference room is that room with a table in it—next to your office."

"And it has chairs then?" Bubba seemed particularly worried about seating.

The question went unanswered, because McFly immediately turned toward the group and roared, "Well, what are you all doing? Loafing?" He followed this assault with demonic laughter and a loud belch.

Although most of the group had been numbed into silence by now, Jill eventually spoke up. "Uh . . . well, we were just talking about books." She thought for a second and then turned to Bubba, "You know, a collection of words on pages like you read." Jill had always been good at communicating to management in terms they could understand.

Bubba looked lost for a few seconds, but finally said, "I hope they're the soft cushioned kind."

McFly grunted, "My philosophy is . . . if someone else has written it down, I probably already know it. Books are just not worth reading."

With feigned sincerity, we all thanked him for sharing his philosophy. He snorted, pointed in the direction of the conference room, and waddled away. Bubba followed.

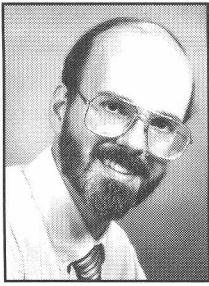
When they had left, Bob looked at Jill and asked, "I wonder if Bubba can read?" Then he added, "How did we get stuck having to work with those two, anyway?"

"Cambert!" a chorus of engineers replied. Bo Cambert was living proof that the company was striving to protect the rights of the technically challenged. Not only had he managed to move up through the ranks quickly himself, but he had steadfastly insisted on promoting other individuals who showed signs of serious and irreversible technical impairment.

"I think I've figured out his strategy," Jimmy Maxwell said after a few seconds. "Bo is only about two promotions away from God. When he finally gets that position, he hopes to change the laws of physics. Then everything he and his team of cretins tries to do will work. In fact," he went on, "maybe you should get him to write a book about becoming a deity."

I don't know about that idea, but I would like to hear yours. If you think you have an IEEE Press book in you, or if you think of one you'd like to read, let me know.

An MTT Consultants' Network



by Steve Maas

Until quite recently, it has been unusual for electrical engineers—especially microwave engineers—to be in private practice. Most consulting engineers came from fields where there was an obvious niche: for example, the structural engineer who reviewed an architect's or building contractor's plans and was needed only for a few days at the beginning of a new project. Several recent events, however, have changed this situation:

- The current recession, which promises to be long-lasting has forced managers in many companies to lay off people who embodied much of their technical expertise;
- Even as the recession abates, it is difficult for companies to make the long-term commitment to hire new employees;
- Many engineers, victims of layoffs and "downsizing," are seeking ways to do business that are not dependent on employment at a single company;
- The long-term decrease in the number of US citizens obtaining graduate degrees has reduced the pool of engineers having specific, high-level technical skills;
- Simultaneously, the range of technologies which companies must address is always increasing, so people with specific technical skills are in progressively greater demand.

The clear result is that many microwave engineers are entering private practice, and companies that previously had strict policies proscribing the use of consultants are now becoming more flexible. An outgrowth of this new reality is the consultants' network, an organization of engineers in private practice, offering a number of valuable functions. These include:

- Maintaining databases of consultants for referrals;
 - Maintaining a database of companies receptive to the use of private practitioners;
 - Education for members on tax and business issues;
 - Assistance for new consultants;
- and, of course, that good ol' buzzword of the '90's,
- Networking.

There are now about eight IEEE consultants' networks in the US (I'm reluctant to give an exact number, because it changes weekly). All serve consultants in a specific geographic area: networks exist in Boston, Long Island, San Diego, Los Angeles, etc. Our network in Los Angeles is by far the largest, having over 100 members.

This leaves a simple but important question, "Should we have consultants' networks organized around technical societies?" I can see a number of advantages to this:

- Referrals are more efficient. A client who calls our LA network, for example, will find that only a relatively small number of our members are microwave engineers; fewer have experience in the specific technology in which the client is interested.
- The network is global in its coverage. Local networks are unlikely to be known outside of their service area; an MTT network would be available to potential clients worldwide.
- It sends a message to company managers *in our industry* that use of consultants is a viable option; There are a number of disadvantages, too:
- An MTT network would be unable to provide some of the services that local networks provide. Chief among these are networking and the kind of information on tax and business issues regularly provided by speakers at meetings.
- It would be difficult for widely-scattered members and officers to meet regularly. Perhaps annual meeting could be held at the MTT Symposium, but more frequent meetings would be impossible.
- The IEEE is moving rapidly to link referral databases of local networks into a national or even worldwide database. Thus, the global coverage provided by an MTT network may eventually be redundant.
- It will require extra dues (our LA network charges \$35/year; others charge up to \$100/year).

In spite of the difficulties, it seems to me that an MTT consultants' network would be valuable. Certainly, the idea of a consultants' network really works; I have already received one job through our local network. If you are either a practicing or "wannabee" consultant, and think an MTT network might be useful, please let me know. I can be reached at 310-426-1639 or by e-mail at smaas@aol.com. Even if you don't like the idea, or have no strong opinion, please let me know you exist; it would be helpful to have some idea of the number of active consultants among our membership. If there is enough positive response, we may begin to organize the IEEE MTT Consultants' Network.

Steve Maas may also be contacted through Non-Linear Technologies, Inc., P.O. Box 7284, Long Beach, CA 90807

Survey of MTT Symposium Attendees



by Derry Hornbuckle

AdCom commissioned a survey of 1993 MTT Symposium attendees as a step toward improving services to MTT members. Mario Maury, John Barr, Eliot Cohen, Roger Pollard, Roger Sudbury, and I put together the survey, the results of which are described below.

Surveys were distributed to all MTT Symposium Technical Program registrants, thanks to the help of Larry Whicker and the registration personnel. There were 117 replies. Geographically, 65 were from the U.S., 26 from Europe, 7 from the Pacific Rim, 4 from Canada, 1 from India, and 14 did not indicate nationality. As for MTT membership, exactly 100 were MTT members, 4 were IEEE but not MTT members, 10 were non-members, and 3 did not respond to this question.

Questions regarding technical meetings and publications required responses on a 1 to 5 scale, with 5 = best. Results are shown in Figure 1. Conferences all

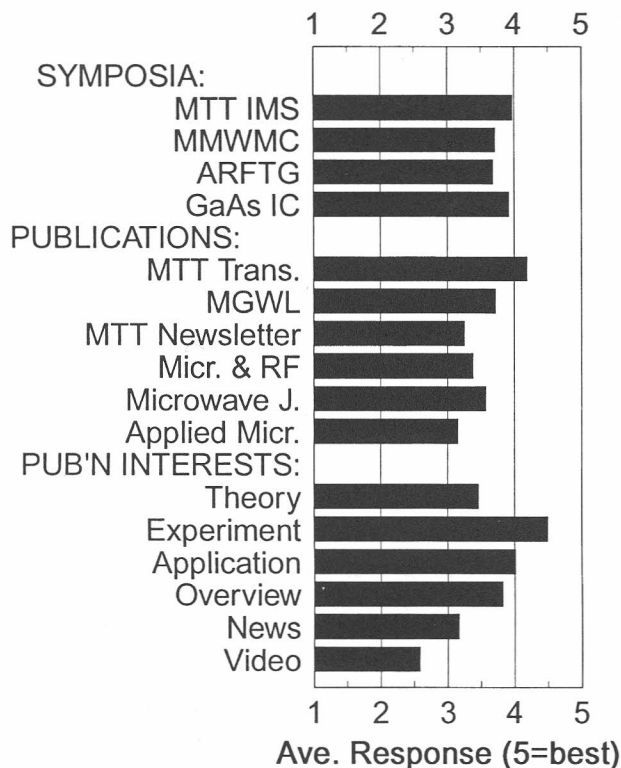


Figure 1. Survey of 1993 MTT Symposium attendees.

received similar ratings, with the MTT International Microwave Symposium slightly higher, at 4.0, than the other meetings. Among publications, the MTT Transactions and the Microwave and Guided Wave Letters both rated significantly higher than the other publications. Interest profiles showed a strong preference for papers which include experimental results. Applications papers rated second, overview papers third, and theoretical papers fourth in interest level among respondents. Standard deviations of answers ranged between 0.7 and 1.0 for nearly all the above questions.

Technical meeting attendance factors and MTT-S participation was explored with "check the box" questions, as summarized in Figure 2. The most important influences on attendance at technical meetings were papers and opportunities for interaction with authors/colleagues; location was the least important factor. About 60% of the respondents attend MTT local chapter meetings, either regularly or occasionally.

Job affiliations of the respondents were 35% academia, 55% industry (1/3 of whom were managers), and 10% other (government, retired, etc.).

Overall satisfaction with services provided by MTT-S was rated 3.9 on a scale of 5, with a standard deviation of 0.87. Written comments from the survey have been transcribed and circulated to the Membership Services Committee to aid in interpreting the results.

An action plan is now being drafted to respond to issues raised by the survey, such as encouraging more applications-oriented papers in MTT publications. AdCom will review the proposals at its next meeting, in January, 1994.

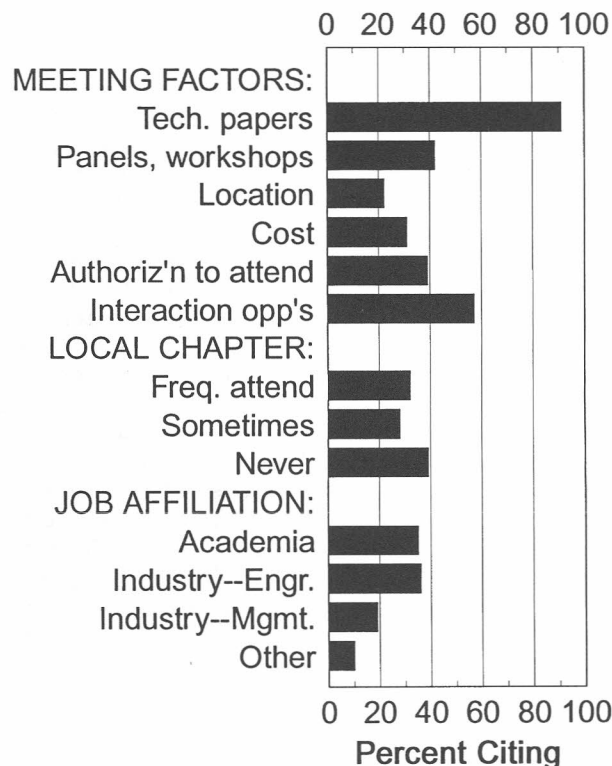
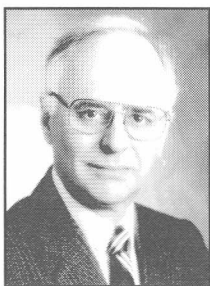


Figure 2. Survey of 1993 MTT Symposium attendees.

Division IV Director's Report



by W. Kenneth Dawson

An Adventure in New York

From time to time one hears complaints about the actions or indifference of IEEE staff. In this article I'd like to present a counterbalancing story based on a recent (mis)adventure in New York. The story will, of necessity, involve the telling of some personal details in order to give you a better idea of the responsiveness and dedication of IEEE staff. Let's approach it in more or less chronological order, except to say I now feel fine.

On a Saturday in mid-September I flew from Vancouver to New York to attend a meeting with IEEE staff associated with the production of *The Institute* and *Spectrum*. (In case you've forgotten, my election statement expressed concern about the direction these publications were taking and my intention to do something about it.) On arrival at about midnight, I felt rather unwell, but, with the help of the cabin crew, managed to make it to a cab and then to the hotel.

Sunday morning things had become so much worse that I was unable to move other than to lift the telephone off the hook and push "O." The operator called 911 and in a few minutes people were outside my door trying to get in. Besides using the double door lock, I had also engaged the interior mechanical latch, so hammer and chisel were required in order to get the door open. The hotel manager accompanied the medical team. As I was being wheeled out I asked him to let Hugh Rudnick know that I would probably not attend our Monday meeting. (Hugh is the chair of the four person committee set up by Helen Wood, Vice-President, Publications to look into *The Institute* and *Spectrum*.) The manager also said not to worry about the door!

So, I had my first and, I hope, last ambulance ride through Manhattan and was deposited in the emergency ward of Bellevue Hospital. After several hours of tests ranging from "What day is it?" to a CAT scan, I was moved to the Ear, Nose and Throat wing of the hospital, since they were now pretty sure the problem was labyrinthitis. Later that evening a sympathetic intern phoned my wife to give her the news.

Early next morning, nurses informed me that a number of people had tried to reach me, but, as my bedside phone wasn't working, were unable to get through. Several hours later somebody (not an IEEE member) figured out that the connection was bad and fixed it. The first call to come through was from Hugh, who said

that real progress was being made at the meeting (perhaps because I wasn't there) and wished me well. Next my wife and then Phyllis Hall, Staff Executive for Publications, who told me, among other things, that Stella Paone, Manager of the Corporate Office, had been assigned to look after me. And she certainly did.

The calls continued to come in. Stella called me periodically to see if anything was needed and my wife several times to reassure her and to keep her up-to-date on my condition. Other callers included Martha Sloan, President of the IEEE and my boss in Vancouver. All were appreciated. My phone was the only one to ring in the entire ward and my roommates seemed to enjoy what they heard of the conversations, although they must have had trouble understanding when I talked to my wife in French!

During one of the calls from Stella, I asked if somebody could accompany me back to the hotel when I was released. She immediately volunteered. Tuesday during the morning visitation by a troop of doctors on their rounds I was informed that I could leave once some further tests were carried out. I reported this to Stella and, since I was unable to dial out, she said she would call on an hourly basis to learn the time of my liberation. Delays were encountered during the test so it wasn't until 4:30 pm that the required clearance was issued. Stella phoned and said she would be right over. We then met for the first time and she took charge.

Considerable time passed before we could get somebody to remove the intravenous needle, find my clothes that the hotel manager had stuffed into some hotel laundry bags and locate a wheelchair attendant. I was expecting difficulties at the discharge office as I only had Canadian medical insurance which has very limited applicability in the States. But no! (Next day I found out that IEEE had told the hospital that they would guarantee the charges—a deeply appreciated action.) Once out of the discharge office Stella and I discovered that cabs were about a block away and, since I was no longer a patient, wheelchairs were not available. My sense of balance was still not good, so she grabbed me firmly by the arm and slowly led me down the long corridor to a gypsy cab stand. At the hotel, Stella unhurriedly made sure I was in good hands before literally running off to catch the last bus home from the Port Authority.

Next day, Stella had some prescriptions delivered to me that the hospital was unable to fill. She also miraculously located, and had delivered, my pyjamas which had been removed in the emergency room. My plan was to try to return home on Friday by air despite explicit warnings to the contrary by the medics. Stella made all the reservations including arranging for a wheelchair. Thanks to some cooperative pilots who alerted me to all cabin pressure changes, the trip home was uneventful.

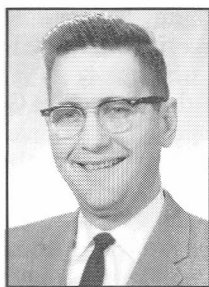
Stella's attitude and actions gave me a new insight into the dedication and willingness of IEEE staff. She went out of her way to help and always had the strong backing of her bosses for her actions and promises. I had seen hints of this attitude at previous meetings, but this event really drove home to me the fact that staff truly appreciate and understand the role of the

(continued on page 26)

Restructured MTT-S Bylaws



K. Tomiyasu



R. A. Moore

Co-Chairmen, Task Force on MTT-S Bylaws

In recent meetings of the MTT-S Administrative Committee, numerous Bylaw amendments have been introduced concerned with detailed operations of the AdCom. A Task Force was appointed in June 1993 to restructure the Bylaws as a whole and to architect a more efficient operational procedure for AdCom. The Task Force received valuable inputs from Ed Rezek, John Wassel, Roger Pollard and Peter Staecker.

At the October 1993 Administrative Committee meeting, the Task Force discussed the MTT organizational documents. In decreasing order of permanence, they

are the MTT Constitution, MTT Bylaws, and a new document called MTT Procedures Manual. The MTT Constitution was not amended. The previous 14 page MTT Bylaws were reduced substantially to retain the generic responsibilities of Officers and AdCom members while preserving the rights of Society members. The restructured Bylaws was adopted by the AdCom in October 1993, and was recently approved by the next higher level, the IEEE Technical Activities Board. These Bylaws are presented in this NEWSLETTER for member ratification. The objective of the restructured Bylaws is to limit its amendments to infrequent occasions.

The third official document, the MTT Procedures Manual, contains those portions removed from the previous 14 page Bylaws. The Manual also contains additional information in order to codify the operations, and to provide detailed guidelines, schedules and responsibilities within AdCom. This Manual should greatly increase AdCom operational efficiency, and assist new AdCom members in discharging their duties in a timely manner. This Manual shall be a living document by collecting AdCom motions that have bearing on future decisions, and providing corporate memory. All items in the Manual require AdCom approval.

CONSTITUTION IEEE Microwave Theory and Techniques Society

Article I: Name and Object

Section 1. This organization shall be known as the Microwave Theory and Techniques Society of the Institute of Electrical and Electronics Engineers, Incorporated, hereafter referred to as the Society.

Section 2. Its object shall be scientific, literary, and educational in character. The Society shall strive for the advancement of the theory and practice of electronics, allied branches of engineering, and of the allied arts and sciences, and the maintenance of high professional standards among its members, all in consonance with the Constitution and Bylaws of the IEEE and with special attention to such aims within the field of interest of the Society as are hereinafter defined.

Section 3. The Society shall aid in promoting close cooperation and exchange of technical information among its members, the members of IEEE, and of the profession, and to this end shall hold meetings for the presentation of papers and their discussion, and through its committees shall study and provide for the needs of its members.

Article II: Membership

Section 1. The members of the Society shall consist only of members of the IEEE in any grade, including students, having an interest in any phase of the field of interest of the Society who apply for membership in accordance with IEEE practice and comply with the Constitution and Bylaws of the Society.

Section 2. Affiliates may participate in Society activities as provided by the IEEE Bylaws and subject to the applicable IEEE rules and regulations and any

additional limitations imposed by the Society Bylaws.

Section 3. Society Affiliate cannot serve in an elective office in the Society or in a Chapter of the Society nor vote for candidates for these offices. An Affiliate can serve in any appointive office in the Society or Chapter of the Society, except the office of Secretary.

Section 4. A Society Affiliate is entitled to receive notices of all meetings sent to Society members, to receive copies of publications of the Society, to attend and participate in any function of the Society by payment of IEEE member charges, and to receive any award bestowed upon him or her by the Society.

Section 5. A Society Affiliate may not receive any IEEE benefits that are derived through IEEE membership except as approved by the Executive Committee of the IEEE.

Article II: Field of Interest

Section 1a. The Field of Interest of the Society shall be Microwave Theory, Techniques and Applications, as they relate to components, devices, circuits, and systems involving the generation, transmission, and detection of microwaves. It shall include scientific, technical, and industrial activities, subject to timely modifications approved by the IEEE TAB.

Section 1b. Microwave Theory and Techniques relates to electromagnetic waves usually in the frequency region between 1-100 GHz; other spectral regions and wave types are included within the scope of the Society whenever basic microwave theory and techniques can yield useful results. Generally, this occurs in the theory

of wave propagation in structures with dimensions comparable to a wavelength, and in the related techniques for analysis and design. Examples are optical waves in suitably scaled structures, as well as the application of acoustic and magnetic domain waves to microwave systems.

Section 1c. Considerable overlap exists with several other Societies. Specific areas are electron tubes and semiconductor devices for the Society on Electron Devices; radiating elements and propagation for the Society on Antennas and Propagation; and acoustical waves for the Society on Ultrasonics, Ferroelectrics and Frequency Control. In each case, activities in areas of common interest shall be coordinated to assure a constructive and mutually satisfactory result.

Section 2. The Field of Interest of the Society may be enlarged, reduced, or shifted moderately as the needs of the occasion indicate with the provision that, if it overlaps the field of interest of another Society to the extent that interference occurs, the IEEE TAB may draw up more exact lines of demarcation, and that, if some other Society wishes to enlarge its field to the disadvantage of the Society, that this Society will reasonably and in good faith consider the proposals and abide by any decision of the IEEE TAB.

Article IV: Chapters

Section 1. A sub-society may be formed and operated on any plan not inconsistent with the powers of the Administrative Committee of this Society. A sub-society formed in a Section shall be known as a Chapter. A Chapter may assist the Administrative Committee of this Society in the management of the Society's Annual Meeting or Symposium held in the Section in which the Chapter is located. The Chapter shall be responsible for coordinating with the Section on such major meetings or symposia. A Chapter may promote meetings of the Section in the field of interest of this Society under the control and supervision of the officers of the Section in which the Chapter is located.

Article V: Financial Support

Section 1. The Society may levy fees on its members and Affiliates for publication and other purposes. Society membership and Society affiliation may be maintained only by regular payment of the Society fee. Any Society member or Affiliate who is delinquent in paying the Society fee for three (3) months shall be dropped from Society membership or affiliation. (The fee for certain categories of special members as established in the Bylaws shall be paid by the Society).

Section 2. The Society may make registration charges at its Society meetings, symposia, conferences, conventions, etc. The registration fee for the non-IEEE members shall be higher than for IEEE members and Society Affiliates.

Section 3. The Society shall not make registration charges at a meeting, conference, or convention which it operates as part of a Sectional, Regional, or Institute meeting, conference, or convention.

Section 4. The Society may raise revenues by other means, such as advertising, shows, requests for contributions, etc., provided such means do not conflict with policies established by the IEEE or do not encroach on prior established revenue fields of other IEEE organi-

zations. The Society must receive from the IEEE General Manager an opinion that a proposed method of raising revenue is non-conflicting and not against IEEE policy before embarking on the proposed plans.

Article VI: Officers and Management

Section 1. The Society shall be managed by an Administrative Committee consisting of 18 elected members of the Society plus additional ex-officio members as provided in the Bylaws. Elected members shall be of at least Member grade.

Section 2. The terms of office of the elected members of the Administrative Committee shall be three years, one-third of the members being elected each year.

Section 3. The current Administrative Committee shall annually elect one of the members of the following year's Administrative Committee as President, another as Vice-President, whose terms shall be for one year. These officers shall be of at least IEEE Senior Member rank.

Section 4. The Incoming President shall appoint a Secretary for a one-year term, whose selection is subject to approval by the Administrative Committee as specified in the Bylaws. This officer need not be an elected member of the Administrative Committee.

Section 5. The President, under direction of the Administrative Committee, shall have general supervision of the Society. The President shall preside at meetings of the Administrative Committee, at any general meeting of the Society, and have such other powers, and perform such other duties as may be provided in the Bylaws, or as may be delegated to him/her by vote of the Administrative Committee. In his/her absence or incapacity, his/her duties shall be performed by the Vice-President.

Section 6. The Administrative Committee may utilize the services of IEEE Headquarters as bursar, in which case funds will be handled under rules established by the IEEE General Manager. If not, the Treasurer shall receive and deposit all monies in his/her name as such officer of the Society in such depository as shall be named by the Administrative Committee, withdrawable on his/her or the President's sole signature. The Treasurer shall make only such disbursements as shall be ordered by the Administrative Committee. He/She also shall be responsible for bringing to the attention of the Administrative Committee all relevant facts bearing on the Society finances and for aiding the President in preparation of the annual estimated budget.

Section 7. The Secretary shall be responsible for recording the minutes of all meetings of the Administrative Committee and general meetings of the Society, for maintaining Society files and records, for assisting the President in the preparation of Administrative Committee meeting agendas, for submitting copies of agendas and minutes to IEEE Headquarters, and for performing other duties as may be required by the President, the Administrative Committee or the Society Bylaws.

Section 8. The President, as soon as expedient after election, shall appoint the standing committees provided by the Bylaws. Other Committees may be authorized by vote of the Administrative Committee and

shall be appointed by the President. Members appointed shall serve until their successors are appointed or the committee dissolved.

Section 9. The President, as a member of IEEE TAB, when notified of a meeting of said committee, is entitled to representation of the Society at such meeting by himself/herself, by a delegate, or by letter.

Section 10. The newly elected President, Vice-President, and members of the Administrative Committee shall assume office on the first day of January following the election, unless a different time is provided in the Bylaws.

Section 11. Neither the Microwave Theory and Techniques Society nor any officer or representative thereof, shall have any authority to contract debts for, pledge the credit of, or in any way bind the IEEE except within prior approved budgets.

Section 12. Monies held by or for the Society legally belong to the IEEE, and such monies shall not be expended for purposes known to be inimical to the interests of the IEEE.

Article VI: Nomination & Election of Administrative Committee

Section 1. Nominating procedures as prescribed in the Bylaws shall include provision for nomination by petition.

Section 2. At the annual meeting of the Administrative Committee, a Committee consisting of elected members of the Administrative Committee, excluding those members who are candidates for re-election, and the three (3) Past Presidents of the Administrative Committee, shall elect the members to fill the vacancies on the Administrative Committee about to occur with the coming year and shall transmit the names of such elected members to the Secretary of the IEEE Technical Activities Board. Unless disapproval of such elected members is received within 60 days of such transmittal, the elections shall become final.

Section 3. Within-term vacancies of the Administrative Committee shall be filled by elections for the unexpired terms by the remainder of the elected members of the Committee and the three (3) Past Presidents of the Administrative Committee.

Article VIII: Meetings

Section 1. The Society may hold technical meetings, such as conferences, symposia, or conventions either alone or in cooperation with Sections, Regions, Convention Committees of the IEEE, or other technical organizations subject to IEEE rules and regulations. The Society shall sponsor at least one technical meeting of major scope each year, which may be held during the International Convention, during some other IEEE meeting, or as a separate conference.

Section 2. Technical meetings of the Society shall be open on an equal basis to all members of the IEEE and to Society Affiliates. Special provisions may be made for IEEE student members.

The Society shall not sponsor classified meetings. However, a classified meeting, sponsored by another organization may be held in conjunction with a Society technical meeting, and publicity on such a meeting may be included in Society mailings provided it is made perfectly clear that the classified meeting is not sponsored

by the IEEE or the Society.

Section 3. Meetings of the Administrative Committee shall be held at such times as are found necessary. Meetings of the Administrative Committee may be called by the President at his/her own discretion, or upon request by two other members of the Committee.

Section 4. Six elected members of the Administrative Committee shall constitute a quorum. No meeting of the Administrative Committee may be held unless a quorum is present.

Section 5. A majority vote of those elected and ex-officio members of the Administrative Committee attending a meeting shall be necessary in the conduct of its business except as otherwise provided in this Constitution or the Bylaws.

Section 6. Business of the Administrative Committee may be handled by informal meetings, correspondence, telephone, or telegraph where, in the opinion of the President, matters requiring action can be adequately handled in that manner. A majority vote of the members of the Committee is necessary for approval of actions handled in that manner. The Secretary shall prepare minutes of the action including a record of the individual votes.

Article IX: Amendments

Section 1. Amendments to this Constitution may be initiated by petition submitted by 25 members of the Society, or by action of the Administrative Committee, such petition being submitted to the IEEE TAB and to the Executive Committee of the IEEE for approval. After such approval, the proposed amendment shall be publicized in a Society publication, or by letter to all members, with notice that it goes into effect unless 10 percent of the Society members object within 30 days. If such objections are received, a copy of the proposed amendment shall be mailed with a ballot to all members of the Society at least 30 days before the date appointed for return of the ballots, and the ballots shall carry a statement of the time limit for their return to IEEE Headquarters. Approval of the amendment by at least two-thirds of those voting shall be necessary for its enactment.

Section 2. Suitable Bylaws or changes in the Bylaws to this Constitution may be adopted by a two-thirds vote of the Administrative Committee present in meeting assembled provided that notice of the proposed Bylaw or change in the Bylaw has been sent to each member of the Administrative Committee at least three weeks prior to such meeting by first class mail. No Bylaw shall take effect until 30 days after it has been publicized to all members of the Society and a copy has been mailed to the IEEE TAB office.

Article X: Publications

Section 1. Publications of any material may be entirely or partly by means of the Proceedings of the IEEE by meeting the standards, and to the extent that it is equitable to other fields of interest.

Section 2. The Society shall publish the *IEEE Transactions on Microwave Theory and Techniques* at least four times a year and a *Newsletter* at convenient intervals. The Society may also join with other Societies to publish such Journals as may be approved by the Administrative Committee.

BYLAWS

Section 1.0 Objective

These Bylaws provide detailed guidance for the supervision and management of the affairs of the IEEE Microwave Theory and Techniques Society (MTT-S), hereafter referred to as "the Society," in accordance with the Society Constitution.

Section 2.0 Society Membership

2.1 Eligibility—All IEEE members shall be eligible for membership in the Society upon payment of the annual fee as prescribed in the Procedures Manual.

2.2 Affiliates—Individuals who are not members of the IEEE but who are members of other Professional and/or Technical Societies approved by the IEEE may be accepted as affiliates in the MTT-S with application and appropriate payment of annual fees.

2.3 Chapters—The Society may approve the formation of Chapters within the Section in which the Chapter is located to promote the technical interests of the Society. Chapters may assist the Administrative Committee in the management of the Society's Symposium held in the region in which the Chapter is located.

Section 3.0 Administrative Committee

3.1 In accordance with Article VI of the Constitution, the Society shall be managed by an Administrative Committee consisting of 18 elected members plus additional Ex-Officio Members as provided in these Bylaws.

3.2 Officers

3.2.1 President—The President shall have general supervision of the affairs of the Society. The President shall preside at meetings of the Administrative Committee and at general meetings of the Society and have such other powers and perform such other duties as may be provided in the Society Bylaws as may be delegated to him by vote of the Administrative Committee. The President shall be an ex-officio member of all committees of the Society.

3.2.2 Vice-President—The Vice-President shall perform the duties of the President in the President's absence or incapacity. In addition the Vice-President shall perform duties as provided in the Society Bylaws or delegated by the President or by vote of the Administrative Committee.

3.2.3 Secretary—The Secretary shall be responsible for keeping and distributing minutes of meetings of the Administrative Committee, general meetings of the Society and for other events as called on by the President or the Administrative Committee. The Secretary shall perform such other duties as may be provided in the Society Bylaws.

3.2.4 Treasurer—The Treasurer shall be responsible for keeping the financial records of the Society and reporting the financial status to the Administrative Committee at regularly called meetings and at other times as requested by the President or the Administrative Committee. The Treasurer shall perform such other duties as may be provided in the Society Bylaws.

3.3 Membership

3.3.1 Elected Members of the Administrative Committee must be members of the Society and of, at least, Member grade in the IEEE. Elected Members have full rights and voting privileges on all matters before the

Administrative Committee as defined in the Constitution and these Bylaws.

3.3.2 Ex-Officio Members shall serve on the Administrative Committee as provided by these Bylaws. Ex-Officio Members have all discussion and voting privileges in matters before the Administrative Committee, except that no vote may be cast to elect members to the Administrative Committee nor to elect the President nor Vice-President of the Society. Ex-Officio members may serve on or chair standing and ad hoc committees.

3.3.2.1 Honorary Life Members of the Society have all the rights of Ex-Officio Members of the Administrative Committee.

3.3.2.2 Past Presidents of the Society shall be Ex-Officio Members and have full rights and voting privileges of Elected members of the Administrative Committee for three years following their term of office as President, provided that membership in good standing is maintained in the Society and the IEEE. Any remaining years of a Past President's elective term will be vacated and be filled within-term vacancy in accordance with Section 4.0 of these Bylaws. Past Presidents will be ineligible for re-election to the Administrative Committee for three years after their terms as President.

3.3.2.3 The Editors of the Archival Technical Journals published by the Society, if not Elected Members of the Administrative Committee, shall be Ex-Officio Members of the Administrative Committee during their tenures in those offices. These Editors must be Members of the Society and of the IEEE.

3.3.3 Non-Voting Members of the Administrative Committee may participate in discussions of all matters before the Administrative Committee but do not have a vote on any Administrative Committee business. Non-Voting members shall receive notification of meetings and copies of the minutes of meetings. Non-Voting members who chair standing or ad hoc committees may bring motions to the floor at meetings of the Administrative Committee.

3.3.3.1 If not an Elected or Ex-Officio Member of the Administrative Committee, the following shall be Non-Voting Members during their tenure in office:

- Secretary of the Administrative Committee
- MTT-S Chapter Chairs
- Chairs of Standing Committees
- Chairs of Ad Hoc Committees
- Designated representatives to other IEEE Entities
- Members of Advisory Committees of the Administrative Committee

Section 4.0 Nomination, Election and Appointment of Administrative Committee Members, Officers and Committees

4.1 Nominations

4.1.1 On or before February 1 of each year, the President of the Society shall appoint the Nominations and Appointments Committee in accordance with Section 4.3.3 of these Bylaws which shall be constituted in accordance with Section 5.2.12 of these Bylaws.

4.1.2 Membership Nominations

4.1.2.1 Each year prior to the Fall Meeting of the

Society, the Nominations and Appointments Committee shall select a slate of, at least, two members of the Society holding IEEE Member rank or above for each vacancy in the Elected membership which will occur on the Administrative Committee on the following January 1. Additional nominations may be made by members of the Administrative Committee or by petition signed by at least 25 members of the Society. The nominees or potential nominees must be contacted prior to the Fall Meeting to ascertain that they will actively participate if elected.

4.1.2.2 The Chair of the Nominations and Appointments Committee shall cause to be published and distributed to the entire Society membership a timely call for nominations in the *MTT Newsletter*.

4.1.3 *President and Vice-President Nominations*—Each year, before the Fall Meeting of the Administrative Committee, the Chair of the Nominations and Appointments Committee shall solicit nominees for the offices of President and Vice-President from each voting member of the Administrative Committee. Each nominee shall be, at least, IEEE Senior Member rank. The nominees shall be contacted by the Nominations and Appointments Chair prior to the Fall Meeting to ascertain that they will actively participate, if elected.

4.1.4 *Divisional Director*—Every two years, for purposes of election to office commencing on odd years, the Nominations and Appointments Committee shall recommend to the President up to two Senior Members or Fellows from the Society representing a consensus of the Administrative Committee as candidates for Division Director and shall ascertain their desire to serve. Candidate(s) name(s) will be forwarded by February 1 to the Divisional Director or the Division Nominations Committee.

4.1.5 *Other IEEE Nominations*—The Nominations and Appointments Committee shall recommend to the Society President candidates for Institute or TAB positions as requested.

4.2 *Elections*—The Administrative Committee shall hold elections at a meeting held in the Fall each year called the Fall Meeting. A quorum in accordance with Article VIII, Section 4 of the Constitution must be present. All Elected Members and the three immediate Past Presidents are eligible to vote, except candidates for election. A majority vote is required for election. The names of the newly Elected Members shall be transmitted to the Staff Secretary of the Technical Activities Board. Unless disapproval of such Elected Members is received within 60 days of each transmittal, the elections shall become final.

4.2.1 *Contingent Elections*—The Administrative Committee may make contingent elections to be effective in case an Elected Member fails to accept the office or a disapproval is received from TAB.

4.2.2 *President and Vice-President*—At the Fall Meeting, the Administrative Committee shall elect as its President one of the Elected Members and its Vice-President one of the Elected Members, both of the following year's Administrative Committee for the year beginning on the succeeding January 1.

4.2.3 *Within-Term Vacancies*—Within-term vacancies on the Administrative Committee shall be filled by

elections for the unexpired terms by the remainder of the Elected Members of the Administrative Committee and the three (3) most recent Past Presidents.

4.3 Appointments

4.3.1 *Secretary*—The President-Elect, upon receiving notice of election as President, shall submit to the Administrative Committee the name of a proposed Secretary for appointment, who must be a member of the Society. If a majority of the members of the Administrative Committee do not object within 30 days by oral or written announcement to the Administrative Committee, the appointment becomes final. If a majority of the members object, new name(s) must be submitted. The incumbent Secretary shall remain in office until a successor takes office.

4.3.2 *Treasurer*—The President-Elect, upon receiving notice of election as President, shall submit to the Administrative Committee the name of a proposed Treasurer for appointment, who must be an Elected Member of the Administrative Committee. If a majority of the members of the Administrative Committee do not object within 30 days by oral or written announcement to the Administrative Committee, the appointment becomes final. If a majority of the members object, new name(s) must be submitted. The incumbent Treasurer shall remain in office until a successor takes office.

4.3.3 *Standing Committees*—Standing Committees shall be appointed by the President as soon as possible after election as President. Such committees shall hold office for one year coincident with the term of the appointing President except as otherwise noted in these Bylaws. It is discretionary with the President to appoint any part or all of the Standing Committee, or to appoint the chair only of each committee and request the latter to appoint additional committee members.

4.3.4 *Ad Hoc Committees*—The President shall create Ad Hoc Committees when, in the President's judgment, such committees are required.

Section 5.0 Administration

5.1 Administrative Committee Meetings

5.1.1 *Meeting Notices*—Meetings of the Administrative Committee shall be held for the purpose of transacting business provided each Administrative Committee member shall have been sent notice of the time and place of such meeting at least 20 days prior to the scheduled date of the meeting.

5.1.2 *Quorum*—A quorum of six Elected Members of the Administrative Committee in accordance with Article VIII, Section 4 of the Constitution must be present to conduct business. If less than a quorum is present at a duly called meeting, tentative actions may be taken which will become effective upon subsequent ratification either at a subsequent meeting, by mail or by electronic contact by a sufficient number of members to constitute a majority of the voting members of the Administrative Committee.

5.1.3 *Order of Business*—Robert's Rules of Order shall govern conduct of Administrative Committee business in all matters not otherwise specified in the Constitution or these Bylaws.

5.2 Standing Committees

5.2.1 *Meetings and Symposium Committee*—The Meetings and Symposium Committee shall recommend

technical meetings, symposia and conferences appropriate for Society interests to the Administrative Committee for sponsorship, cosponsorship, technical cosponsorship and cooperation. The Meetings and Symposium Committee shall establish procedures for site selection of meetings, symposia and conferences sponsored and cosponsored by the Society. These procedures when approved or revised by the Administrative Committee shall be included in the Procedures Manual. Meetings, symposia and conference chairs shall take office immediately upon approval by the Administrative Committee and continue until activities of the event for which they were appointed to manage are completed. The Meetings and Symposium Committee shall, as required, assist conference committees in planning approved meetings, symposia and conferences of the Society.

5.2.2 Publications Committee—The Publications Committee shall be responsible for publication and dissemination of technical information of interest to the Society. The Committee shall be responsible for the Archival Technical Journals of the Society. The Committee is also responsible for notifying the technical community of meetings, special publications and other information of interest to the Society through its publications. Editors of the Society Archival Technical Journals are recommended by the Chair of the Publications Committee and approved by the Administrative Committee. The duties of the Editors of the Society Archival Technical Journals are included in the Procedures Manual.

5.2.3 Education Committee—The Education Committee shall be responsible for the promotion and coordination of activities furthering the cause of education as it relates to the Society. The committee shall institute and administer educational-aid programs to be wholly or partially sponsored by the Society. These activities shall encompass both support of student educational activities and continuing education for the Society membership. The Committee shall obtain all necessary IEEE approvals to implement each activity.

5.2.4 Operations Committee—The Operations Committee shall be responsible for the operational conduct and advisory administration of the Society and the Administrative Committee. It shall be responsible for maintaining the Constitution, the Bylaws and the Procedures Manual; for ensuring the proper conduct of business meetings; for maintaining historical collection; for publicity and public relations activities; and for providing membership an alternate channel to the IEEE Service Center for addressing problems.

5.2.5 Standards Coordinating Committee—The Standards Coordinating Committee shall be responsible for establishing and/or reviewing IEEE Standards within the scope of interest of the Society. The Committee shall periodically upgrade existing standards and shall initiate standards in new areas when they have become sufficiently established. The Chair of the Standards Coordinating Committee shall appoint Ad Hoc Standards Committees to deal with specific areas requiring standardization.

5.2.6 Long-Range Planning Committee—The Long-Range Planning Committee shall be responsible for review of advanced goals and policies of the Society and

shall submit recommendations to the Administrative Committee.

5.2.7 Technical Coordinating Committee—The Technical Coordinating Committee shall investigate, evaluate, and, as appropriate, promulgate new and/or peripheral technologies of interest to the Society. The Technical Coordinating Committee shall appoint Technical Committees for each technology of interest to the Society and conduct special and periodic technical meetings as directed by the Administrative Committee.

5.2.8 Membership Services Committee—The Membership Services Committee shall encourage membership in the Society and shall maintain records of Society membership. The Committee is responsible for promotion of the Society's interests through the formation of new Society Chapters, maintaining supporting liaison with existing Society Chapters and promulgating activities which encourage membership in the Society. The Membership Services Committee shall disseminate publicity and information of interest on the IEEE and the Society to the Chapters and to the Society membership.

5.2.9 Awards Committee—The Awards Committee shall recommend candidates to the Administrative Committee for Society awards and recognitions as documented in the Procedures Manual and shall cooperate with the IEEE in recommending members of the Society for IEEE awards. The term of the Awards Committee Chair shall normally begin on October 1 of the year in which that Chair is appointed. The term of office shall normally be more than one year. The Chair should be a Past President of the Society and shall hold the grade of Fellow of the IEEE.

5.2.10 Budget Committee—The Budget Committee shall be responsible for creating the Society budget for the following year, reporting the budget to and seeking approval of the Administrative Committee, monitoring the financial operations of the Society in the current year and recommending priorities and guidelines on income and expenditures. The Committee shall receive all requests for discretionary expenditures and recommend approval or disapproval to the Administrative Committee, based on analysis of the impact on the budget.

5.2.11 Transnational Committee—The Transnational Committee shall be responsible for promoting non-US international activities. The Committee shall address specific needs of the non-US membership, and assure that this part of the membership is adequately represented in all facets of the Society. The Transnational Committee shall report on and recommend those non-US activities considered beneficial to the Society.

5.2.12 Nominations and Appointments Committee—This Committee shall suggest candidates for Members and Officers of the Administrative Committee in accordance with Sections 3.0 and 4.0 of these Bylaws and shall be responsible for recommending to the Administrative Committee nominees for all IEEE positions for which the Society can nominate. The Committee shall assist and provide nominations to the President and President-Elect names of individuals for appointment to positions and on committees. The Chair shall be a Past President or an Honorary Life Member of the

Society not serving as an Elected Member of the Administrative Committee. Preference shall be given to an individual who will not be eligible to vote in the election.

5.3 Finances

5.3.1 Bursar—The Society shall use the service of the IEEE as Bursar in accordance with the Constitution and the policies of the IEEE.

5.3.2 Fees—Each member of the Society shall be assessed a yearly fee, established by the Administrative Committee, which money will be used for the publications and activities of the Society and/or the IEEE. The fee schedule shall be recorded in the Procedures Manual.

5.3.3 Authorization for Payment of Bills—The approval of one Administrative Committee Officer is needed in the case of bills presented to IEEE Headquarters for payment. The approval of two Administrative Committee Officers is required for payments to any member of the Society or of the Administrative Committee. The Treasurer will be responsible for requesting all disbursements from IEEE Headquarters.

5.3.4 Operating Budget—The Administrative Committee shall establish by a majority vote an annual operating budget for the operation of committees and activities of the Society. Requests for advances, reimbursements or payment of bills within the limits of the established budget for any committee shall be sent by the committee Chair to the Treasurer in accordance with Paragraph 5.3.3 above.

5.3.5 Symposium Advances—The Administrative Committee may make an advance to the Steering Committee of a Symposium sponsored or co-sponsored by the Society in accordance with 5.3.4 of these Bylaws.

5.3.6 Symposium Finances—All financial arrangements for a Symposium or other special activity shall be in accordance with prudent management procedures, applicable IEEE policies, and any special conditions imposed by the Society. Money deposited in a Symposium or similar account shall be identified with the Society and IEEE. In the event of activities co-sponsored with others, a clear and explicit statement of the financial arrangements shall be reduced to writing at the outset in a Memorandum Of Understanding (MOU).

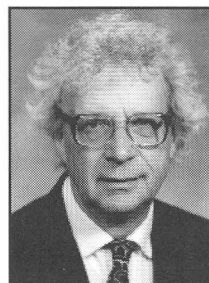
5.4 Administrative Year—The administrative year of the Society shall be January 1 through December 31 of the same year.

Section 6.0 Amendments to the Bylaws and Procedures Manual

6.1 Bylaws—Suitable amendments to the Bylaws may be adopted by a two-thirds vote of the Administrative Committee present in meeting assembled provided a quorum is present and that notice of the proposed Bylaw amendment has been sent to each member of the Administrative Committee at least three weeks prior to such meeting by first class mail. No Bylaw shall take effect until thirty days after it has been publicized to all members of the Society and a copy has been mailed to the IEEE TAB office in accordance with the Society Constitution, Article IX, Section 2.

6.2 Procedures Manual—Suitable amendments to the Procedures Manual may be adopted by a majority vote on motion to the Administrative Committee.

The Impact of Emerging Technologies on Wireless Communications



Martin V. Schneider
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ABSTRACT

As we approach the end of this century, wireless communication is becoming the most pervasive and fastest growing technology. The major cause for this growth is a common need of individuals, industry, government and defense for rapid exchange of information and access to data bases. We expect that the growth will be further enhanced by the creation of the information super highway and the development of an intelligent vehicle highway system (IVHS). Microwave and millimeter-wave technology will play a crucial role in the realization of wirefree and fiberless links that will link people to people and people to machines at an affordable cost, thus enhancing economic development and growth. This talk will give an overview of emerging technologies with emphasis on the specific areas where microwave theory and techniques can contribute to the successful implementation of wireless ventures. We will report on the findings of the IEEE New Technology Directions Committee, which identified opportunities for significant advances in the field of electrotechnology in general, and the wireless area in particular. The committee, led by the author, created a *Portfolio of Emerging Technologies* which serves as a roadmap for starting fruitful technical activities. It is being updated periodically and can be readily accessed from any individual e-mail internet address.

The origins of wirefree communications reach back to Heinrich Hertz and Guglielmo Marconi. Other fundamental contributions were made by Carl Friedrich Gauss and Alexander Graham Bell who were first to use modulated backscatter technology to send both coded and acoustic signals wirefree from a base station to a terminal. It is only recently that wireless means of communications have become economically so attractive that "to be or not to be reachable anytime anywhere" is becoming an option and a reality. This objective is being facilitated by the allocation of portions of the radio spectrum for 38 terrestrial and space radio communication services defined by the International Telecommunication Union. Additional frequencies are being allocated for domestic and worldwide markets for new wireless personal communications services (PCS)

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Update on the 1992-1994 MTT-S Distinguished Lecture—"Progress and Change in Microwave Radio Communications"



by Ferdo Ivanek

Schedule

My preceding reports in the No. 131, 133 and 134 issues of the *MTT-S Newsletter* covered the 12 lectures delivered in 1992 in the U.S., Europe and Japan, and the first three lectures in 1993 (January—February, U.S.). My subsequent program was as follows:

- Milwaukee MTT/AP/ED/IM Chapter, combined with the Colloquium of the Marquette University Department of Electrical and Computer Engineering, 3/3;
- Chicago MTT/AP Chapter, 4/29;
- Philadelphia MTT/AP Chapter, within the program of the 11th Annual "Benjamin Franklin Symposium on Antenna and Microwave Technology in the 1990's," 5/1;
- Czechoslovakia IEEE Section, Prague, May 21;
- Technical University Hamburg-Harburg, Germany, Colloquium on Microwave Engineering, 5/28;
- Sweden MTT/AP Chapter, Goteborg, 6/1;
- Finland MTT/AP Chapter, Espoo, 6/4;
- Switzerland MTT/AP and Communications Chapters, two part lecture within the Seminar "From Cellular Wireless to Local Loop," Bern, 9/13;
- IEEE North Queensland Subsection, Townsville, Australia, 10/26;
- IEEE Queensland Section, Brisbane, Australia, four part lecture within the Seminar "Progress and Change in Microwave Communications: Mobile and Wireless Networks," 11/4;
- New South Wales MTT/AP Chapter, Epping, Australia, three part lecture within the Symposium "Progress and Change in Microwave Communications: Mobile and Wireless Networks," 11/11;
- Victorian COMSOC Chapter, Melbourne, Australia, 11/15;
- South Australia MTT/AP Chapter, Adelaide, Australia, 11/17.

This completes my second year with a total of 16 lectures in 1993.

Lecture focus: Mobile communications and their fixed applications

I have chosen a generic lecture title in order to retain flexibility in responding to the expressed interests of the individual Chapters. It turned out that, with a single exception, all host chapters wanted me to concentrate on mobile communications and their fixed or hybrid applications. I am therefore covering vehicular and pedestrian mobile communications and their derivatives that include fixed usage, i.e. wireless PBX, LAN and local loop. These represent the next major microwave application area.

I structure my presentations as follows:

- I. Services
- II. Frequencies
- III. Standards
- IV. Technology

Items I-III are of an introductory nature, because sound technical and business decision making relies on a good understanding of the relevant development trends in communications services, frequency allocations and standardization. Item IV, the main part of the lecture, covers technological trends with emphasis on MMICs for hand-held terminals and future base station networking for the emerging Personal Communications Services (PCS). I usually conclude with information on how MTT-S is covering the emerging microwave technology for these applications, and with comments on how we could improve our efforts in this direction.

I treat this lecture as a research project undertaken for the Society. The dynamic developments in the subject area make it necessary to continually update the content. I am indebted to MTT-S members and others for valuable inputs and numerous viewgraphs which make up substantial portions of my presentations.

Planning for 1994

I started planning my 1994 program based on the 13 invitations received from 7 countries, which I have not been able to schedule so far. As before, to stretch the MTT-S budget allocation, I shall combine lecture and business travel whenever possible, because this allows me to increase the number of lectures. Also, financial support from MTT-S Chapters, IEEE Sections and their sponsors has greatly expanded my program, so far, and would facilitate scheduling in 1994, as well.

To inquire about scheduling a lecture with Ferdo Ivanek, please write to P.O. Box 60862, Palo Alto, CA 94306, or fax to 415 328 8751, or call 415 329 8716.

Division IV Director's Report

(continued from page 18)

volunteer and the member. They want to help. They want to make the IEEE a better organization for its members. Foul-ups are usually caused by "technical problems" and not because of lack of caring. If in the future you are in touch with Stella Paone, tell her how thankful I am for her unselfish attention.

Cheap and Easy e-Mail

by Steve Maas

I have found e-mail—electronic mail through the Internet—to be invaluable for keeping in contact with clients, friends and colleagues. It is cheap, reliable, and simple to use. Recently, for example, I have been using my e-mail connection to send messages to colleagues in Finland, in preparation for a trip there. You can imagine how much long-distance faxes or phone calls would have cost! The e-mail cost is nothing, beyond the modest monthly connection fees.

People in large companies or universities usually have their own gateways to the Internet, the major worldwide e-mail system. Unfortunately, those of us who work independently have no such easy access. Fortunately, Internet access is available through a number of commercial bulletin board services.

The most popular service offering Internet access is probably CompuServe. I have not used CompuServe myself; however, people using the Internet gateway on CompuServe have told me that it is possible to accumulate high e-mail charges if you use it extensively. On CompuServe, e-mail addresses consist of apparently random sequences of numbers such as 7501.217@compuserve; this is obviously less convenient than something like joe@foobar.edu would be. CompuServe costs \$9.95 a month, but there are extra charges for many of its services.

Another option is PsiLink. PsiLink is a true UNIX e-mail service that is available to DOS users. For a flat rate of \$19 per month (\$29 for 9600 baud) you get Internet access, UUCP, FTP, message forwarding, and even paging. As with CompuServe, user names are random sequences such as p10117@mail.psi.net. The service runs under standard DOS; I don't know if they have a Mac option. For more information, call Performance Systems International, 1-800-827-7482 or send an e-mail to info@psi.com.

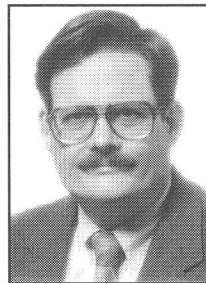
Recently, I discovered another bulletin board service offering a convenient e-mail connection—*America On Line*, or AOL. AOL costs \$9.95 a month for five hours of connect time; additional time is \$3.50 per hour. Most of the other services it offers do not cost extra. Access is through local phone numbers, and software is available for Mac, PC (DOS), or Microsoft Windows.

AOL's e-mail gateway is trivial to use. In the DOS version, you select *Compose Message* from a pull-down menu, type in the message, click on the *Send* icon and off goes the e-mail! Addresses follow the standard (i.e., meaningful) format: mine is smaas@aol.com.

Many of these services have toll-free numbers; AOL's is 1-800-827-6364. Software is free. It is available for DOS, Windows, or MAC installations. CompuServe's number is 1-800-732-7246. Other possibilities are Sprintmail (1-800-835-3638) and MCImail (1-800-444-MAIL). I have no firsthand experience with these, but I understand that they do charge for e-mail beyond a certain number of monthly messages. The IEEE Com-

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Notice: Weekend Seminar



Steve Stitzer
(410) 765-7348

The Historical Electronics Museum is planning a four day weekend seminar to be held at the museum on June 2 to 6, 1994. The seminar leader will be H. Warren Cooper. Seminar speakers range from Joseph Lockard who saw on his 'scope the Japanese bombers on their way to Pearl Harbor on December 7, 1941, to Louis Brown of the Carnegie Institution of Washington who has researched records from both European combatants to find where radar use was critical to victory or defeat in key battles. The seminar starts with a "get acquainted" dinner on Thursday evening, June 2, and ends on June 6, and the day after the 50th anniversary of the Allied landing on Normandy Beach. Among other seminar speakers are Jack Slattery, Bert Fowler, Ted Saad, John Bryant, Merrill Skolnik, and Edward Menaker.

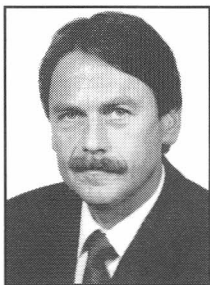
During the weekend, there will be demonstrations including the SCR-270-D, a modified version of the Pearl Harbor type radar and the Enigma, the German code machine that encrypted radio messages for German military commanders. Seminar participants will have an opportunity to discuss their radar experiences.

Tours are being planned for the Westinghouse Plant that makes today's radars. A hall full of early-day radio stations, receivers, and radio programs, plus engines and generators will be seen at the Baltimore Museum of Industry. Also being planned is a cruise of Baltimore's harbor in the 1906 steamship, "Baltimore" which will take us to the salvaged "John Brown," a Liberty ship, one of two still afloat. Finally, a last day tour to the Signal Corps Museum at Fort Monmouth is also being considered.

Spouse programs may include tours of Washington, D. C., Baltimore, Annapolis and Civil War battlefields.

A registration fee of approximately \$790 will include four nights at Linthicum's Suisse Chalet, all meals, and all tours and admissions. A lower registration fee will be available for local participants who do not need a hotel. For a complete program of "Radar Technology That Won World War II," contact E. C. Hall, Historical Electronics Museum, P. O. Box 746, MS 4015, Baltimore, MD 21203, telephone (410) 765-3803, fax (410) 765-0240.

Region 8 MTT-S Chapter News



by Rolf H. Jansen
MTT-S Transnational Committee
Region 8 Chapter Coordinator

Region 8 Chapter Activities and Workshops in Late 1992 and 1993

As a good yearly practice well established meanwhile for the MTT-S Chapters of Europe and the Mediterranean area of Latin America and of Asia-Pacific countries, Region 8 Chapters are reporting here again about their activities during the past year and about some plans for the future. The economic situation in most countries reporting is affected by a slight recession and some Chapters are even suffering seriously from an unstable and transitory political situation. However, in spite of this, and to the satisfaction of the Society, the average level of activities is surprisingly high in most Chapters and the spirit of our Chapter officers is obviously unbroken, giving rise to the expectation of further growth of our community.

It is a particular pleasure to note that with Poland, Hungary and very recently the Czech Republic, MTT-S is now represented over the whole of Middle Europe. A newly formed AdHoc Committee installed by our President, Peter Staecker, and chaired by myself is addressing the needs of the microwave community in Eastern Europe and the former Soviet Union. There are good chances now that we will have Chapters in Moscow, St. Petersburg, Bulgaria and other centers of activity in Eastern Europe not too far from now. The key problem in these and other countries is the very low income level compared to Western European standards that makes it extremely difficult for our friends in that area to afford Membership fees. In addition, communication links are not yet as well established as we are used to. But, without any doubt, there is a lot of enthusiasm and motivation there that promises fast development as soon as the major problems have been solved. Fortunately, the MTT-S budget for 1994 is already addressing some of these problems to the limited extent that a Society can offer. Please do your best to support this process wherever you see a chance to help your colleagues in Eastern Europe and let us continue to work for the benefit and prosperity of our MTT-S community.

Benelux

Prof. B. Nauwelaers, Vice-Chairman, Katholieke Universiteit Leuven

The IEEE MTT Chapter of the Benelux Section had no organized activities registered in the report period.

The main reason for this is that the Chapter Chairman, K. Van't Klooster, was on sabbatical leave to Russia. However, the Chapter is working on a number of ideas to revitalize its membership life in the coming year and there are good chances for a number of successful meetings for the near future.

Bulgaria

Dr. Sava V. Savov, Chapter Organizer, Technical University of Varna

Efforts to establish MTT-S related organizational structures in Bulgaria are continuing now for a couple of years. Unfortunately, the general economic situation is getting worse: no money, no conferences, no workshops, just a few contacts. The main efforts of the Bulgarian community have been directed first to form the Bulgarian Section of the IEEE, which is now close to success and will probably happen before the end of the year. The next step will then be to establish an MTT/AP Chapter. This will have to be supported by the MTT-S Transnational Committee.

Czech Republic

Dr. Pavel Bezousek, Chapter Organizer, Radio Research Institute Opocinek

The MTT/AP Joint Chapter was only approved in July 1993, so the activities of the MTT-related microwave community in the Czech Republic during the report period were concentrated first on organizing the necessary petition and submitting this to IEEE headquarters via the Czechoslovakia Section. In addition, planning of future activities was started. However, several professional events in the Czech Republic have already been supported by the informal group now representing the core of the Chapter.

The first Chapter meeting is scheduled now for December 1, 1993, and on this meeting the election of Chapter Officers will finally be conducted.

Finland

Dr. Ari Sihvola, Chapter Secretary-Treasurer, Helsinki University of Technology

The Chapter activities consisted of organizing seven (7) technical meetings with invited presentations by experts in the fields of antennas, propagation, or microwave engineering. These are summarized below. For each meeting, advertising to students and research people in the industry was directed. Coffee and donuts were served; for the meetings, no fee was asked. The normal attendance number has been around 30 to 40, with about half of the number being IEEE members.

- August 18, 1992, Mr. Ebbe G. Nyfors (Espoo, Finland): Radio communications in the Antarctic
- November 4, 1992, Dr. Sailing He (Stockholm, Sweden): Inverse scattering problems
- December 2, 1992, Prof. Hiie Hinrikus (Tallinn, Estonia): Research and teaching of radio engineering at the Tallinn Technical University
- February 3, 1993, Academician Fedor I. Fedorov (Minsk, Belarus): Covariant methods in the theory of electromagnetic waves
- February 17, 1993, Professor Per-Simon Kildal (AP Distinguished Lecturer, Chalmers, Sweden): Artificially soft and hard surfaces in electromagnetics

- June 4, 1993, Dr. Ferdo Ivanek (MTT Distinguished Lecturer, Palo Alto, California): Progress and change in microwave radio communications
- July 8, 1993, Dr. Stephan A. Maas (Long Beach, California): Planar monolithic microwave diode circuits

In addition, the Chapter organized the Chapter Chairmen's meeting on 26 August 1992 in connection with the 22nd European Microwave Conference. This was held in Espoo, and there were 17 participants in the meeting.

A great effort was made by the Chapter in organizing *Bi-isotropics '93*, a four day workshop on novel microwave materials, especially chiral media. There were 17 participants from six countries. Financial assistance was granted by the Transnational IEEE Committee (R. Jansen) and the Region 8 (A. Vander Vorst). With this help, scientists and engineers from the former Soviet Union could be invited, and a fruitful meeting was held. The Finland Chapter also contributed in organizing the continuation workshop and helped in international contacts between East and West: this workshop, *Bianisotropics '93*, was held in Gomel, Belorussia, in October, with 30 people participating.

France

Dr. J. Magarshack, Chairman, Thomson CSF

The French chapter workshops have continued during this period with special emphasis on exploring new territory where microwaves are being introduced to give new and interesting possibilities for developing applications. One reason for this is that the economic situation in France, as elsewhere, is not very conducive to technical meetings at the moment. We try to reply to the needs and preoccupations of the Microwave community, but they are very often far from technical matters. However, new horizons would open new opportunities and, as such, interests us all.

The '92 workshop was on Microwaves and Optics in a chateau of the Loire at Seillac. There were 70 participants from Europe and contributions covered both components and systems. There will be a follow up on this subject in '94 at Cannes. This year ('93) the subject is New Civil Applications of Microwaves covering such areas as Medical, Identification Tags, Robots, Automobile Applications. It will take place in the seaside resort of La Baule on 22/23 November.

For the usual conferences, there was a very successful one day meeting in February on mm-waves with D. Pavlidis (University of Michigan) and P. A. Rolland (IEMN-Lille) giving invited talks. An interesting development is that we are starting to cooperate with other chapters to try to encourage pan-European meetings to foster interaction over frontiers. The CAD workshop in Germany last May was such a "mixed" meeting and this will be repeated in spite of certain attendance difficulties.

Germany

Prof. F. Arndt, Chapter Chairman, University of Bremen

The technical activities of the German Chapter, in the October 1992 to November 1993 period, were concentrated mainly on the organization and successful realization of workshops and one conference. Good meet-

ings traditionally prove to be an excellent means of exchanging ideas concerning international and national research and industrial application topics, of gaining new IEEE members, and last but not least of bringing together engineers from the eastern and western parts of Europe for promoting the reputation and benefits of the IEEE.

During the period from October 1992 to November 1993, five international workshops and one international conference were held by or under the sponsorship of the German Chapter.

- 10/7-9, 1992: Second International Workshop of the German IEEE MTT/AP Joint Chapter on "Integrated Nonlinear Microwave and Millimeterwave Circuits" (INMMC'92). This workshop took place at the University of Duisburg and was organized and chaired by Prof. I. Wolff and Prof. A. Beyer. 25 technical papers were presented with many interesting theoretical and application oriented topics, such as quasi-optical power combining, noise measurement and simulation, oscillator and amplifier optimization, large signal modeling, time domain methods. Therefore, this workshop enjoyed a very high number of attendees (about 90) with a high international participation.
- 5/24, 1993: International Workshop of the German IEEE MTT/AP Joint Chapter on "Computer Aided Design and Measurement Verification," Messehalle (Exhibition Hall), Sindelfingen. This workshop was organized and chaired by Prof. Omar, Technical University of Hamburg-Harburg, and jointly sponsored by the IEEE MTT-S Chapters of France, Italy, UK/IR and Germany. Nine papers covered topics ranging from modeling of semiconductor devices, CAD and modeling of MMIC structures to antenna measurements and diagnostics. The number of attendees was about 50.
- 5/25-27, 1993: MIOP '93, Microwaves and Optronics, 7th Exhibition and Conference for Ultra High Frequency Technology, Messehalle (Exhibition Hall), Sindelfingen. The Chairman of the MIOP '93 was Prof. Wiesbeck, University of Karlsruhe, who did a good job of bringing together 21 internationally well known experts for a successful Technical Program Committee. Moreover, for the first time, the MIOP conference was jointly planned and organized by the German IEEE MTT/AP Chapter and the VDE group "Microwave Technology" (together with the NETWORK GmbH). The success of this joint effort of the two leading organizations of microwave technology in Germany became already visible in the number of submitted papers. One hundred sixty (160) contributions were made, 87 of them were presented as papers, and 34 of them as posters. Nearly half of the submitted contributions came from European foreign countries and overseas. The MIOP '93 covered a wide range of topics: antennas and phased arrays, microwave measurement techniques, CAD and modeling, new materials, HTC, components and systems, mobile communication, MMICs, optical techniques, field theory, applications in medicine, microwaves and optics, microwave sensing, power microwave

EMC, and guiding structures. The number of about 300 attendees shows the attractiveness of this successful conference. Moreover, the about 40 exhibitors presented a favorable opportunity to exchange ideas with the industry. The next MIOP (May 16-18, 1995) will also be held in Sindelfingen. People who are interested in the approximately planned 20 topics of this conference may contact Prof. Detlefsen, University of Munich (phone: +49-(89)-2105-8389), the Chairman of the next MIOP conference.

- 9/23-24, 1993: International Workshop of the German IEEE MTT/AP Joint Chapter on "Microwave Sensing," Technical University of Ilmenau. This two day workshop was organized and chaired by Prof. Kummer and Dozent Loewle, Technical University of Ilmenau. Thirteen (13) papers were presented to about 40 attendees. The topics were sensor test objects (physical, technical, biological, medical, environmental), methods, design and realization of sensors, and applications. This workshop continued successfully the most recent activity in the eastern part of Germany which was introduced in September 1992 by the Ilmenau workshop on "Mobile Microwave Radio Services" (cf. the report in the *Newsletter*, No. 133, Winter 1992).
- 10/11-13, 1993: International Workshop of the German IEEE MTT/AP Joint Chapter on "High-Speed Bipolar Devices," University of Ulm. This 3 day workshop was organized and chaired by Prof. Schumacher, University of Ulm.

The covered topics of this successful workshop were advanced research results on: physics and concepts of novel bipolar high-speed devices, thermal problems in high-power/high-temperature heterojunction bipolar transistors, materials and technologies of high-speed bipolar transistors, applications of high-speed bipolar transistors. More than 40 attendees from several countries participated at this workshop. This attractive workshop stimulated the idea to continue this activity within the frame of a joint workshop with the MTT-S Chapter of France, "High-Speed Bipolar Devices," to be held in March, 1994, in Paris, France. The organizers will be M. Bon and Mme. Dubon-Chevalier, France. Please contact M. V. F. Ilana or J. Magarshack (phone: + 6019-7000) for further details.

- 10/28-29, 1993: Second International Workshop of the German IEEE MTT/AP Joint Chapter on "Discrete Time Domain Modeling of Electromagnetic Fields and Networks," Hotel Ambassador, Berlin. The workshop was organized and chaired by Prof. Russer, Ferdinand-Braun Institut für Höchstfrequenztechnik, Berlin, and Prof. Nossek, Technical University of Munich. About 70 attendees participated at this successful workshop which covered the following topics: finite-difference time-domain method, transmission-line matrix (TLM) method, time-domain data processing, non-linear networks, dynamic simulation of semiconductor devices, and signal-processing approach. International key speakers from the USA, Canada, France, and Italy increased the attractiveness of this workshop.

Greece

Prof. N. K. Uzunoglu, Chapter Chairman, Technical University of Athens

During the time period of December 1992 to June 1993, the IEEE-MTT chapter in Greece has organized several preliminary activities because of the change of the chairperson on November 1992. Among the activities were the organization of a COMETT course on Biomedical Engineering with particular emphasis to microwave applications in medicine. In order to promote cooperation with neighboring countries, such as Albania, Bulgaria, Romania, Armenia, Moldavia, Georgia, and Ukraine, several bilateral exchanges of scientists have been realized. Furthermore, several students from these countries have visited Athens, and seminars and intensive courses have been organized on microwave theory, technology and CADE approaches.

In this framework a regional symposium on microwave telecommunications and other applications will be organized in the region of Macedonia in northern Greece in May, 1994. Scientists working on microwave technology and members of universities specializing in microwaves will be invited.

Hungary

Prof. Istvan Frigyes, Chapter Chairman, Budapest

Hungary—Joint Chapter MTT, Com, ED, AP

During the years 1992/93, we have organized one major event, the IEEE International Workshop on Personal, Indoor and Mobile Radio Communications, and technical meetings approximately once each 2 to 3 months on the average.

The main event of the reported period was an International Workshop on Personal Indoor and Mobile Communications (26-27 May, 1992). It was organized in the Hungarian countryside in Siofok, a town at the shore of Lake Balaton. The number of attendees was above 80, coming not only from Hungary, but also 14 other countries. There were 9 tutorial talks dealing with various aspects of the subject and about 25 contributed papers. These dealt with theoretical, system, networking, and equipment problems. The subject is very well tailored to the Joint Chapter's activity, because, besides communications aspects, microwave and propagation topics, essential in the given communications field, were also dealt with. The workshop was organized by the Chapter and sponsored by ComSoc, Region 8 and the United Kingdom—Republic of Ireland Section.

In 1993 we had several meetings and in their organization, again, we took into account the joint nature of the chapter.

On January 20, a lecture was given by Prof. I. Chlamtach, IEEE Fellow and ComSoc Distinguished Lecturer, entitled "Optical formats for high speed networks." There was a rather high attendance of about 40 people including several Ph.D. students. Networking aspects is a subject not dealt with very often in our previous meetings. This time it was a good first step.

Italy, Central and South

Prof. Ovidio Bucci, Chapter Chairman, University of Neapals

The technical activities of the MTT/AP Societies Joint Chapter of the Central and South Italy Section, regard-

ing the period from mid '92 to mid '93, concentrated on the following meetings and conferences.

- 11/23, 1992, Rome—Prof. Tapan K. Sarkar, Syracuse University, Syracuse, New York: "Generation of Broadband Information from Narrowband Data."
- 12/17, 1992, Rome—Prof. Paul F. Goldsmith, Five College Radio Astronomy Observatory, University of Massachusetts, Amherst: "Radiometric Imaging Systems and Applications."
- 4/30, 1993, Perugia—Prof. Guglielmo D'Inzeo and Dr. Luciano Tarricone, University of Rome "La Sapienza" "Introduction to Bioelectromagnetism."
- 5/21, 1993, Perugia—Prof. Gaspare Galati, University of Rome "Tor Vergata": "Radar Remote Sensing of the Atmosphere."

Apart from the above lectures, several meetings and conferences have been organized.

On 5-8 October, 1992, the Italian National Meeting on Electromagnetism was held in the pleasant town of Assisi. During this event, internationally recognized experts were invited to give survey lectures followed by discussions with the audience. There were:

- E. R. Westwater: "Recent results in remote sensing of the atmosphere by microwave radiometry"
- N. G. Alexopoulos and G. Franceschetti: "Virtual rays and applications"
- A. Vander Vorst: "Microwave bioelectromagnetic research on the nervous system"
- P. Russer: "Millimeterwave integrated circuits"
- H. Meinel: "Radio communication and traffic control, the future for millimeterwave technology?"

More than 100 papers were presented at the conference in several sessions dealing with:

- Microwave and millimeterwave circuits and components
- Diffraction and inverse problems
- Numerical methods, CAD
- Electromagnetic techniques in remote sensing and radar systems
- Propagation and mobile communications
- Antennas
- Integrated optics and optical fibers
- Biological applications
- Electromagnetic theory
- Electromagnetic compatibility and industrial applications
- Metrology

The number of participants was 180, coming from universities, private industry and government agencies. In addition to the effort made by the steering committee, composed by M. Calamia, G. Falciasacca, G. Franceschetti, B. Palumbo, and R. Sorrentino, the conference was made possible thanks to the generous contribution of IBM Italia, The Italian Research Council (C.N.R.), Alenia S.p.A., the University of Perugia and the Cassa di Risparmio di Perugia.

A meeting on Microwave Diagnostic and Power Applications was organized by Prof. G. d'Ambrosio and was held in Naples on June 4, 1993.

In the same month of June (17-19) 1993, a joint meeting between the national groups of Electromagnetic and Electrotechnique took place in Rimini. During

this meeting, recent research activities ongoing at various Italian Universities were illustrated.

Poland

Prof. J. Modelski, Chapter Chairman, Warsaw University of Technology

Since September 1992, the following technical meetings have been held:

- 9/7/92, Telecommunications Research Institute, Warsaw: Prof. H. Groll, Technische Universität München, München, Germany; "Anticollision Warning Radars with PN-Modulation and Wavefront Reconstruction at 60 GHz"
- 10/7/92, Warsaw University of Technology: Dr. Stefan Misiaszek, Warsaw University of Technology, Warsaw, Poland; "Pico- & Femtoseconds Time-Domain Measurements of Electronic Elements and Circuits"
- 10/21/92, Warsaw University of Technology: Prof. J. Jasenek, Technical University of Bratislava, Bratislava, Slovakia; "New Activities in Microwave Optoelectronics"
- 11/4/92, Warsaw University of Technology: Prof. W. Gwarek, Franco-Polish School of New Information and Communication Technologies in Poznan, Poznan, Poland; "New Trends in Microwave Techniques"
- 12/11/92, Warsaw University of Technology: Dr. F. Henze, Forschungsgesellschaft für Informationstechnik GmbH, Germany; "Trends in Modern Mobile Communication Systems"
- 1/6/93, Warsaw University of Technology: Dr. W. Wiatr, Warsaw University of Technology, Warsaw, Poland; "Measurements of Microwave Circuits Noise Parameters"
- 2/15/93, Telecommunications Research Institute, Warsaw: Prof. Per-Simon Kildal; Chalmers University of Technology; Gothenburg, Sweden; "Artificially Soft and Hard Surfaces in Electromagnetics"
- 3/12/93, Warsaw University of Technology: Prof. R. Jansen, University of Duisburg, Duisburg, Germany; "CAD of Microwave Circuits—Design of MMICs for Telecommunications"
- 3/13/93, Technical University of Gdansk, Gdansk, Poland: Prof. R. Jansen, University of Duisburg, Duisburg, Germany; "CAD of Microwave Circuits—Electromagnetic Analysis and Modeling"
- 4/7/93, Warsaw University of Technology: Dr. B. Stec; Military Academy of Technology, Warsaw, Poland; "Military Applications of Microwaves"
- 5/5/93, Warsaw University of Technology: Prof. A. Jelenski, Institute of Electronic Materials Technology, Warsaw, Poland; "Submicron Semiconductor Devices—Prospects of Development"

The average attendance number has been 25.

The election of the Chapter officers for the term of office from July 1, 1993 to June 30, 1995 took place at the Chapter meeting which was held on June 24, 1993. The following members have been elected:

- Prof. Dr. Józef Modelski—Chairman;
- Dr. Edward Sedek—Vice Chairman
- Dr. Jerzy Piotrowski—Secretary Treasurer

The Chapter was represented at the following IEEE international meetings:

- MTT-S Chapter Chairpersons' Meeting in Atlanta (USA)—Prof. J. Modelski;
- Region 8 Chairpersons' Meeting in Madrid (Spain)—Prof. J. Modelski.

Recently, the contacts with some Universities in Ukraine and White Russia have been established in order to transfer information about IEEE's objectives and activities.

Russia

Dr. Vladimir Dzougaev, Moscow, Engineering Center Electro-dynamics

A petition was organized with the goal of forming an MTT-S IEEE Chapter in Moscow. The authorities at Electro-dynamics company have been convinced to finance involvement of 3 Electro-dynamics staff members into IEEE membership. A total number of 16 signatures for the Chapter formation has been brought together and on December 7, 1992, the formal petition was sent for approval to the IEEE MTT Society. The chapter activities consisted of organized technical meetings, workshops, symposium in the fields of propagation or microwave engineering.

They are summarized below. For each meeting, advertising was directed to research people in the industry. Coffee and donuts were served and no fee was asked for the meeting. The normal attendance number has been around 30 to 40, with about 3 of the members being IEEE members.

- 5/15/92—In a Technical Meeting, Dr. Ioura Gouketlev, Member of the Academy, President of the Association "Lidar," Russia, gave a lecture on Topics in Laser Technology of VLSI Microstructures followed by a vivid discussion. Main Laser stimulated processes of VLSI microstructure fabrication were discussed. The attendance of the meeting was 64.
- 12/9-13/92—The Exhibition-Workshop "Lasers in Medicine" was held at Budapest at the Russian Exhibition Centre, sponsored by the Association "Lidar" and the Moscow MTT chapter. The activity of Russian Research Institutes in this field has been demonstrated.
- 3/26/93—Mini-Symposium on "Semiconductor devices" co-sponsored by R&D Institute of Semiconductor Devices and the Chapter was held at Tomsk R&D Institute. Twelve topics covering microwave diodes, optical converters and their circuit application were presented. Finally, the Symposium included a panel discussion. The attendance of the Mini-Symposium was 69 from Russia, Ukraine, Byelorussia.
- 5/28/93—A full day Seminar on Microwave and High Frequency organized by the Chapter in cooperation with Moscow Power Institute and SIA "Toriy." The chairman was Dr. Igor Artioukh, Vice-president of the manufacturers' union of Moscow. There was one invited talk, Prof. Serge Lefeuvre (France, ENSEEIHT). The Seminar took place in an informal atmosphere and thus stimulated many interesting discussions among the participants.
- At the end of September, 1993—A workshop in the field of theoretical methods and CAD was held at Moscow (50 participants). The chairman was Dr. V. Dzougaev, Director of Engineering Center Electro-

dynamics. The following techniques were treated programs: "Quick electro-dynamical models" and "Integral equation methods."

- 11/93—Two more workshop meetings were conducted by Dr. V. Kopylov, one on "Original hybrid multisection electromagnetics system for TWT," and a second one on "Two modes hybrid power TWT for airborne radar" held in Moscow with the participants from China.

South Africa

Prof. Duncan Baker, Vice-Chairman, University of Pretoria

Because of the large geographic area of the Republic of South Africa, it is extremely difficult to organize many meetings where most of the members of the Joint Chapter for Antennas and Propagation and Microwave Theory and Techniques (AP/MTT) can attend. For this reason the Chapter cooperates actively with the South African Institute of Electrical Engineers (SAIEE) to organize and host an AP/MTT Symposium.

In recent years these events have become an annual highlight in the activities programs of both the local IEEE AP/MTT Chapter as well as the SAIEE. Initially these Symposia were held in the Johannesburg/Pretoria area, but the pattern has now developed where the Symposia are held in three areas on a rotating basis, namely Johannesburg/Pretoria, Cape Town/Stellenbosch and Durban. Organization of the Symposia are undertaken jointly by IEEE and SAIEE members in these areas.

Many of these members hold joint membership in the SAIEE and either the IEEE or the IEE in the UK. The net result of this has been the development of a fairly small, close-knit community offering ideal opportunities for networking on technical aspects of their profession on a personal level.

During 1992 the annual AP/MTT Symposium (AP/MTTS92) was held on the campus of the University of Natal in Durban on the 14th of September. The guest speaker was Prof. Garth Milne from the University of Stellenbosch. His plenary address was entitled "Antennas, Propagation and Microwaves on the SUNSAT Microsatellite." Two parallel sessions were held for papers presented in the field of antennas and propagation and the field of microwave theory and techniques. There were 14 and 12 papers in these sessions respectively. In the antennas session, topics included radiowave propagation (HF and VHF/UHF), radar cross section and imaging computational techniques and antenna arrays. In the microwave theory and techniques session the topics included device modelling, microwave measurements and modelling, circuit design and a number of general topics. In addition there was also a poster paper session with 11 poster papers. Prizes were awarded for the best papers in the three sessions.

This year the annual AP/MTT Symposium (AP/MTTS93) was held in the Johannesburg/Pretoria area at a venue near Jan Smuts International Airport. Despite the increasing severity of the economic recession in the country, it was well attended by representatives from academia and industry. The guest speaker was Dr. Gerry Crone from the European Space Agency. His keynote address was entitled "A Review of Satellite

Antenna Technology." This was followed by two more plenary papers on spacebased systems. As was the case in 1992, two parallel sessions and a poster paper session were held. There were 12 papers presented in each of the oral sessions and 6 papers in the poster session. The topics covered much the same fields as during AP/MTTS92. Again, best paper awards were made for each of the three sessions.

Although these Symposia are small by international standards, it is the opinion of researchers who regularly attend conferences abroad that these symposia compare very favorably in terms of technical merit and presentation. Copies of the Conference Proceedings have been lodged with the IEEE Library in Piscataway as well as with Region 8 Executive for future reference. Any questions concerning these may be addressed to the author of this brief report.

We are fortunate to be visited from time to time by distinguished colleagues from abroad. Many of these are recognized as authorities in their fields. Where time and finances permit, it is arranged that they present lectures in the three centres already identified as venues for the annual symposia. In this way we are able to create maximum exposure for our Chapter members to the intellectual and technological stimuli provided by these lecturers. This was the case with Robert Munson from Ball Communications Division in Colorado, USA, a specialist in microstrip antennas. He presented a number of lectures in all three venues. Dr. Gerry Crone was also able to present lectures in all three venues as well as to a number of student groups.

At the beginning of 1992, Dr. Eric Walton from the Ohio State University's ElectroScience Lab presented a lecture on "Approaches to Radar Target Recognition" at a Chapter meeting in Pretoria. At the beginning of 1993, it was the turn of Dr. Denny Burnside, also from the ElectroScience Lab, on the subject "New Concepts in Antenna Radar Cross Section Measurements."

While the annual symposium provides the highlight for the Chapter activities in cooperation with the SAIEE, every effort is made to capitalize on opportunities provided by the visits from colleagues abroad. In this way we are able to maintain the interest and support of our members.

Switzerland

Dr. L. Prost, Chapter Chairman, Swiss Federal Office of Metreology, Berne

Four meetings had been organized from November 1992 up to now and they are briefly summarized below:

- 11/24—Lecture by Prof. A. Ephremides on "Wireless Communication Networks" at the Swiss PTT Technical Centre in Berne.
- 4/30—Spring meeting on "Optical Communication Systems" at Ascom in Berne. The meeting included 4 presentations and a visit of the optoelectronic laboratory of Ascom.
- 6/1—Colloquium on "Computing the exact field propagating in dielectric structure" by O.J.K. Martin, IBM, cooperatively supported by ETH Zurich.
- 9/13—Full day seminar titled "From Cellular to Wireless Local Loop" at the PTT Technical Center in Berne. The seminar included the lecture "Progress

and Change in Microwave Radio Communications" by Dr. Ferdo Ivanek and several shorter contributions showing more practical aspects from the point of view of the PTT and the manufacturer.

Sweden

Dr. A. Moldsvor, Chapter Secretary, Chalmers University of Technology

There were a total of eight meetings in the time between August 1992 and June 1993. These meetings had a duration of 1 to 1½ hours in the case of single presentations, two of them were afternoon meetings and there was the yearly one day symposium called Electromagnetic Day. The typical number of attendees for the short meetings was about 15 to 20, while the Electromagnetic Day had an attendance of 50. In the following, the details of the seven conducted meetings are given.

- 8/31/92—Dr. Carl E. Baum, Air Force Weapons Laboratory (NTAAB), New Mexico, USA—Singularity expansion method and Impulse radiating antennas.
- 9/3/92—Dr. Hans Steyskal, Rome Laboratory, Hanscom AFB, Massachusetts, USA—Recent developments in EHF active phased arrays at Rome Laboratory.
- 9/19/92, Electromagnetic Day—Prof. T. Dvorak, Eidgenössische Technische Hochschule, Zürich, Switzerland—Understanding radiated field measurements; Prof. J. Bach Andersen, Aalborg University, Aalborg, Denmark—Antennas and propagation in mobile communications—some recent developments; Dr. Alwyn Seeds, Dept. of EEE, University College of London, London, Great Britain—Opto-electronic technique for phased array antennas; MSSE Robert Persson, SAAB Ericsson Space, Gothenburg, Sweden—Array antennas for space applications; Prof. O. Vendik, St. Petersburg Institute of Electrical Engineering, St. Petersburg, Russia—Microwave applications of new superconducting materials.
- 10/20/92—Dr. Alan Mickelson, The MIMICAD Center, University of Colorado, Boulder, Colorado—Analysis of coplanar waveguide circuits using an optical sampling technique.
- 3/22/93—Prof. Makito Ando, Tokyo Institute of Technology Tokyo, Japan—Design of waveguide slot arrays for DBS reception; Prof. Ahmed Kishk, University of Mississippi, Mississippi, USA—MoM analysis of rationally symmetric scatters—Application to prime-focus reflector feeds.
- 5/19/93—Prof. Paul F. Goldsmith—Radiometric imaging systems and applications.
- 5/28/93—Prof. Hristo D. Hristov, Technical University of Varna, Bulgaria—From passive to active cavity type antennas, some experiences with cavity antenna oscillators.
- 6/1/93—Dr. Ferdo Ivanek, Communications Research, Palo Alto, California, USA—Progress and change in microwave radio communications.

United Kingdom & Republic of Ireland

T. H. Oxley, Chapter Chairman, TREMONT, Newark, U.K.

The Chapter activities are planned by the Chapter fourteen member Administrative Committee (AdCom)

representing the UKRI interests of the joint MTT/ED/AP Societies' membership (543 at the end of March, 1993). Activities consider the mutual interests of the IEEE and the national professional bodies.

A lecture series forms the core of the Chapter technical program, but special attention is also given to co-sponsorship, involvement in Europe, membership promotion and self-financing events. The Chapter activities held during the period August 1992 to July 1993 are briefly summarized below:

- 10/8/92—Lecture on "CAD in RF, Microwave and MM Wave Systems" by Ray Pengelly, Compact, Inc., USA; at The University College, Dublin.
- 10/13-15/92—Chapter Membership Booth at the MM(92) Conference/Exhibition; at Brighton.
- 11/26-27/92—Cooperative sponsorship of the Workshop on "Microwaves and Optics" organized by the French Chapter; at Tours, France.
- 12/3/92—Lecture on "Artificially Soft and Hard Surfaces in Electromagnetics and their Applications" by Prof. Per-Simon Kildal, Chalmers University, Sweden; at ERA Technology, Ltd., Leatherhead.
- 12/9/92—Lecture on "Microwave Applications of High T_c Superconductors" by Andrew Phillips, GEC-Marconi Hirst Research Centre; at King's College, London.
- 3/24/93—Lecture on "Microwave Imaging Systems" by David Daniels, ERA Technology, Ltd.; at King's College, London.
- 4/19-21/93—Cooperative sponsorship of the Short Course on "Compound Semiconductor Device Modeling," organized by The University of Leeds; at Harrogate, North Yorkshire.
- 5/24/93—Cooperative sponsorship of the European Chapter Workshop on "CAD, Modelling & Measurement Verification," organized by the German Chapter in cooperation with the UKRI, French, and Italian Chapters in conjunction with MIOP'93; at Sindelfingen, Germany.
- 6/30/93—Lecture on "Digital Radio Links move into Millimetric Frequencies" by Barry Pilley, GPT, Coventry; at King's College, London.

Five further activities are organized for 1993. The 1994 program is currently being planned. All activities are publicized in the Region 8 News.

Yugoslavia

Branka Jocanovic, Chapter Chairwoman, Institute of Applied Physics, Beograd

Yugoslavia MTT Chapter works at sanctions and it is a very sad experience. I suppose few chapters have been in such a situation as our chapter has. About 50% of electrical engineering staff younger than 35 years have already left the country because of the actual situation in Yugoslavia. This is the crucial fact which diminishes the quality and success of our professional work now and later. All the other scientific contacts have been broken just because of the sanctions or because of the impossibility of attending the meetings and conferences due to the economic restrictions. The only contacts are realized by IEEE magazines, because no books can be bought and we can't invite anybody to deliver attractive lectures in Yugoslavia.

In spite of the difficulties, we try to continue our activities. In order to legalize its status in Yugoslavia, the Yugoslavia MTT Chapter initialized and established The Yugoslavian Association for Microwave Technique and Technology-YU MTT. This Association will include all activities of Yugoslavia IEEE MTT Chapter and also will serve as a link between microwave engineers and other professionals who are interested in application of microwave technology.

At the first meeting of a new MTT Association which was held on the 10th of December, 1992, two lectures were given:

- Prof. Aleksandar Nesic and Miodrag Mikavica gave a lecture about their software and users' manual entitled *CAD for Linear and Planar Antenna Arrays of Various Radiating Elements*, which was published by Altech House, 1992, and
- Prof. Nikola Dekleva, with Clinical Hospital Zemun, (who was Chairman of the First Conference Microwaves in Medicine '91) gave a speech entitled, "Recent Trends in Microwave Applications in Medicine." The meeting took place in the Serbian Academy of Sciences in Belgrade and about 30 people were present.

The second meeting was organized on July 8, 1993, in remembrance of the fiftieth anniversary of Nikola Tesla's death. Prof. Aleksandar Marincic, Director of the Nikola Tesla Museum and one of the most distinguished experts on the legacy of Nikola Tesla, gave a very inspiring lecture about Tesla's discoveries and presented a lot of unpublished materials from the Museum archives. The lecture entitled, "Nikola Tesla's Contributions to the Development of Radio—Some Lesser Known Facts Discovered in the Archives of the Nikola Tesla Museum in Belgrade," was given in the pleasant atmosphere of the Nikola Tesla Museum where we all stayed a long time after the lecture, talking about Tesla and turning over the leaves of the precious books that belonged to Tesla.

The Yugoslavia MTT Chapter and Yugoslavia Association for Electrical Circuits are planning the next technical meeting on November 18, 1993, at IMTEL. Dr. Miroslav Lutovac from IRITEL—Telecommunications & Electronics Institute, Belgrade, will talk about "New Approach to the Design of Elliptical Filters." He will present his latest published and unpublished results from this field.

Cheap and Easy e-Mail

(continued from page 27)

puter Society has negotiated a deal with Sprintmail to provide low-cost e-mail to individuals. The system is called *compmail*. Contact the Computer Society or Sprintmail for more information.

The IEEE is trying to get all IEEE functionaries on e-mail. For this reason, the IEEE produces an e-mail guide; I didn't find it very useful, but it may have some value to you. Send your request to e-mail.guide@ieee.org or contact the IEEE Service Center, 908-981-0060.

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Region 9 Chapter Activities—1993



by Denise Consoni
Region 9 Coordinator
MTT-S Transnational Committee

Venezuela (MTT/COMM)

Chairman: Aldo Bianchi (Universidad de Carabobo)

- 12.3.93—"Digital Telephony," Eng. José Garcia (Ericsson), Universidad de Carabobo. 40 attendees.
- 19.3.93—"A software for the communication system in the missile frigates of the Venezuelan Navy," Engs. Luis Fajardo and Elsa Losada, Universidad de Carabobo. 25 attendees.
- 26.3.93—"The IEEE and Its Societies," Eng. Aldo Bianchi, Universidad del Zulia. 100 attendees.
- 26.3.93—"The IEEE and Its Societies," Eng. Aldo Bianchi, Universidad Rafael Urdaneta. 50 attendees.
- 26.5.93—Tutorial Course: "Optical Communications," Eng. Aldo Bianchi, Unexpo, Barquisimeto. 200 attendees.
- 4.6.93—"Advances in Optical Communications," Eng. Aldo Bianchi, Unexpo, Barquisimeto. 100 attendees.
- 5.8.93—"The privatization of the Venezuelan Telecommunications," Eng. Aldo Bianchi, 1993 SBMO International Microwave Conference/Brazil, São Paulo. 80 attendees.
- 10.9.93—"Red Saycit: Present and Future," Lic. Ivan Valdes, Centro de Informacion y Documentacion UC. 45 attendees.
- 1.10.93—"The development of Telecommunications in Venezuela," Eng. Aldo Bianchi, Escuela de Ingenieria Electrica, Universidad de Carabobo. 44 attendees.
- 4.10.93—Tutorial: "Optical Communications," Eng. Aldo Bianchi, Hilton Hotel, Caracas. 40 attendees.
- 11.10.93—"Telecommunications and the IEEE," Eng. Aldo Bianchi, Universidad de Carabobo. 50 attendees.
- 16.11.93—"Radio Links," Eng. Aldo Bianchi, Instituto Universitario Politécnico de las Fuerzas Armadas Nacionales.

Rio de Janeiro/Brazil (MTT/AP/ED)

Chairman: José Ricardo Bergmann (CETUC-PUC/RJ)

- 11.4.93—"Novel surface emitting GaAs/AlGaAs laser diodes based on surface mode emission," Anton Kock, University of Vienna, Austria. 17 attendees.
- 10.5.93—"Evaluation of carrier capture times for very thin InGaAs/InP," P. Lustoza de Souza, CETUC, PUC-RJ. 19 attendees.
- 4.6.93—"A general-purpose topographical acquisition system applied to evaluating propagation conditions in telecommunication systems," Dr. M.A.G.M. Maia, CETUC, PUC-RJ. 52 attendees.

- 10.7.93—"The geometrical optics design of shaped reflector antennae," Dr. B. S. Westcott, University of Southampton, UK. 26 attendees.
- 6.8.93—"Finite Element Modeling of Optical Guided Wave Devices," Dr. B. M. A. Rahman, University College London, UK. 14 attendees.
- 9.8.93—"The influence of impedance mismatching on the interconnection of high speed ICs," A. Podcameni, CETUC, PUC-RJ. 20 attendees.
- 10.8.93—"Efficient calculation of the radiation integral via quadrature equation," F. J. S. Moreira, USC, Los Angeles, USA. 18 attendees.
- 30.8.93—"Subs electric generator," J. A. Pereira da Silva, CETUC, PUC-RJ. 18 attendees.
- 13.9.93—"Underwater cableless data transmission," J. A. Pereira da Silva, CETUC, PUC-RJ. 16 attendees.
- 20.9.93—"Growth and characterization of III-V semiconductors for electrooptical modulators," P. Lessa Bastos, CETUC, PUC-RJ, and Boris Yavich, IOFFE Institute, Leningrado. 19 attendees.
- 23.9.93—"Optical systems topology," M. M. Mosso, CETUC, PUC-RJ. 20 attendees.
- 29.11.93—"Coherent Reflectometry," J. P. von der Weid, CETUC, PUC-RJ. 22 attendees.

Workshops (presented by undergraduate and graduate students of PUC-RJ)

- 7.6.93—"Measurement of short optical pulses from a semiconductor laser, using second harmonic external generation," A. Lang da Cunha; "Carbon doping in GaAs and AlGaAs," W. Mendes; "Optical pressure sensor for submarine application," F. C. da Silva. 15 attendees.
- 16.9.93—"Study of operation mode jumping in highly feedback semiconductor lasers," A. Saavedra; "A new technique to measure and time-resolve the variation of the reflectivity produced by a light beam," M. Pamplona Pires. 17 attendees.
- 8.11.93—"Design of an InGaAs photodetector," O. Ayala, M. E. Koslinski; "Processing of semiconductor structures for waveguides and electrooptical modulators," J. Brant; "Thin-film attenuators," M. P. Podcameni. 20 attendees.

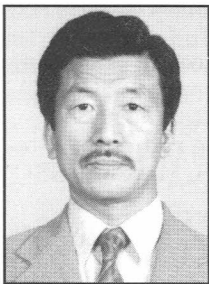
The Rio de Janeiro Chapter, in conjunction with CETUC, has encouraged the IEEE affiliation of students in 1993 by: paying the annual IEEE subscription fee to outstanding students and financially supporting the participation of students in scientific conferences in Brazil.

South Brazil (MTT)

Chairwoman: Denise Consoni (LME-EPUSP)

- 3.5.93—"Optoelectronics Devices," L. Duque and T. Takada, Fujitsu Compound Semiconductor Inc., EPUSP. 25 attendees.
- 2-5.8.93—"1993 SBMO International Microwave Conference/Brazil," Centro de Convenções Rebouças, São Paulo. Number of attendees: 200.
- 4.8.93—"Region 9 IEEE/MTT-S Chapter Officers Meeting," Centro de Convenções Rebouças, São Paulo. 13 attendees.
- 2.12.93—"Microwave holography and the inverse scattering method," Dr. Nabil H. Farhat, University of Pennsylvania, EPUSP. 7 attendees.

1993 Region 10 Chapter Reports



by Eikichi Yamashita, Co-chairperson &
Region 10 Coordinator, MTT-S
Transnational Committee

The various activities of Asian chapters in Region 10 are covered below. These reports include activities of the Microwave Distinguished Lecturer, Professor T. Yoneyama.

Beijing Chapter Report

by Wei-chia Huang, Secretary

Beijing Chapter held two meetings as chapter activities for 1993.

- 6th National Symposium on Microwave Applications, 8/27-29/93, Harbin. Attendance: IEEE members: 8, guests: 95, total: 103. 112 papers in the Proceedings; 16 of Microwave Heating & Drying; 7 of Non-electronic Measurements; 62 of Microwave Medical & Biological Effect; 12 of Microwave Chemistry & Microwave Plasma; 4 of Microwave Oven Technology & Applications; 4 of Microwave Power Advancement; 7 of Other Subjects.
- '93 National Microwave Conference. Meeting, 10/25-30/93, Hefei. Attendance: IEEE members: 12, guests: 287, total: 299. Invited Paper: Research Production & Education of Microwaves in China, by Wei-gan Lin. Presented papers were divided into 10 categories as follows: Electromagnetic Theory 82; Microwave Network Theory 17; Microwave Antennas 26; Microwave Passive Devices & Circuits 42; Microwave Active Devices & Circuits 61; Microwave Systems & Applications 19; mm-Wave Technology 24; Microwave CAD 12; Microwave Measurements 24; Science of Microwave 18.
- Activities of Microwave Distinguished Lecturer in China. The contents of lectures by Prof. Yoneyama were: Lecture 1—Recent Advances in Non Radiative Dielectric (NRD) Technology. Lecture 2—Leaky NRD-Guide-Fed Planar Antennas. Lecture 3—Optical Modulator Using Inverted Co-planar Waveguide.

In Nanjing: Lecture 2 was arranged by Prof. Wen-Xun Zhang and supported by Southeast University for the 3rd International Symposium on Antennas & EM Theory. Attendance: 80 from China and abroad, including 40 IEEE members and Fellows. Lecture 1 was given in the 7th National Symposium on MMW & Sub-MMW. About 60 participants from different re-

gions of China including about 20 IEEE members attended. Lecture 3 was given in the State Key Laboratory on MMW. Attendance: 20 including 5 IEEE members.

In Shanghai: Lecture 1 was arranged by Prof. Tong-Yi An and supported by both East-China Normal University and IEEE Shanghai-Subsection. Attendance: 30 including 10 IEEE members.

In Hefei: Lecture 1 was arranged by Prof. Shanjia Xu and supported by the University of Science & Technology of China. Attendance: 20 including a few IEEE members.

In Wuhan: Lectures 1, 2, and 3 were arranged by Prof. Lan-Feng Qi and supported by Huazhong University of Science & Technology. Attendance: 10.

In Beijing: Lecture 1, 2, and 3 were arranged by Prof. Zhen-He Feng and supported by Tsinghua University. Attendance: 10 professors and graduate students.

In Xian: Lecture 1 was arranged by Prof. Shu-Yi Dong and supported by Xidan University. Attendance: 10 professors and graduate students.

India Joint ED/MTT Chapter

Reported by Shibani K. Koul, Chairperson

The National Symposium on Advances in Microwaves was held on 3/1-2/93. Fifteen sessions were conducted with 54 papers presented during the two days. Three sessions covered Active Devices, one session was devoted to Passive Devices, one on Microwave Integrated Circuits, one session was conducted on Microwave Sources, and two sessions covered Industrial Microwaves. There were two sessions covering Optical Interactions and Microwave Superconductivity. Two sessions were held on Microwave Antennas and Patch Antennas. Computer-Aided Design, Numerical Techniques, and Microwave Measurements were treated in separate sessions.

Korea Chapter Report

by Jung-Su Myung, Chairperson

- Workshop on M/W Technology in Industrial and Defense Area, 2/6/93, Korea Advanced Institute of Science. Presenter: Dr. Jung-Su Myung (Chapter Chairperson). Title: High Technology in Defense Fields—Applications of EM Wave. Presenter: Prof. Dong Chul Park, Dept. of EE, Choong Nam University. Title: Dielectric Resonated Filter. Host: Korea Advanced Institute of Science, IEEE Korea MTT Chapter. Attendance: IEEE members 32, non-members 40.
- Workshop with IEEE Distinguished Lecturer, 7/7/93, Seoul National University, Seoul. Seminar: Prof. Tsukasa Yoneyama, Tohoku University, Katahira 2-1-1, Sendai 980, Japan. Title: Non-radiative Dielectric Waveguide and Its Applications. Host: IEEE MTT Korea Chapter, Dept. of EE, Seoul National University. Attendance: IEEE members 12, non-members 4.

- Workshop with IEEE Distinguished Lecturer, Japan; 7/8/93, Institute of Aerospace Research. Seminar: Prof. Tsukasa Yoneyama, Tohoku University, Katahira 2-1-1, Sendai 980. Title: Non-radiative Dielectric Waveguide and Its Applications. Host: IEEE MTT Korea Chapter, Institute of Aerospace Research. Attendance: IEEE members 12, non-members 48. Sponsor: Institute of Aerospace Research
- Workshop with IEEE Distinguished Lecturer, 7/10/93, Korea Advanced Institute of Science. Seminar: Prof. Tsukasa Yoneyama, Tohoku University, Katahira 2-1-1, Sendai 980, Japan. Title: Non-radiative Dielectric Waveguide and Its Applications. Host: IEEE MTT Korea Chapter, Korea Advanced Institute of Science. Attendance: IEEE members 8, non-members 6
- Microwave Symposium '93, 10/16/93, Aju University, Suwon. Guest Speaker: Prof. Dahl Ahn (Soon Chun Hyang University). Host: Korea Institute of Telecommunications and Electronics, IEE MTT Korea Chapter. Attendance: IEEE members 80, non-members 220

New South Wales Section, AP/MTT Joint Chapter

- Committee—The committee for 1993 has been: Chairman: Mrs. Carol Wilson, CSIRO Division of Radiophysics; Vice-Chairman: Dr. Bruce Thomas, CSIRO Division of Radiophysics; Secretary/Treasurer: Mrs. Oya Sevimli, CSIRO Division of Radiophysics; Member: Dr. Jonathon Scott, Department of Electrical Engineering, University of Sydney
- Technical Activities—The single technical activity of the year was a one day "Symposium on Progress and Change in Microwave Communications" featuring Dr. Ferdo Ivanek, an MTT-S Distinguished Lecturer. Dr. Ivanek's three part lecture was complemented by presentations from Prof. Reg Coutts, University of Adelaide, and Dr. John Archer, CSIRO Division of Radiophysics.
- Plans for 1994—It is expected that the Joint Chapter will organize evening lectures as in previous years. In an effort to make the program more relevant to the interest of the members, a survey has been prepared canvassing opinion on potential topics and on lecture format, (e.g. day symposia, evening lectures, etc.) and will be sent to members before the end of this year.
- Symposium on Progress and Change in Microwave Communications: Mobile and Wireless Networks—The Symposium was held on Thursday, 11/11/93, from 10 am to 5:30 pm at CSIRO Division of Radiophysics, Epping, New South Wales. The Symposium featured MTT Society Distinguished Lecturer, Dr. Ferdo Ivanek. Dr. Ivanek gave three sessions of about an hour each, discussing developments and trends in microwave communications. Specific sections of the program addressed current and proposed

services, frequency considerations, the importance of international and regional standards, and technology developments. There was particular interest in mobile communications for vehicular and pedestrian applications and considerable discussion concerning the recent introduction of GSM. Dr. Ivanek also discussed derivatives of this technology into wireless PBX, LAN and local loop systems and into mobile-satellite communications. The lectures included up-to-date information provided from telecommunication companies around the world. Prof. Reg Coutts, of the University of Adelaide, spoke on the Future Public Land Mobile Telecommunication System (FPLMTS). He reviewed both the history and the future plans of the International Telecommunication Union's Task Group 8/1, which is developing a worldwide standard for FPLMTS, and discussed the balance between technical input and commercial interests in such work. Dr. John Archer, of the CSIRO Division of Radiophysics, spoke about recent developments in millimetre-wave GaAs MMIC technology at the Division, complementing his presentation with pictures of several of the devices designed and built within the division for a variety of applications. The program concluded with a tour of the MMIC prototyping facility. Forty people (including 26 IEEE members) attended the Symposium, and there was a very positive response to the program. In particular, several people commented that it was very valuable to have presentations which discussed not only the technical aspects but also the commercial and market aspects of the communications industry.

New IEEE MTT/AP/EMC Chapter in Singapore

by Dr. S. P. Yeo, Vice-Chairman, MTT/AP/EMC Chapter, IEEE Singapore Section

This is a new chapter for IEEE members in Singapore who are interested in any of this wide variety of electromagnetic-related topics broadly classified under Microwave Theory and Techniques (MTT), Antennas and Propagation (AP) and Electromagnetic Compatibility (EMC). Listed below are the different items that the Chapter Committee has initiated over the past few months in an effort to promote the image of this fledgling chapter:

- Technical Talk on "Aspects of Microwave Imaging"—This talk (9/1/93, Electrical Engineering Department, National University of Singapore) focused on the use of microwave/optical imaging techniques in various applications, e.g. synthetic aperture radar (SAR). The speaker was Prof. C. B. Zhang from Tsinghua University, P. R. China, who had since 1978 been involved in theoretical research on various aspects of microwave imaging as well as in the actual development of a SAR system for the Institute of Electronics, Academia Sinica (IEAS). Attendance: 29 engineers (16 IEEE members and 13 non-members).

- Technical Talk on "EMI Problems in Aircrafts"—This talk (10/6/93, Electrical Engineering Department, National University of Singapore) focused on the problems posed by electromagnetic interference (EMI) in aerospace electronic systems. The speaker was Mr. M. F. Lim, the present Head of Electrical Installation at Singapore Aerospace, Ltd. who has to handle such problems when retrofitting civilian/military aeroplanes. Attendance: 43 engineers (14 IEEE members and 29 non-members). Electromagnetic compatibility (EMC) is currently a hot topic among the Singaporean engineering community in view of the various EMC directives that recently came into effect, hence the larger-than-expected number of non-IEEE members attending this particular talk. For this reason, the chairman also gave an impromptu presentation on the benefits of joining IEEE prior to the conclusion of the meeting.
- International Conference on Communication Systems (ICCS)—The Chapter has recently negotiated for a tie-up with the Organizing Committee for the forthcoming ICCS/94. This conference (to be held at Westin Singapore on November 14-18, 1994) will be the fourth in the International Conference on Communication Systems (ICCS) series, the previous ICCS/88, ICCS/90 AND ICCS/92 having successfully attracted some 400 delegates from 30 countries. For ICCS/94, the Chapter will be arranging for, in addition to the regular sessions on communication topics, special sessions on microwave components and systems, optical components and systems, radar, antennas and propagation. Call-for-papers announcements are currently being distributed. The Chapter Vice-Chairman, Dr. S. P. Yeo, is now also the ICCS/94 Vice-Chairman; any enquiries about this conference can therefore be directed to him via fax at (65) 779-1103 or via e-mail at eleyeosp@nusvm.nus.sg

South Australia MTT/AP Joint Chapter

by Bevan D. Bates, Chairman

The first meeting of this new chapter was a lecture given by Dr. John Cashen of the Defense Science and Technology Organization, entitled "AuSAR—Australia's own Airborne Imaging Radar" on 10/19/93. It was a privilege to have the inaugural lecture given by an IEEE Fellow and a distinguished member of the AP Society. Dr. Cashen described the locally-developed AuSAR system and showed a number of examples of the imagery produced, highlighting the wealth of information that can be gained even though the images are low resolution compared with optical images. 17 attendees.

The second meeting on 11/16/93 was a lecture given by Dr. Ferdo Ivanek, an MTT Society Distinguished Lecturer on the topic "Progress and Change in Microwave Radio Communications." The meeting was co-sponsored by the Communications and Signal Process-

ing Chapter and the South Australia Section. 15 attendees.

Tokyo Chapter

by Masami Akaike, Chairperson, Masayoshi Aikawa, Vice Chairperson, Mitsuo Makimoto, Secretary, and Kazuhiko Honjo, Treasurer

Prof. Tsukasa Yoneyama, Tohoku University, the Former Tokyo Chapter Chairperson, has been selected to be a 1993-1994 MTT-S Distinguished Lecturer. His lecture title is "Non-radiative Dielectric Waveguide and Its Applications." He gave four Distinguished Lectures in Kyoto, Akita, Sapporo and Muroran. Some other lectures are planned within this year.

Another big event was 1993 Microwave Workshops and Exhibition (MWE'93) in which the Tokyo Chapter played an important role. Prof. T. Itoh (UCLA) gave a keynote address, "Expanding Opportunity of Microwave Engineering." More than 200 people attended. This year the Tokyo Chapter invited Dr. P. W. Staeker, President of MTT-S, to MWE'93 as a guest of the Opening Ceremony. However, he was not able to visit due to a sudden and unexpected accident in his family. MTT-S Tokyo Chapter would like to express a deep sorrow to him.

As listed below, the Tokyo Chapter held 33 meetings with 101 speakers this year.

- 1/22/93, 34 attendees: "A Report on 1992 IEEE GaAs IC Symposium," M. Hirano, NTT, and three other members.
- 2/22/93, 35 attendees: "Conference Review: The 17th International Conference on Infrared and Millimeter Waves," T. Suzuki, Tohoku University, and 6 other members; 36 attendees; "Overview for APMC'92, 5th Australian Symposium on Millimeter and Submillimeter Waves & URSI," K. Honjo, NEC, and 7 other members.
- 5/28/93, 66 attendees: "Non-Radiative Dielectric Waveguide and Its Applications," T. Yoneyama, Tohoku University.
- 8/25/93, 18 attendees: "Optical Technologies for Phased Array Antennas," A. J. Seeds, University College, London; 18 attendees; "Optical Technologies for Fiber Optic Microwave Links," C. H. Cox, MIT Lincoln Lab.
- 9/20/93, 83 attendees: "Expanding Opportunity of Microwave Engineering," T. Itoh, UCLA; 133 attendees; "Tutorial Lecture: Introduction to Digital Microwave Technology," S. Komaki, Osaka University; 88 attendees; "Workshop: Optical/Microwave and Millimeter Wave Technology," I. Chiba, ATR, and 3 other members; 49 attendees; "Workshop: Microwave Energy Transmission and Its Application," K. Itoh, Hokkaido University, and 2 other members; 42 attendees; "Panel Discussion: Si Devices versus GaAs Devices," T. Shiba, Hitachi, and 3 other members; 56 attendees; "Lunch Session: A Discussion about the

Education for Microwave Engineers," M. Nakajima, Kyoto University, and three other members.

- 9/21/93, 125 attendees: "Tutorial Lecture: MMIC Technology," T. Enoki, NNT, and three other members; 220 attendees; "Workshop: State of the Art Cellular Portable Radio Technologies," K. Murota, NTT DoCoMo, and three other members; 88 attendees; "Workshop: Active Antennas," K. Mizuno, Tohoku University, and three other members; 193 attendees; "Panel Discussion: Multilayer Substrate Technologies for Radio Frequencies and Their Application to Miniaturized Circuits," K. Atsuki, Electro-Communication University, and four other members; 51 attendees; "Panel Discussion: Microwave Applications of High Tc Superconductors," T. Matsui, CRL, and three other members; 132 attendees; "Workshop: Present Status and Trends of Microwave and Millimeter Wave Devices," H. Sakaki, University of Tokyo, and three other members; 47 attendees; "Toward Development of the Submillimeter Wave Region," K. Mizuno, Tohoku University; 4 attendees; "A Report on 1993 IEEE MTT-S International Microwave Symposium," H. Ogawa, NTT, and seven other members.
- 9/22/93, 230 attendees: "Tutorial Lecture: Microwave Oscillator Basics," T. Ohira, NTT, and T. Nakagawa, NTT; 160 attendees; "Tutorial Lecture: Fundamental Analyses of Guided Waves," T. Kitazawa, Ibaraki University, and M. Koshiba, Hokkaido University; 36 attendees; "Workshop: Trends of High-Speed Radio Communication," N. Yazawa, NHK, and three other members; 147 attendees; "Workshop: New Application of Radio and Microwaves," M. Sato, Tohoku University, and three other members; 68 attendees; "Panel Discussion: Low Voltage/Low Power/High Efficiency Circuits Technology," T. Tsukahara, NTT, and three other members; 104 attendees; "Workshop: Mobile Satellite Communication Systems," N. Hamamoto, CRL, and four other members; 61 attendees; "Panel Discussion: Present Status and Trends of Microwave Device Manufacturing Technology for Creating New Markets," Y. Harada, Sanyo Electric Co., Ltd., and four other members; 83 attendees; "Workshop: DBS Reception Systems and Related Microwave Technologies," K. Shogen, NHK, and three other members; 92 attendees; "Lunch Session: Future of Radio and Microwaves," Y. Furuhashi, ATR and K. Hatsuta, Hokkaido Institute of Technology.
- 1-12/93, 49 attendees: "Non-Radiative Dielectric Waveguide and Its Applications," T. Yoneyama, Tohoku University.
- 11/1/93 23 attendees: "Non-Radiative Dielectric Waveguide and Its Applications," T. Yoneyama, Tohoku University.
- 11/2/93 20 attendees: "Non-Radiative Dielectric Waveguide and Its Applications," T. Yoneyama, Tohoku University.

The Impact of Emerging Technologies on Wireless Communications

(continued from page 25)

and for fixed wireless access networks (LANs, MANs and WANs). Other major factors are advances in miniaturization (VLSI, MIMIC), multiple access techniques (CDMA, TDMA), and the evolution from macrocells to microcells and even further to femtocells.

Some new telecommunications ventures which will require the expertise and active participation of microwave engineers are these seven global satellite-phone projects: Iridium66, Inmarsat-P, Globalstar, Odyssey, Ellipso, Constellation Communications, and Calling Communications. Contributions by the microwave engineering community will also be crucial for improving the performance of base stations and terminals needed for providing cellular, telepoint and cordless services. Technologies that permit the miniaturization and cost reduction of cellphones and base stations are ceramic chip filters, homodyne mixers and direct conversion receivers, monolithic and hybrid transceivers, and new types of directional or isotropic antennas. Work in these fields is supported by the growing availability of advanced software tools permitting the design and accurate simulation of devices, circuits and systems.

The importance of early development of standards through the publication and dissemination of *Emerging Practices in Technology* will be emphasized.

Announcement & Call for Papers IEEE AP/MTT-S, Philadelphia Section

12th Annual Benjamin Franklin Symposium on Antenna and Microwave Technology in the 1990s Friday, May 6, 1994

The Philadelphia Chapter of the IEEE AP/MTT-S will hold the 12th Annual Benjamin Franklin symposium on Friday, May 6, 1994, from 8:30 a.m. to 5:00 p.m. This one-day symposium will consist of two sessions:

- Morning Session: Plenary Session of Invited Papers
- Afternoon Session: Parallel Sessions of Contributed Papers on the following: a. Antennas and Propagation: Phased Array Technology, Antenna Design, Radiating Elements and Phase Shifters, Antenna Applications, Imaging and Radiometry, Remote Sensing, Scattering and Diffraction, and Wave Interaction with Complex and Chiral Materials. b. Microwave Theory and Techniques: Microwave Networks and Filters, Solid State Devices and Circuits, Millimeter Waves and Monolithic Technology, Ultrafast Optoelectronics, and Optical Technologies Applied to Microwaves and Microwave Applications.

Place: Philadelphia Marriott West, 111 Crawford Avenue, West Conshohocken, PA 19428

Papers: Authors are invited to submit papers in either field. Please send a camera-ready summary (one to four 8.5" x 11" pages, one inch margins) by March 7, 1994, to: Professor Ahmad Hoorfar, Department of Electrical and Computer Engineering, Villanova University, Villanova, PA 19085, e-mail: hoorfar@vu-vlsi.ee.vill.edu

For further information, please call Ahmad Hoorfar, Villanova University, (215) 519-7223; William Jemison, Martin Marietta, (609) 722-3568; or Seong-Hwoon Kim, Martin Marietta, (609) 722-6065.

IEEE-USA Electronic Mail Services Available

by Scott Grayson

IEEE-USA is continuing to expand its distribution of information by electronic mail. Eleven electronic "autoresponse" files have been established with Internet and Compmail addresses to provide information on subjects of interest to IEEE's U.S. members. In addresses to provide information on subjects of interest to IEEE's U.S. members. In response to messages sent to these addresses, the corresponding IEEE-USA text file is sent automatically by e-mail. Currently available files and their addresses are:

Employment Assistance

U.S. members affected by the economic downturn and defense downsizing are looking increasingly to IEEE-USA for employment assistance. An electronic file is now available, which contains information about the various forms of employment assistance currently available, including commercial on-line job listings. Address: info.ieeeusa.employ@ieee.org (Internet) or info.ieeeusa.employ (Compmail).

Congressional Fellowships

Each year IEEE-USA selects two or three qualified members for a one year Fellowship serving on the staff of a Member of Congress or congressional committee. Information on IEEE-USA's Congressional Fellowship program, including qualifications, application procedures, and a listing of past Fellows is available on-line. Address: info.ieeeusa.congfel@ieee.org (Internet) or info.ieeeusa.congfel (Compmail).

Federal Legislative Agenda

IEEE-USA prioritizes its public policy recommendations every two years in a Federal Legislative Agenda, which is submitted to Congress and the Administration. IEEE-USA's Federal Legislative Agenda for the 103rd Congress summarizes IEEE-USA recommendations in such key issue areas as U.S. competitiveness in global markets, retirement income policy, defense conversion, engineering careers, research and development, civilian space program, computers and communications, energy policy, and health care. Address: info.ieeeusa.agenda@ieee.org (Internet) or info.ieeeusa.agenda (Compmail).

Pensions Update

Pension reform is one of the key thrusts of IEEE-USA's Legislative Initiative. This file provides up-to-date information about pension portability and preservation of vested benefits, including the current status of legislation addressing the issue. Address: info.ieeeusa.pension@ieee.org (Internet) or info.ieeeusa.pension (Compmail).

Legislative Report Newsletter

Long-time Washington observer Edith Carper prepares a bimonthly IEEE-USA Legislative Report offer-

ing insights into current Congressional activities of interest to IEEE. Address: info.ieeeusa.leg rpt@ieee.org (Internet) or info.ieeeusa.leg rpt (Compmail).

IEEE-USA Position Statements

Recommendations on career and technology policy issues of concern to IEEE's U.S. members are recorded in position statements of IEEE's United States Activities Board. Current IEEE-USA positions are organized by topic area with information on how to obtain copies of specific statements. Address: info.ieeeusa.pos@ieee.org (Internet) or info.ieeeusa.pos (Compmail).

Influencing Public Policy

IEEE-USA has reissued a brief guide entitled "How to Communicate with Members of Congress," which offers useful tips to help IEEE members improve their ability to influence public policy on issues of concern. Address: info.ieeeusa.lobby@ieee.org (Internet) or info.ieeeusa.lobby (Compmail).

Washington Internships For Students of Engineering

Each year IEEE sponsors two students for a ten week summer internship in Washington, D.C., to study the interaction of science, engineering, and public policy. Information on the WISE program and application procedures are available on-line. Address: info.ieeeusa.wise@ieee.org (Internet) or info.ieeeusa.wise (Compmail).

Student Professional Awareness Conferences

With the support of IEEE's Regional Activities Board, IEEE-USA helps IEEE's Student Branches organize Student Professional Awareness Conferences (S-PACs), what they are, how they're organized, and who to contact is available on line. Address: info.ieee.spac@ieee.org (Internet).

Conferences

Announcements, advance programs, and registration information for pending IEEE-USA conferences, workshops, and symposia are now available on-line. Address: info.ieeeusa.conf@ieee.org (Internet) or info.ieeeusa.conf (Compmail).

Publications of IEEE-USA

Each year IEEE-USA issues a number of useful publications, including the Employment Guide for Engineers and Scientists, the Salary and Fringe Benefit Survey, and various conference reports. Both free and sale titles are listed, along with ordering information. Address: info.ieeeusa.pubs@ieee.org (Internet) or info.ieeeusa.pubs (Compmail).

IEEE-USA's electronic "autoresponse" files are just a few of the many information files being developed by IEEE as a member service. Instructions on how to use IEEE's electronic mail information resources can be obtained as an autoresponse file by e-mail message to info.info@ieee.org (Internet) or info.info (Compmail). For a complete listing of current files and their addresses, send an e-mail message to info.index@ieee.org (Internet) or info.index (Compmail).

3rd International Workshop on Integrated Nonlinear Microwave and Millimeterwave Circuits INMMC'94

**October 5-October 7, 1994
Duisburg University, Duisburg, Germany**

**Sponsored by:
IEEE German MTT/AP Joint Chapter
and
Institute of Mobile and Satellite Communications Techniques
Kamp-Lintfort, Germany**

Call for Papers

The 3rd International Workshop on Integrated Nonlinear Microwave and Millimeterwave Circuits INMMC'94 will be held again in Duisburg, Germany. The aim of the workshop is to promote the discussion on recent developments, and the exchange of scientific and technical information in the area of nonlinear microwave and millimeterwave circuits. Besides a number of invited papers presented by recognized authors in the field at the first day, oral presentations of contributed papers in two parallel sessions and a poster session will be offered. The papers will be published in the Workshop Proceedings. The workshop language is English.

The workshop is organized by the Duisburg University and sponsored by the IEEE German MTT/AP Joint Chapter.

Scope

The members of the IEEE MTT/AP Joint Chapter as well as all other scientists and delegates from industry and science are invited to participate.

A two day workshop is planned on all aspects of **"The Art to Design Power Amplifiers."** Other areas which are also interesting for the contributed papers are: latest results in modeling, simulation, technology and measurement techniques of nonlinear circuits.

Deadline

Authors who intend to submit a paper for oral presentation (20 minutes) or for a presentation in the poster session are requested to submit a 2-DIN A4-pages summary (maximum 1000 words) to the workshop bureau to be received before:

April 1st, 1994

Chairmen:

| | |
|--------------------------|--------------------------|
| Prof. Dr. Ingo Wolff | Prof. Dr. Adalbert Beyer |
| Tel.: ++49-(203) 3789213 | Tel.: ++49-(203) 3789217 |
| Duisburg University | |
| Bismarckstr. 81 | |
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Workshop Bureau:

Tel.: ++49-(203) 3793213
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Telex: 855 793 uni du d

Exhibition

An industrial exhibition presenting RF and microwave equipment and software will be opened on October 6-7, 1994. Potential exhibitors may obtain detailed information from the Workshop Bureau.

Registration

Registration, accommodations and traveling information will be mailed in the final program. For those who require earlier information, it will be available at the Workshop Bureau from January 1994.

Social Events

A workshop dinner will be offered to the workshop delegates on Thursday, October 6, 1994. A sightseeing tour through the region with interesting adventures will be organized for Saturday, October 8, 1994. Details will be announced later.

Fees

The workshop fee will be:

100,00 DM for IEEE members including the fee for the reception dinner,
130,00 DM for non-members including the fee for the reception dinner,
30,00 DM without dinner and 60,00 DM with dinner for students

The fee must be paid before September 1, 1994, in Deutsche Marks to the bank account No. 0209 003 987 at the Stadtparkasse Duisburg, Germany (bank code number: 350 500 00) or by a cheque made payable to INMMC'94, Duisburg, Germany.

Call for Papers
for the
MTT-S International Topical Symposium
on
Technologies for Wireless Applications

To complement the annual International Microwave Symposium, the Microwave Theory and Techniques Society (MTT-S) of the Institute of Electrical and Electronics Engineers (IEEE) is sponsoring a series of International Topical Symposia in areas of special interest to its membership. The first of these Symposia is scheduled to be held 21 to 23 February 1995 in conjunction with INTER COMM 95 in Vancouver, B.C., Canada.

The topic of this symposium, *Technologies for Wireless Applications*, is intended to highlight the application of RF, microwave and millimeter wave technologies to all aspects of wireless communications. Contributions of original work are solicited in the field of wireless applications, including personal communication systems, local and wide area networks, stationary and mobile communication systems, global positioning systems and others. Areas of special interest include, but are not limited to:

- System Design Tradeoffs
- Antenna and Path Design
- Devices and Circuits
- Components for Consumer Products
- High Speed Digital Processing
- Design for Manufacturing
- Design for Testing
- Manufacturing Technologies
- Packaging and Interconnection Technologies.

Prospective authors are requested to submit 10 copies of a 50 word abstract and an extended Summary (not to exceed 1000 words) with supporting figures, clearly stating the significant contribution, to be sent to:

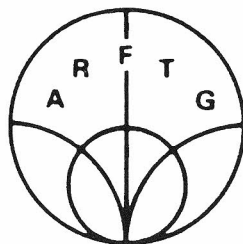
Dr. George L. Heiter
c/o Microwave Journal
685 Canton Street

NORWOOD, MA, 02062, USA.

Tel: (508) 960-6136 FAX: (617) 762-9230.

A separate cover sheet should include the name, address, telephone and FAX numbers of the corresponding author.

Deadline for the receipt of papers is 29 July 1994. Notifications to authors of accepted papers will be mailed by 29 August 1994. For the Digest of Papers, an archived and copyrighted publication of the IEEE which will be available at the Symposium, authors are expected to provide a camera ready manuscript by 21 October 1994. (Instructions for its preparation, including a copyright release form, will be provided).



AUTOMATIC RF TECHNIQUES GROUP

ADVANCE CALL FOR PAPERS

SPRING 1994 CONFERENCE

The Automatic RF Techniques Group will hold their 43rd Conference in San Diego, California on May 27, 1994. Conference theme is:

IMPROVING PERFORMANCE AND QUALITY OF AUTOMATED MICROWAVE TEST SYSTEMS

The need to remain competitive in more demanding markets and to meet increased customer requirements made it necessary for many suppliers of automated microwave test systems to take an in-depth look at their products and services with resulting improvements in both performance and quality. The current market is also international so that new standards such as ISO 9000 must be met. Many members of ARFTG will be confronted with similar situations and could benefit from this experience.

Papers are invited on all areas of automated microwave testing including improved techniques for calibration and verification of systems, MMIC, CAD, circuit modeling, millimeter-wave systems, and related subjects.

Presentations should be informal 20-minute talks using viewgraphs or 35mm slides. For early acceptance and advance publicity, authors are requested to submit two copies of a one-page abstract and a 500 to 1000 word summary including illustrations to allow evaluation with respect to interests of the attendees; this submittal should be made to the Technical Program Chairman prior to February 18, 1994. Papers not submitted for early acceptance must be sent for review in final form with abstracts by March 18, 1994. Absolute deadline for complete and/or revised copies of all accepted papers to be included in the digest distributed at the conference is March 30, 1994. Manufacturers interested in setting up an exhibit should contact the Exhibits Chairperson for application forms. More information can be obtained from the Conference Chairperson, Mr. P. E. Nolan at (408) 756-2144.

Technical Program Chairperson:

Mr. S. D. Phleger
TRW Space and Electronics Group
Measurement Engineering
Mail Stop S/2767
One Space Park
Redondo Beach, CA 90278
Phone: (310) 812-4667
Fax: (310) 814-8797

Exhibits Chairperson:

Mr. W. E. Pastori
Maury Microwave Corporation
2900 Inland Empire Boulevard
Ontario, CA 91764
Phone: (909) 987-4715 X225
Fax: (909) 987-1112

Request for Donations of Publications of the Microwave Theory and Techniques Society and the Electron Devices Society

During recent meetings with IEEE members for eastern Europe, the lack of complete journal libraries over the last ~20 years was identified as a major issue as these countries attempt to build their economies and improve their technology base. To support efforts to reach out to engineers and scientists of countries in eastern Europe which have been cut off from the technology flow from IEEE because of prohibitive costs, the ED and MTT Societies are soliciting contributions of libraries of *Transactions* or *Letters* Journals from individuals who may not have need for them any longer. IEEE will defray any shipping charges and will identify suitable recipients for the journals.

Would you please indicate your interest in participating in such a program by contacting the following:

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