



EDITOR: S. L. March

Compact Engineering Division, CGIS, 1106 Bobbie Lane, Garland, Texas 75042

Number 103, Spring 1982

The 1982 IEEE MTT-S International Microwave Symposium

Dallas, Texas

June 14 - 19, 1982

by D.N. McQuiddy, Jr.

On behalf of the Steering Committee, I extend a cordial invitation for you to attend the 1982 IEEE MTT-S International Microwave Symposium, associated workshops, and one day symposium on Microwave and Millimeter-Wave Monolithic Circuits. The Dallas Chapter of the MTT Society hosted the 1969 Symposium and is proud to again serve as host for 1982. The Hyatt Regency Hotel, located near downtown Dallas, has been selected as our Symposium headquarters.

The theme for this year's Symposium is "Thirty Years of Microwaves" in recognition of the historic inauguration of the Microwave Theory and Techniques Society. Our Keynote Session on Tuesday morning has been organized to support this theme, featuring two reviews of the past. These will be presented by Mr. Theodore S. Saad, MTT Society Historian and President of Sage Laboratories and by Dr. Huang Hung-Chia, Chairman of the Society of Microwaves, Chinese Institute of Electronics, People's Republic of China. Finally, Dr. Leo Young, speaking from his vantage point as Director of Research and Technical Information in the Office of the Undersecretary of Defense for Research and Engineering, will attempt a forecast of the future for microwaves.

The technical program, consisting of 165 selected papers and five invited presentations, will begin after the plenary Keynote Session. In order to accommodate the large number of accepted papers, the Technical Program Committee has arranged the eighteen "full-length" sessions and seven "half-length" sessions so that four simultaneous sessions are scheduled each morning and afternoon. These sessions have been structured so that areas of overlapping interests will be minimized.



The Technical Program Committee has also planned four panel sessions for the evenings. These discussions will cover the following subjects:

- Monolithic Versus Miniature Hybrid MICs (June 15)
- Applications of Microwave and Millimeter-Wave Low Noise Technology (June 17)
- Technology Application for Microwave Landing Systems (June 17)
- Monolithic Millimeter-Wave Integrated Circuits (June 17)

Three workshops have been arranged to be held in conjunction with the Symposium. The subjects to be discussed this year are:

- Advances in Optical Communications (June 14)
- Medical Applications of Electromagnetic Energy (June 15)
- Automatic RF Techniques (June 18 and June 19)

Friday also marks the inauguration of a new MTT-S sponsored symposium, the IEEE Microwave and Millimeter-Wave Monolithic Circuits Symposium.

In keeping with the Symposium theme, the Awards Banquet, Wednesday evening, will honor the past Chairmen and Presidents of the MTT Administrative Committee. You are invited to attend the exhibitors' cocktail party preceding the banquet.

(Continued on page 2)

The following people will be honored at the Awards Banquet for their contributions to the microwave field:

- Microwave Career Awards — Dr. Akio Matsumoto, Dr. Arthur A. Oliner
- Microwave Applications Award — Dr. Charles R. Boyd, Jr.
- Microwave Prize — Mr. Kunikatsu Kobayashi, Dr. Yoshiaki Nemoto, and Dr. Risaburo Sato
- National Lecturer's Award — Dr. Ferdo Ivanek
- MTT-S Sponsored IEEE Fellows

The Awards Banquet will conclude with a delightful presentation by "Riders in the Sky" featuring western swing, old cowboy ballads, and innovative cowboy sketches.

Complementing the Symposium technical events, over 160 exhibitors have reserved space in the Colonnade Exhibit area and the Regency Ballroom to display the latest state-of-the-art in microwave hardware. As in recent years, Horizon House is organizing and managing the exhibition.

The MTT-S Historical Exhibit has been given special emphasis this year and will be located adjacent to the technical program meeting rooms on the main concourse. Hardware artifacts, photographs, books, and other memorabilia will be on display during the Symposium. Members having items of an historical nature are urged to contact either Mr. John Wassel, (214) 995-2391, or Mr. Ben Hallford, (214) 996-5800, regarding the inclusion of the historical articles in the displays.

Dallas offers art, cuisine, entertainment, fashion and sports plus a traditional Southwestern hospitality unique among cities of the world. The Social Program will feature daily tours to highlight interesting areas of Dallas and Fort Worth. A free continental breakfast is available to tour participants.

The planning for this Symposium was initiated in 1977. During the past five years many manhours of labor have been donated by Steering Committee members. I sincerely appreciate the contributions they have made. Their enthusiasm and devotion will make the 1982 IEEE MTT-S International Microwave Symposium a truly rewarding experience.

I look forward to meeting with you in June.

D. N. McQuiddy, Jr.
Chairman
Steering Committee



PRESIDENT'S REPORT

by R. A. Sparks

In recent years, the leadership of the IEEE has become increasingly concerned about and aware of the growing transnational character of the Institute. With 15 percent of IEEE members residing outside the United States, the last few Institute Presidents have made special efforts to visit Regions-7 through 10 to encourage greater technical interaction and information exchange among the membership.

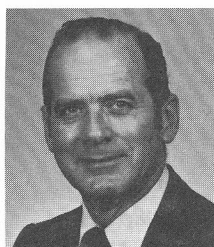
Within the Microwave Theory and Techniques Society, you only have to review any issue of the Transactions to notice the participation of overseas authors. Nearly one-third of the Society's membership resides outside the United States.

The National Lecturer for the 1980-81 year, Dr. Robert Pucel, has suggested changing the title to "International Lecturer." He reflected this title in his own itinerary during the year. Bob presented his lecture in Europe, the Middle East and the Far East. In Japan, where we have 350 MTT-S members, he presented four lectures over a period of about one week. Interestingly, Bob was also invited to spend two weeks in the People's Republic of China as a guest lecturer and expanded his presentation on Monolithic Microwave Circuits into four separate parts. His PRC hosts have responded by inquiring into the possibility of establishing an MTT-S Chapter in China where none exist at the present time.

Our ties with the PRC have been further expanded to include an invited presentation at the 1982 IEEE MTT-S International Microwave Symposium by the Chairman of the Society of Microwaves, Chinese Institute of Electronics. Dr. Huang Hung-Chia will present a survey on the past thirty years of microwave activity in China, a subject which should be of intense interest to all who are able to attend the Symposium.

In addition, the MTT-S Administrative Committee is exploring the possibility of forming a Microwave Study Group to visit Mainland China in the Fall of 1982 or 1983 under the auspices of the IEEE Transnational Relations Committee, Technical Activities Board. The details of these visits will be worked out in the months ahead. Those interested in participating and able to lecture on a topical microwave subject should contact me or any member of the Administrative Committee. Travel expenses, of course, will be the responsibility of each individual.

There is also considerable interest in other countries for technical interactions on microwave subjects. During the past year, the process of forming MTT-S Chapters in Rome, Italy and Seoul, Korea has been initiated. Also, inquiries have been received to establish Chapters in Greece and Australia. Service to our membership remains our most important task today and in the future.



ADCOM HIGHLIGHTS

by C. T. Rucker

The most recent meeting of the Administrative Committee of the MTT Society was held in Dallas on January 19th and 20th. All MTT-S can look forward to a superior Symposium in Dallas this June. The Steering Committee, chaired by David McQuiddy, and the Technical Program Committee, chaired by Steve March, have put together a fine overall Symposium program. Your Adcom will meet next at the Symposium; then, in October in San Francisco.

Financial

It seems appropriate to report to you first on finances and to note that MTT-S has never been financially healthier. Jim Degenford reported that the net worth of the Society will approach \$500,000 in 1982. The main reason for our health is the surpluses generated by our Symposia, especially the exhibits. A truly symbiotic relationship has grown between the technical program and exhibits aspects of the biggest and best Microwave meeting in existence.

Some initial action has already been taken to apply some of this surplus for the benefit of membership. At the request of John Kuno, Membership Services Chairman, the Membership Services Committee was voted a budget of \$10,000 to be used to provide financial support to Chapters. This support might include help with mailing costs, printing, lecture series, short courses, equipment rentals, entertainment of guest speakers, etc. Additional information on the financial assistance available to MTT-S Chapters can be found in the article, Financial Assistance Available to MTT-S Chapters, by Ed Niehenke elsewhere in this issue of the MTT-S Newsletter.

Adcom is continuing to look at other services which could benefit the overall membership. This is no simple task! Scholarships, student awards, grants to universities, and rebates to members of MTT-S have all been discussed at the October and January meetings. The big questions seem to be: what is appropriate for MTT-S and will all of the membership benefit? We are truly interested in hearing from the membership on this issue. Write either me or Dick Sparks with your suggestions or recommendations.

Other Matters of Interest

- The Long Range Planning Committee presented a proposal by which ten East Coast Chapters would be able to obtain the National Lecturer's talk via teleconferencing. After discussion, this item was referred back to the Committee for reexamination at a more appropriate time in the future.
- At the October meeting, an ad hoc Committee on Symposium Management was formed. This Committee has been necessitated by the continued

growth of the Symposium and the increasing complexity that accompanies the growth. The Committee is charged with two main tasks at present. One of these is to determine means of insuring the continuity of Symposia through the local Steering Committees. The other involves consideration of three proposals received for computerized registration and financial reporting at Symposia. Before these proposals are considered in detail, the ad hoc Committee will generate guidelines describing the required services. For this year, the Symposium Steering Committee has already chosen a firm for the services they require. Their experience will be of help in generating guidelines.

- MTT-S is in a position to provide scholarship assistance to students. The best means of doing this has not been determined but many options are available for consideration. For instance, MTT-S could support graduate study in a microwave discipline; only a few Society members could benefit from this approach. At the opposite end of the spectrum, we could provide undergraduate scholarships to the children of Society members solely on the basis of scholastic merit without regard to discipline. The Long Range Planning Committee is continuing to study this question. Your views and opinions are solicited.
- Perhaps scholarships are just one aspect of constructive action MTT-S can take. Past President Fred Rosenbaum has suggested the possibility of forming a "Microwave Engineering Foundation", a separate entity, but related to MTT-S by charter. Possible purposes of such a foundation would be to advance and support educational activities in the microwave field. Fred stressed that this is a very preliminary thought, presented as a basis for discussion. The basic idea was favorably received by Adcom and Fred was asked to give more thought to be possibility and structure of such a foundation.
- The Transactions are thriving; Reinhard Knerr, Editor, noted that seven special Transactions issues are currently planned for 1982-1983. Plans are for the following issues:

April 1982 (with QEA)	Guided Waves
July 1982 (with ED)	Monolithic GaAs Integrated Circuits
September 1982	Microwave Filters
October 1982 (with QEA)	Guided Waves II
December 1982	Symposium Issue
January 1983 (with ED)	Microwave and Millimeter Wave Monolithic Circuits

(Continued on page 4)

IEEE MEMBERSHIP GROWS

At the end of 1981, the IEEE had a total membership of 221,747 members worldwide. This figure represents an increase of 7,935 members, a 3.7% increase over the closing 1980 figure.

In the U.S. geographical Regions of the IEEE, Region 3 (Southeast) reported the largest membership gain of 1,067, or 4.9%, bringing the total membership of that Region to 22,710 members. The most populated Region in the U.S. is Region 6 (West) with 43,133 members, a gain of 3.5% over the 41,683 total of the year before. Outside the U.S., Region 8 (Europe, Near East) reports the largest increase, 1,211 members, or 11.5%, which brings the total Region membership to 11,717. The largest non-U.S. geographical Region is Region 7 (Canada) with a membership total of 11,964.

In addition, the membership of the technical Societies of the IEEE increased to nearly a quarter million. The Societies' total membership at year end was 249,979, which represents a 6% increase over last year's figures.

FINANCIAL ASSISTANCE AVAILABLE TO MTT-S CHAPTERS



by E. C. Niehenke

All active MTT-S Chapters are now eligible to receive from our Society up to \$300 per year to subsidize Chapter activities. This policy was established at its January meeting by MTT-S Adcom in order to provide better services to the MTT-S membership. The Chapters play key roles in serving the membership by providing technical meetings, lecture series, one-day symposia, tours, and social events. These activities help to keep the membership abreast of advancing technology and give them a chance to meet with others in their field.

The financial assistance to the Chapters will be provided from the reserves of the MTT-S and are intended to supplement, not replace, funds provided to the Chapter by the local IEEE Section to enhance the Chapter's program. Chapters should prepare a letter requesting a specific amount and should describe how the Chapter plans to use the money. Address the letter to:

Dr. H. J. Kuno
Hughes Aircraft Company
Building 230/2011 C
3100 W. Lomita Blvd.
P.O. Box 2999
Torrance, CA 90509

TECHNICAL WRITING

The publication of **A Guide for Writing Better Technical Papers**, a book of selected reprints, has been announced by the IEEE Press. This volume, sponsored by the IEEE Professional Communication Society, was edited by Craig Harkins of IBM in San Jose, CA and Daniel L. Plung of Exxon Nuclear Idaho Company.

The successful engineer, scientist, or other professional must be able to communicate information and concepts in a clear, concise, and effective manner. This book is designed to help such professionals develop the tools necessary to become better writers. To accomplish this, it presents a variety of useful suggestions, ideas, guidelines and techniques from diverse points of view.

The 48 reprinted articles, which are drawn from an unusually wide array of sources, are divided by subject into the following five parts: Getting Started, The Rhetoric of Papers and Articles, Tricks of the Trade, Some Research Results, and Following Through. Since these parts are reflective of particular segments of the writing process, the prospective author either can focus attention on one facet of writing or can follow the book's sequence of steps leading from initial planning of a paper to polishing of a final manuscript.

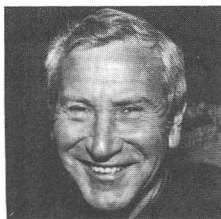
A Guide For Writing Better Technical Papers is priced at \$11.45 for the paperbound member edition. A clothbound edition is available to nonmembers for \$22.95 (discounted to \$17.20 for IEEE members). This 228-page volume can be ordered postpaid from the IEEE Service Center, 445 Hoes Lane, Piscataway, N.J. 08854. Payment should accompany orders.

HERTZ DISCOUNTS

IEEE members renting automobiles from Hertz can now get a ten-percent discount on standard unlimited mileage rates or a 40-percent discount on Hertz' basic rates in the U.S. Discounts are also available outside the United States.

ADCOM HIGHLIGHTS (from page 3)

As you can see, MTT-S is not only healthy but busy and struggling to grow in ways beneficial to the overall membership. Toward this end, let me encourage each of you to join the struggle. Let your Society officers and Administrative Committee members know your views. Your Society is what you help it to be!



ON REPLACING OUR "SEED CORN"

by A. Clavin

I was struck recently by an article in the Los Angeles Times regarding the shortage of high school science teachers. The article pointed out that the salary difference between industrial jobs (high salary) and the high school teaching job (low salary) was so great that it was difficult for the schools to retain their teachers. The very same day I received my copy of IEEE Spectrum and noted the many openings for college level instructors and professors appearing in the classified. It is obvious from the above that the teacher shortage may be much more serious than the well advertised shortage of engineers. For without teachers it is highly unlikely that we will have large crops of engineering (science) graduates. This is akin to "eating our seed corn."

I suspect that I'm a "Johnny come lately" on this subject, and that our MTT professors have been saying this for a long time. Perhaps I didn't hear them or didn't want to hear them because after all, were they not just sounding their own horn. "Shortage of teachers!" Why not solve the problem by giving teachers more money. That may be part of the answer. What is a comparable salary between teacher and industrial worker? Are there not certain benefits from teaching, i.e. 10 month year, academic freedom, doing interesting research, social status in the community, etc.? Arguing salary and benefits are really useless any way. The market place is the final judge of where one will work. But one thing is clear, we must stop eating our seed corn or we must replace it with a new supply.

Is there a source of supply for new teachers? Can we replace our seed corn? Perhaps there is. We are all aware of the fact that after World War II there was a large crop of engineers trained under the G.I. bill. These engineers are now reaching retirement age. Would it not be possible to use this natural resource of the country for the teaching of science in high school and college? I know there are rules concerning credentials, but perhaps this can be waived for those professionals with career achievements recognized by peers. I don't know whether these retired or about to retire engineers can be enticed into the classroom, but perhaps we can try by cutting red tape, rules and regulations.

AWARD TO EUGENE FUBINI

Eugene Fubini (F '54) has been awarded a special silver medal by the Association of Old Crows for his leadership in electronic warfare and his institution of the quick-reaction capability in the Department of Defense that resulted in a significant reduction in U.S. aircraft losses to enemy missiles during the war in Southeast Asia.

SPECIAL TRANSACTIONS ISSUES

Seven special issues of the IEEE Transactions on Microwave Theory and Techniques are planned for the twelve months. The April 1982 issue, joint with the Quantum Electronics and Applications Society, will be devoted to Guided Waves. Selected papers from the 1981 Gallium Arsenide IC Conference will be published jointly with the Electron Devices Society in July 1982. The September 1982 Transactions will feature papers on Microwave Filter Technology. Guided Waves II, also joint with the QEA Society, has been announced for the October 1982 MTT-S Transactions. As has been the practice for many years, the December 1982 Transactions will contain expanded versions of papers presented at this year's IEEE MTT-S International Microwave Symposium. In January 1983, selected papers from the 1982 Microwave and Millimeter Wave Monolithic Circuits Symposium will be expanded and published. Millimeter Wave Integrated Circuits will be featured in the February 1983 Transactions on Microwave Theory and Techniques.

Further details on many of these special issues will be published in future issues of the MTT-S Newsletter.

PHASED ARRAY SYMPOSIUM

The Baltimore Chapter of the Microwave Theory and Techniques Society, in conjunction with the local Chapters of the Antennas and Propagation Society and the Aerospace and Electronic Systems Society is hosting a one and one-half day symposium on Microwave Phased Array Systems. The Symposium begins with an evening session on Friday, May 7, and concludes the following day.

The Friday opening session follows a cash bar and dinner beginning at 6:00 P.M. at the International Hotel, Elkridge Landing Road and Route 170. The conclusion of the mini-symposium, at which speakers will cover radar and electronic warfare systems architecture and the technology of the associated components, will be held at the Westinghouse Services Building Auditorium, Route 170 near the Baltimore/Washington International Airport. Saturday's session lasts from 9:00 A.M. until 3:00 P.M.

The fee structure for the Symposium is: Student IEEE members — \$15, Regular IEEE members — \$30, and nonmembers of IEEE — \$40. After April 20, an additional late charge of \$5 will be assessed. The registration fee includes lecture material, coffee, and lunch on Saturday; dinner on Friday is not included.

For more information, contact either Debbie Walter at (301) 765-7272 or P.D. Hrycak at (301) 765-4515.

RADAR ECCM AND ECM US PATENTS

All of the approximately 300 US patents on radar ECCM and ECM have been identified and collected by Mr. Stephen L. Johnston. Mr. Johnston is Chairman of the ECCM Committee of the IEEE Aerospace and Electronic Systems Society Radar Systems Panel. Since issuance of US patents is not limited to US citizens, these patents represent an interesting international cross section of open literature radar ECCM and ECM technology. These patents were issued to workers in many countries which include France, Germany, Great Britain, Italy, Japan, the Netherlands, as well as the USA.

This patent collection is particularly important since many of the techniques have not been previously described in the professional literature, conference papers, professional technical books, etc. Mr. Johnston has incorporated a large number of these patents into his lecture notes for his short course on Radar ECCM for George Washington University Continuing Engineering Education Division. He also plans to prepare papers on groups of related ECCM patents for presentation at various IEEE and Association of Old Crows conferences such as the forthcoming Radar-82 (London, October 1982).

Mr. Johnston is currently Editor-In-Chief of the International Radar Directory in Huntsville, Alabama.

Reprinted from Aerospace and Electronic Systems Society Newsletter, Volume 17, Number 2, February 1982.

invited papers. The accepted papers come from seventeen countries, acknowledging the International flavor of the Symposium.

An abundance of papers in the areas of solid state devices and circuits was received. The technical program reflects this input devoting five "full-sessions" and two "half-sessions" to various microwave and millimeter-wave solid-state components and devices. Traditional and important technical areas, however, have not been deleted from the program. In addition to a session each on high power techniques, ferrite applications, field theory, and microwave acoustics, there are sessions on microwave integrated circuits, millimeter-wave integrated circuits, low noise techniques, radiometers, computer-aided design, microwave systems, and phased array techniques. Two sessions each on passive components and microwave measurements are also included. New and emerging technological areas — biological effects of microwaves, GaAs analog monolithic circuits, magnetostatic waves, and optical techniques — are also represented by technical sessions.

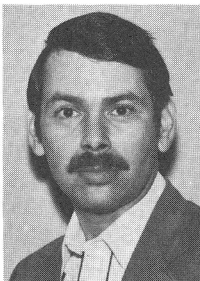
Panel sessions have been scheduled for Tuesday and Thursday evenings to stimulate continued technological exchange of information. On Tuesday evening, panel sessions on "Monolithic Versus Miniature Hybrid MICs" and "Applications of Microwave and Millimeter-Wave Low Noise Technology" will be presented. Additional panel discussions on "Technology Application for Microwave Landing Systems" and "Monolithic Millimeter-Wave Integrated Circuits" are planned for Thursday evening.

Three workshops and a separate one-day conference will be held in conjunction with the Symposium. The "Advances in Optical Communications" workshop is scheduled for Monday, before the official Symposium opening. Following the Microwave Symposium, workshops on "Medical Applications of Electromagnetic Energy" (Friday) and "Automatic RF Techniques" (Friday and Saturday) have been arranged. Friday also marks the inauguration of a new MTT-S sponsored symposium, the IEEE Microwave and Millimeter-Wave Monolithic Circuits Symposium.

The official opening session on Tuesday morning, plenary in form, will consist of three invited presentations. In keeping with the historical theme of the Symposium, Mr. Theodore S. Sadd, eminent MTT Society Historian and President of Sage Laboratories, will review the past "Thirty Years of Microwaves." In a companion paper, Dr. Huang Hung-Chia, Vice President of the Shanghai Institute of Science and Technology and Chairman of the Society of Microwaves, Chinese Institute of Electronics, People's Republic of China, will report on "Thirty Years of Microwaves in China". Since the present and the future soon become history, Dr. Leo Young, Director of Research and Technical Information, Office of the Undersecretary of Defense for Research and Engineering, will attempt to forecast the future in "Microwaves — The Years to Come". It promises to be a very enlightening session, the appropriate beginning to an excellent Symposium. Come and experience it with us.



FROM THE TPC CO-CHAIRMEN



S.L. MARCH



J.K. BUTLER

Thanks to the diligent efforts of the eighty-six participating members of the Technical Program Committee, the 1982 IEEE MTT-S International Microwave Symposium promises to be one of the finest technical conferences since the beginning of the MTT thirty years ago. From 262 submissions, the TPC selected 165 papers for presentation in eighteen "full-length" sessions and seven shorter "half-length" sessions. The technical sessions also include an additional five

SCHEDULE OF EVENTS

	REUNION BALLROOM			
CONCOURSE	EF	GH	BC	A

MONDAY, JUNE 14, 1982

REGISTRATION 0730-1000 1600-2000				0900-1700 WORKSHOP ON ADVANCES IN OPTICAL COMMUNICATIONS
--	--	--	--	---

TUESDAY, JUNE 15, 1982

REGISTRATION 0730-1700	0830-1040 OPENING SESSION				HISTORICAL EXHIBIT CASCADE BALLROOM A 1030-1700
		1100-1240 MICROWAVE MIXERS	1100-1230 LOW NOISE TECHNIQUES	1100-1230 MICROWAVE ACOUSTICS: DEVICES AND APPLICATIONS	
	1400-1650 OPTICAL AND MICROWAVE TECHNIQUES FOR GUIDED WAVE STRUCTURES	1400-1700 TWO TERMINAL DEVICES AND COMBINING TECHNIQUES	1400-1700 HIGH POWER TECHNIQUES	1400-1520 MAGNETOSTATIC WAVES: DEVICES AND APPLICATIONS	
				1540-1700 RADIOMETERS	
	2000-2200 PANEL SESSION APPLICATIONS OF LOW NOISE TECHNOLOGY	2000-2200 PANEL SESSION MONOLITHIC vs MINIATURE HYBRID MICs			

WEDNESDAY, JUNE 16, 1982

REGISTRATION 0703-1700	0900-1200 GaAs FET AMPLIFIERS	0900-1200 MILLIMETER-WAVE INTEGRATED CIRCUITS	0900-1220 PHASED ARRAY TECHNIQUES	0900-1200 MICROWAVE SYSTEMS APPLICATIONS	HISTORICAL EXHIBIT CASCADE BALLROOM A 0900-1700
	1400-1700 NONLINEAR APPLICATIONS OF GaAs FETs	1400-1650 AUTOMATED MICROWAVE MEASUREMENTS	1400-1700 MICROWAVE FIELD THEORY	1400-1650 FERRITE APPLICATIONS	
	1930-2130 AWARDS BANQUET		1800-1930 EXHIBITORS' COCKTAIL RECEPTION		

THURSDAY, JUNE 17, 1982

REGISTRATION 0730-2000	0900-1200 MICROWAVE INTEGRATED CIRCUITS	0900-1200 MILLIMETER-WAVE SOLID-STATE DEVICES	0900-1200 MICROWAVE MEASUREMENTS	0900-1200 FILTERS AND MULTIPLEXERS	HISTORICAL EXHIBIT CASCADE BALLROOM A 0900-1300
	1400-1520 MICROWAVE BIOLOGICAL EFFECTS	1400-1700 SOLID-STATE MILLIMETER-WAVE SOURCES	1400-1700 COMPUTER-AIDED DESIGN	1400-1700 FILTERS AND PASSIVE NETWORKS	
	1540-1720 GaAs MONOLITHIC CIRCUITS				
	2000-2200 PANEL SESSION MONOLITHIC MILLIMETER- WAVE INTEGRATED CIRCUITS	2000-2200 PANEL SESSION TECHNOLOGY APPLICATION FOR MICROWAVE LANDING SYSTEMS			

FRIDAY, JUNE 18, 1982

REGISTRATION 0730-1000	0815-1600 1982 IEEE MICROWAVE AND MILLIMETER-WAVE MONOLITHIC CIRCUITS SYMPOSIUM		0830-1700 WORKSHOP ON AUTOMATIC RF TECHNIQUES	0830-1700 WORKSHOP ON MEDICAL APPLICATIONS OF ELECTROMAGNETIC ENERGY
---------------------------	---	--	--	--

SATURDAY, JUNE 19, 1982

		0830-1700 WORKSHOP ON AUTOMATIC RF TECHNIQUES	CASCADE BALLROOM A/B
--	--	--	-------------------------

1982 IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM

TUESDAY MORNING, JUNE 15, 1982

Reunion Ballroom E/F/G/H

WELCOME

- 0830 WELCOME BY STEERING COMMITTEE CHAIRMAN
David N. McQuiddy, Jr., Texas Instruments, Dallas, TX
- 0840 WELCOME BY MTT SOCIETY ADMINISTRATIVE
COMMITTEE PRESIDENT
Richard A. Sparks, Raytheon Co., Bedford, MA

OPENING SESSION

Chairman: S. L. March, Compact Engineering, Garland, TX

- 0850 THIRTY YEARS OF MICROWAVES (INVITED)
A-1 Mr. Theodore S. Saad, President, Sage Laboratories,
Natick, MA
- 0935 THIRTY YEARS OF MICROWAVES IN CHINA (INVITED)
A-2 Dr. Huang Hung-chia, Society of Microwaves, Chinese
Institute of Electronics, Shanghai, People's Republic of
China
- 1015 MICROWAVES—THE YEARS TO COME (INVITED)
A-3 Dr. Leo Young, Director of Research and Technical
Information, Office of the Undersecretary of Defense for
Research and Engineering, Washington, D.C.

Reunion Ballroom B/C

LOW NOISE TECHNIQUES

Chairman: Jesse J. Taub, Eaton Corp., AIL Division, Melville,
NY

- 1100 LOW NOISE TECHNOLOGY, 1982 STATE-OF-THE-ART
B-1 (INVITED)
S. Weinreb, National Radio Astronomy Observatory,
Charlottesville, VA
- 1130 MILLIMETRE WAVE LOW NOISE E-PLANE BALANCED
B-2 MIXERS INCORPORATING PLANAR MBE GaAs
MIXER DIODES
R. N. Bates, R. K. Surrige, J. G. Summers, J. M.
Woodcock, Philips Research Laboratories, Surrey,
England
- 1150 A 30 GHz FET RECEIVER
B-3 E. T. Watkins, J. M. Schellenberg, H. Yamasaki, Hughes
Aircraft Co., Torrance, CA
- 1210 A 22-24 GHz CRYOGENICALLY COOLED LOW NOISE
B-4 FET AMPLIFIER IN COPLANAR WAVEGUIDE
A. Cappello, J. Pierro, Eaton Corp., Deer Park, NY

Reunion Ballroom G/H

MICROWAVE MIXERS

Chairman: G. R. Basawapatna, Microsource, Inc., Santa Rosa,
CA

- 1100 THE GAP DIODE: A NEW HIGH FREQUENCY MIXER
C-1 AND DETECTOR
P. Chen, S. J. J. Teng, F. J. Rosenbaum, Washington
University, St. Louis, MO; R. E. Goldwasser, Central
Microwave Co., St. Charles, MO

- 1120 SUBHARMONIC MIXER USING PLANAR-DOPED
C-2 BARRIER DIODES
S. Dixon, R. J. Malik, T. R. Aucoin, U.S. Army Electronics
Technology and Devices Laboratory, Fort Monmouth, NJ;
J. Paul, P. Yen, L. T. Yuan, Hughes Aircraft Company,
Torrance, CA
- 1140 SINGLE SIDEBAND MIXERS FOR COMMUNICATIONS
C-3 SYSTEMS
B. R. Hallford, Rockwell International, Dallas, TX
- 1200 A NOVEL BROADBAND DOUBLE BALANCED MIXER
C-4 FOR THE 18-40 GHz
A. A. Blaisdell, R. Geoffroy, H. Howe, Jr., M/A-COM, Inc.,
Burlington, MA
- 1220 THE IMAGE REJECTION HARMONIC MIXER
C-5 J. R. Griffin, L. E. McCarty, D. B. Weiner, Texas
Instruments, Dallas, TX

Reunion A

MICROWAVE ACOUSTICS: DEVICES AND APPLICATIONS

Chairman: T. Lukaszek, U.S. Army Electronics R&D Command,
Ft. Monmouth, NJ

- 1100 A REVIEW OF ELECTRONIC WARFARE (EW)
D-1 RECEIVERS WITH ACOUSTIC DEVICES (INVITED)
J. B. Y. Tsui, W. T. Brumfield, J. F. Hoffmann, Air Force
Wright Aeronautical Laboratories, Wright-Patterson
Air Force Base, OH
- 1130 A SAW RESONATOR STABILIZED OSCILLATOR FOR A
D-2 CATV SET-TOP CONVERTER
S. McIntosh, McIntosh Design, Atlanta, GA
- 1150 800 MHz LOW LOSS SAW FILTER USING NEW PHASE
D-3 WEIGHTING
M. Hikita, Y. Kinoshita, H. Kojima, T. Tabuchi, A. Sumioka,
Hitachi Ltd., Tokyo, Japan
- 1210 HYBRID FET/SAW PROGRAMMABLE TRANSVERSAL
D-4 FILTER
C. M. Panasik, Texas Instruments, Dallas, TX

TUESDAY AFTERNOON, JUNE 15, 1982

Reunion B/C

HIGH POWER TECHNIQUES

- Chairman: H. Goldie, Westinghouse Electric Corp., Baltimore,
MD
- 1400 HIGH-POWER 2-9 GHz SOLID STATE SWITCH
E-1 D. W. Kintigh, W. K. Niblack, Frequency Sources,
Chelmsford, MA
- 1420 A LINEARIZED HIGH POWER MICROWAVE DIGITAL
E-2 PHASE MODULATOR
M. Cuhaci, G. J. P. Lo, N. S. Hitchcock, Communications
Research Centre, Ottawa, Canada
- 1440 A HIGH POWER W-BAND SOLID STATE
E-3 TRANSMITTER FOR SHORT AND LONG
PULSEWIDTHS, A WIDE RANGE OF DUTY CYCLES
AND LARGE TUNABLE BANDWIDTH
G. R. Thoren, M. J. Virostko, Raytheon Co., Bedford, MA

- 1500 NON-LINEAR EQUIVALENT CIRCUIT FOR
E-4 BROADBAND GaAs MESFET POWER AMPLIFIER
DESIGN
R. Soares, M. Goudelis, B. Lorigou, E. de Los Reyes Davos,
Centre National d' Etudes des Telecommunications,
Lannion, France
- 1540 BREAK
- 1550 A 4.5 GHz 40 WATT GaAs FET AMPLIFIER
E-5 N. Fukuden, F. Ogata, M. Hayakawa, H. Sugawara, M.
Takagi, Y. Arai, Fujitsu Ltd., Kawasaki, Japan
- 1600 AN RF-PRIMED ALL-HALOGEN GAS PLASMA
E-6 MICROWAVE HIGH POWER RECEIVER PROTECTOR
H. Goldie, S. Patel, Westinghouse Electric Corp.,
Baltimore, MD
- 1620 POTENTIAL ARC HAZARD PRODUCED BY HANDLING
E-7 CONNECTORS WHILE OPERATING PULSED
MICROWAVE EQUIPMENT
A. W. Friend, Naval Electronics Systems Command,
Washington, D.C.; S. L. Gartner, Naval Medical Research
Institute, Bethesda, MD
- 1640 L-BAND SILICON POWER FET
E-8 X. Chen, P.-H. Zhou, W.-R. Qian, Hebei Semiconductor
Research Institute, Hebei, People's Republic of China

Reunion A

**MAGNETOSTATIC WAVES: DEVICES
AND APPLICATIONS**

Chairman: R. S. Kagiwada, TRW Defense and Space Systems,
Redondo Beach, CA

- 1400 AN EPITAXIAL YIG 10-CHANNEL FILTER BANK
F-1 J. D. Adam, Westinghouse Electric Corp., Pittsburgh, PA
- 1420 SIMULTANEOUS PULSE SEPARATOR
F-2 P. Wahli, Z. Turski, Litton Industries, College Park, MD
- 1440 ION IMPLANTED OBLIQUE INCIDENCE
F-3 MAGNETOSTATIC WAVE REFLECTIVE ARRAY
FILTERS
R. L. Carter, J. M. Owens, K. M. Reed, C. V. Smith, Jr.,
University of Texas at Arlington, Arlington, TX
- 1500 MAGNETOSTATIC WAVE PROPAGATION WITHIN
F-4 OBLIQUELY MAGNETIZED YIG FILMS
T. Koike, Tamagawa University, Tokyo, Japan

Reunion A

RADIOMETERS

Chairman: J. W. Dees, Georgia Institute of Technology, Atlanta,
GA

- 1540 FLIGHT TEST EVALUATION OF A NOISE INJECTION
G-1 DICKE MICROWAVE RADIOMETER EMPLOYING
DIGITAL SIGNAL PROCESSING
R. W. Lawrence, R. F. Harrington, N. S. Higdon, NASA
Langley Research Center, Hampton, VA
- 1600 AN EXPERIMENTAL MILLIMETRE-WAVE
G-2 RADIOMETRIC TRACKER
S. J. Nightingale, G. Payne, Philips Research
Laboratories, Redhill, Surrey, England
- 1620 HIGH SENSITIVITY, ACCURATE MMW RADIOMETERS
G-3 FOR GROUND-MAPPING SYSTEMS
W. B. Day, E. Kraemer, R. S. Roeder, R. E. Wilt, Sperry
Gyroscope Co., Clearwater, FL
- 1640 PERFORMANCE SIMULATOR FOR A WIND
G-4 SCATTEROMETER
P. Hans, D. Miller, H. Schussler, Dornier-System GmbH,
Friedrichshafen, West Germany

Reunion E/F

**OPTICAL AND MICROWAVE TECHNIQUES
FOR GUIDED WAVE STRUCTURES**

Chairman: A. A. Oliner, Polytechnic Institute of New York,
Brooklyn, NY

- 1400 MICROWAVE CIRCUIT MODELS OF
H-1 SEMICONDUCTOR INJECTION LASERS
R. S. Tucker, D. J. Pope, University of Queensland, St.
Lucia, Brisbane, Australia
- 1420 COMPARISON OF NUMERICAL AND EFFECTIVE
H-2 INDEX METHODS FOR A CLASS OF DIELECTRIC
WAVEGUIDES
A. Linz, J. K. Butler, Southern Methodist University,
Dallas, TX
- 1440 CAPACITIVELY LOADED TRANSMISSION LINE FOR
H-3 SUBNANOSECOND STEPPED $\Delta \beta$ OPERATION OF
an
INTEGRATED OPTICAL DIRECTIONAL COUPLER
SWITCH
U. Langmann, D. Hoffmann, Ruhr- Universitat Bochum,
Bochum, West Germany
- 1500 PROPOSAL OF AN ANALYTICAL TECHNIQUE USING
H-4 CIRCULARLY POLARIZED WAVES AND ITS
APPLICATION
K. Kusano, Tohoku University, Sendai, Japan
- 1520 BREAK
- 1550 PHASE MATCHED OPTICAL DIELECTRIC WAVEGUIDE
H-5 USING "THE ARTIFICIAL ANISOTROPIC STRUCTURE"
T. Mizumoto, H. Arai, Y. Naito, Tokyo Institute of
Technology, Tokyo, Japan
- 1610 DESIGN OF CHIRPED GRATING LENSES IN PLANAR
H-6 OPTICAL WAVEGUIDES
W. S. C. Chang, S. Forouhar, J.-M. Delavaux, R.-X. Lu,
University of California at San Diego, La Jolla, CA
- 1630 A PLANAR ELECTRO-OPTIC BEAM SPLITTER WITH A
H-7 SAWTOOTH ELECTRODE
C. L. Lee, J. S. Horng, C.-H. Huang, National Chiao Tung
University, Hsin Chu, Taiwan, Republic of China

Reunion G/H

**TWO TERMINAL DEVICES
AND COMBINING TECHNIQUES**

Chairman: C. T. Rucker, Georgia Institute of Technology,
Atlanta, GA

- 1400 A 1 KW PEAK, 300 W AVG IMPATT DIODE INJECTION
I-1 LOCKED OSCILLATOR
C. A. Drubin, A. L. Hieber, G. Jerinic, A. S. Marinilli,
Raytheon Co., Waltham, MA
- 1420 A DUAL DIODE TM₀₂₀ CAVITY FOR IMPATT DIODE
I-2 POWER COMBINING
R. Laton, S. Simoes, L. Wagner, Raytheon Co.,
Bedford, MA
- 1440 MULTIDIODE WAVEGUIDE POWER COMBINERS
I-3 S. E. Hamilton, B. M. Fish, Hughes Aircraft Co., Canoga
Park, CA
- 1500 120-GUNN DIODE POWER COMBINING AT 23 GHz
I-4 S. Mizushima, M. Madhian, Shizuoka University,
Hamamatsu, Japan
- 1520 BREAK
- 1540 ANALYSIS AND USE OF THE HARKLESS
I-5 DIODE MOUNT FOR IMPATT OSCILLATORS
P. J. Allen, B. D. Bates, P. J. Khan, University of
Queensland, St. Lucia, Brisbane, Australia

MTT-SPRING 1982

- 1600 POWER COMBINERS WITH GUNN DIODE
I-6 OSCILLATORS
J. J. Potoczniak, H. Jacobs, U.S. Army Electronics Research and Development Command, Fort Monmouth, NJ; C. LoCascio, G. Novick, Monmouth College, West Long Branch, NJ
- 1620 GALLIUM ARSENIDE IMPATT DIODES AT 20 GHz
I-7 M. G. Adlerstein, J. W. McClymonds, D. Masse, Raytheon Co., Waltham, MA
- 1640 PULSED CHARACTERIZATION OF X-BAND GaAs DDR
I-8 IMPATT DIODES
M. Harris, R. Ligon, L. Wagner, Raytheon Co., Bedford, MA

WEDNESDAY MORNING, JUNE 16, 1982

Reunion E/F

GaAs FET AMPLIFIERS

Chairman: H. Q. Tserng, Texas Instruments, Dallas, TX

- 0900 S-BAND GaAs POWER FET
J-1 H. M. Macksey, H. Q. Tserng, G. H. Westphal, Texas Instruments, Dallas, TX
- 0920 INTERNALLY MATCHED (IM) PLATED SOURCE
J-2 BRIDGE (PSB) POWER GaAs FET ACHIEVING A HIGH PERFORMANCE POWER AMPLIFIER IN X-BAND
M. Kobiki, T. Sakayori, M. Ohashi, M. Wataze, S. Igi, T. Suzuki, K. Kusunoki, Mitsubishi Electric Corp., Itami, Hyogo, Japan
- 0940 K- AND Ka-BAND POWER GaAs FETS
J-3 T. Noguchi and Y. Aono, Nippon Electric Co., Kawasaki, Kanagawa, Japan
- 1000 DESIGN OF MEDIUM POWER, 6-12 GHz GaAs FET
J-4 AMPLIFIER USING HIGH DIELECTRIC NETWORKS
S. D. McCarter, A. M. Pavio, Texas Instruments, Dallas, TX
- 1020 BREAK
- 1040 A NETWORK MODELING AND DESIGN METHOD FOR
J-5 A 2-18 GHz FEEDBACK AMPLIFIER
A. M. Pavio, Texas Instruments, Dallas, TX
- 1100 26.5-40.0 GHz GaAs FET AMPLIFIER
J-6 J. Rosenberg, P. Chye, C. Huang, G. Policky, Avantek, Santa Clara, CA
- 1120 CLASS B OPERATIONS OF MICROWAVE FETs FOR
J-7 ARRAY MODULE APPLICATIONS
M. Cohn, J. E. Degenford, R. G. Freitag, Westinghouse Electric Corp., Baltimore, MD
- 1140 DESIGN AND FABRICATION TECHNIQUES FOR
J-8 LUMPED ELEMENT GaAs MESFET POWER AMPLIFIERS USING AUTOMATED ASSEMBLY PROCEDURES
J. B. Klatskin, R.L. Camisa, D. Haggis, RCA Laboratories, Princeton, NJ

Reunion B/C

PHASED ARRAY TECHNIQUES

Chairman: L. R. Whicker, Naval Research Laboratory, Washington, D.C.

- 0900 SOLID STATE RADAR'S PATH TO GaAs (INVITED)
K-1 D. N. McQuiddy, Jr., Texas Instruments, Dallas, TX
- 0930 A HIGH PHASE ACCURACY ACTIVE PHASED ARRAY
K-2 MODULE FOR MULTI-FUNCTION RADARS
C. J. Ward, J. R. Forrest, P. Malamis, A. A. Salles, University College London, London, England; M. E. Brinson, A.J. Parsons, Polytechnic of North London, Holloway, England

- 0950 DUAL POLARIZATION PHASED ARRAY DIODE PHASE
K-3 SHIFTER MODULE
J. F. White and D. J. Fryklund, M/A-COM, Inc., Burlington, MA
- 1010 EXPERIMENTAL THIN-FILM, ETCHED-CIRCUIT
K-4 RECTENNA
W. C. Brown, Raytheon Co., Waltham, MA; J. F. Triner, NASA Lewis Research Center, Cleveland, OH
- 1030 BREAK
- 1050 FERRITE SCANNING LENS AT 94 GHz (INVITED)
K-5 R. Tang, Hughes Aircraft Co., Fullerton, CA
- 1120 COMMUTATING SPOT TRANSMISSIVE LENS
K-6 ANTENNA
C. L. Orr, Texas Instruments, Dallas, TX
- 1140 SUBSTRATE OPTIMIZATION FOR INTEGRATED
K-7 CIRCUIT ANTENNAS
N. G. Alexopoulos, P. B. Katehi, University of California at Los Angeles, Los Angeles, CA; D. B. Rutledge, California Institute of Technology, Pasadena, CA
- 1200 EXTRA BROAD BAND PHASE-SHIFTER MODULES
K-8 M. Bedoure, Thomson-CSF, Malakoff, France

Reunion G/H

MILLIMETER-WAVE INTEGRATED CIRCUITS

Chairman: J. B. Knorr, Naval Postgraduate School, Monterey, CA

- 0900 NEW STRUCTURES FOR IMPEDANCE
L-1 TRANSFORMATION IN FIN-LINES
H. El Hennawy, K. Schunemann, Technische Universitat Braunschweig, Braunschweig, West Germany
- 0920 WIDEBAND SUBHARMONICALLY PUMPED W-BAND
L-2 MIXER IN SINGLE-RIDGE FIN-LINE
P. J. Meier, Eaton Corp., Deer Park, NY
- 0940 BROADBAND PLANAR BALANCED MIXERS FOR
L-3 MILLIMETER-WAVE APPLICATIONS
L. Bui, D. Ball, Hughes Aircraft Co., Torrance, CA
- 1000 A ZERO-BIAS GaAs MILLIMETER WAVE INTEGRATED
L-4 DETECTOR CIRCUIT
C. C. Chang, D. L. Lynch, M. D. Sohigian, G. F. Anderson, T. Schaffer, G. I. Roberts, Hewlett-Packard Co., Santa Rosa, CA
- 1020 BREAK
- 1040 WIDELY TUNABLE MILLIMETER-WAVE MIXERS
L-5 USING BEAM-LEAD DIODES
S. Nussbaum, J. A. Calviello, E. Sard, N. Arnoldo, Eaton Corp., Deer Park, NY
- 1100 MICROSTRIP DEVICES FOR MILLIMETER
L-6 FREQUENCY FRONT-ENDS
M. J. Sisson, P. M. Briggins, P. N. Wood, P. R. Brown, A. M. Hansom, M. R. Nicholls, J. W. Burns, K. J. Ming, General Electric Co., Wembley, Middlesex, England
- 1120 MILLIMETER-WAVE HYBRID-OPEN MICROSTRIP
L-7 TECHNIQUES
T. H. Oxley, R. E. Scarmand, P. L. Lowbridge, Marconi Electronic Devices, Lincoln, England
- 1140 HYBRID COUPLED MICROSTRIP REFLECTION
L-8 AMPLIFIERS
D. Rubin, Naval Ocean Systems Center, San Diego, CA

Reunion A

MICROWAVE SYSTEMS APPLICATIONS

Chairman: J. B. Horton, TRW Defense and Space Systems, Redondo Beach, CA

- 0900 A 20-WATT C-BAND BPSK MODULATED FET
M-1 TRANSMITTER FOR MICROWAVE LANDING SYSTEM
S. R. Mazumder, T. Dao, T. L. Tsai, W. C. Tsai, Raytheon Co., Northborough, MA
- 0920 A 1 WATT GaAs POWER AMPLIFIER FOR THE 30/20
M-2 GHz COMMUNICATIONS SYSTEM
J. Goel, G. Oransky, S. Yuan, P. O'Sullivan, J. Burch, TRW Defense and Space Systems, Redondo Beach, CA
- 0940 A 50 GHz MIC TRANSMITTER/RECEIVER USING A
M-3 DIELECTRIC RESONATOR OSCILLATOR
T. Saito, M. Ishizaki, Y. Tokumitsu, Fujitsu Laboratories, Kawasaki, Japan; E. Matsumoto, Fujitsu Ten Co., Kobe, Japan
- 1000 A COMPACT LOW COST 60 GHz COMMUNICATOR
M-4 A. Hilsop, Naval Ocean Systems Center, San Diego, CA
- 1020 BREAK
- 1040 A LOW NOISE FREQUENCY AGILE X-BAND SOURCE
M-5 Z. Galani, M. Bianchini, R. Di Biase, Raytheon Co., Bedford, MA
- 1100 A 14 GHz DCPSK DIRECT DEMODULATOR FOR
M-6 SATELLITE APPLICATIONS
A. Angelucci, L. Accatino, Centro Studi e Laboratori Telecomunicazioni, Torino, Italy
- 1120 COUPLER CROSSBAR MICROWAVE SWITCH MATRIX
M-7 P. T. Ho, J. R. Pelose, R. Maliszewski, Ford Aerospace and Communications Corp., Palo Alto, CA
- 1140 DIRECT BASEBAND TO MICROWAVE MSK
M-8 GENERATION BY USING INJECTION LOCKED OSCILLATOR
S. A. Myrillas, J. S. Wight, Carleton University, Ottawa, Canada

WEDNESDAY AFTERNOON, JUNE 16, 1982

Reunion A

FERRITE APPLICATIONS

Chairman: J. E. Raue, TRW Defense and Space Systems, Redondo Beach, CA

- 1400 A RESONANTLY COUPLED, FERRITE-TUNED
N-1 BUNCHER-CAVITY SYSTEM FOR THE LOS ALAMOS PROTON STORAGE RING
L. M. Earley, G. P. Lawrence, F. J. Humphry, J. M. Potter, Los Alamos National Laboratory, Los Alamos, NM
- 1420 BROADBAND FIN-LINE CIRCULATORS
N-2 U. Goebel, C. Schieblich, Technische Universitat Braunschweig, Braunschweig, West Germany
- 1440 LOW LOSS 92-100 GHz CIRCULATORS
N-3 W. Piotrowski, S. Schell, TRW Defense and Space Systems, Redondo Beach, CA
- 1500 BREAK
- 1530 DIELECTRIC WAVEGUIDE PHASE SHIFTER
N-4 J. J. Green, Raytheon Co., Waltham, MA
- 1550 A 60 GHz DUAL-MODE FERRITE PHASE SHIFTER
N-5 C. R. Boyd, Jr., Microwave Applications Group, Santa Maria, CA
- 1610 HIGH POWER, LOW PHASE DISTORTION,
N-6 ELECTRONIC FERRITE ATTENUATOR
L. Dubrowsky, J. Cohen, G. Kern, W. Milberger, R. Porter, Westinghouse Electric Co., Baltimore, MD; J. Van Damme, Rome Air Development Center, N.Y.

- 1630 DESIGN AND PERFORMANCE OF K-BAND YIG
N-7 TUNED MULTIPLIER
L. A. Stark, Hewlett-Packard Co., Palo Alto, CA

Reunion E/F

NONLINEAR APPLICATIONS OF GaAs FETs

Chairman: R. A. Pucel, Raytheon Company, Waltham, MA

- 1400 GaAs FET LIMITING AMPLIFIER DESIGNED FOR LOW
O-1 AM TO PM CONVERSION
C. R. Baughman, J. Y. Chin, Aertech Industries, Sunnyvale, CA
- 1420 BR FET: A BAND REJECTION FET FOR AMPLIFIER
O-2 AND MIXER APPLICATIONS
C. Tsironis, Laboratoires d' Electronique et de Physique Appliquee, Limeil-Brevannes, France
- 1440 VARACTOR TUNED DIELECTRIC RESONATOR GaAs
O-3 FET OSCILLATOR IN X-BAND
K. W. Lee, W. R. Day, Varian Associates, Santa Clara, CA
- 1500 EFFICIENT LOW-NOISE THREE PORT X-BAND FET
O-4 OSCILLATOR USING TWO DIELECTRIC RESONATORS
A. P. S. Khanna, J. Obregon, Y. Garault, Universite de Limoges, Limoges, France
- 1520 BREAK
- 1540 FREQUENCY DOUBLERS WITH GaAs FETs
O-5 C. Rauscher, Naval Research Laboratory, Washington, D.C.
- 1600 A 45 GHz FET MIC OSCILLATOR-DOUBLER
O-6 Y. Tokumitsu, M. Iwakuni, T. Sakane, T. Saito, Fujitsu Laboratories, Nakahara, Kawasaki, Japan
- 1620 X-BAND BURNOUT CHARACTERISTICS OF GaAs
O-7 MESFETs
J. J. Whalan, State University of New York at Buffalo, Amherst, NY; R. T. Kemerley, Air Force Wright Aeronautical Laboratories, Wright-Patterson Air Force Base, OH
- 1640 MONOLITHIC MICROWAVE INTEGRATED GaAs
O-8 FET OSCILLATORS
X. Xe, F. Wang, Nanjing Solid State Devices Research Institute, Nanjing, People's Republic of China

Reunion B/C

MICROWAVE FIELD THEORY

Chairman: C. M. Krowne, Naval Research Laboratory, Washington, D.C.

- 1400 A UNIFIED ANALYSIS FOR PLANAR TRANSMISSION
P-1 LINES
A. M. K. Saad, K. Schunemann, Technische Universitat Braunschweig, Braunschweig, West Germany
- 1420 ANALYSIS OF TRAPPED IMAGE GUIDES USING
P-2 EFFECTIVE DIELECTRIC CONSTANTS AND SURFACE IMPEDANCES
W. B. Zhou, T. Itoh, University of Texas at Austin, Austin, TX
- 1440 COUPLING THROUGH A SLOT BETWEEN A
P-3 DIELECTRIC IMAGE LINE AND A PARALLEL PLATE GUIDE
R. D. Nevels, Texas A and M University, College Station, TX; C. M. Butler, University of Mississippi, University, MS

- 1500 BENDS IN NONRADIATIVE DIELECTRIC
P-4 WAVEGUIDES
T. Yoneyama, S. Nishida, M. Yamaguchi, Tohoku University, Sendai, Japan
- 1520 BREAK
- 1540 VARIATIONAL METHODS FOR NONSTANDARD
P-5 EIGENVALUE PROBLEMS IN MICROWAVE FIELD ANALYSIS
I. V. Lindell, Helsinki University of Technology, Espoo, Finland
- 1600 NEW ASPECTS CONCERNING THE DEFINITION OF
P-6 MICROSTRIP CHARACTERISTIC IMPEDANCE AS A FUNCTION OF FREQUENCY
R. H. Jansen, N. H. L. Koster, Universitat Gesamthochschule Duisburg, Duisburg, West Germany
- 1620 COMPENSATION OF DISCONTINUITIES IN PLANAR
P-7 TRANSMISSION LINES
R. Chadra, K. C. Gupta, Indian Institute of Technology, Kanpur, India
- 1640 ANALYTICAL EXPRESSIONS FOR THE PARAMETERS
P-8 OF FINNED AND RIDGED WAVEGUIDES
W. J. R. Hoefler, M. H. Burton, University of Ottawa, Ottawa, Canada

Reunion G/H

AUTOMATED MICROWAVE MEASUREMENTS

- Chairman: G. F. Engen, National Bureau of Standards, Boulder, CO
- 1400 ASPECTS OF THE CALIBRATION OF A SINGLE
Q-1 SIX-PORT USING A LOAD AND OFFSET REFLECTION STANDARDS
G. P. Riblet, E. R. B. Hansson, Microwave Development Laboratories, Natick, MA
- 1420 DIODE DETECTOR CHARACTERISTICS FOR A 94
Q-2 GHz SIX-PORT APPLICATION
R. A. Fong-Tom, H. M. Cronson, Sperry Research Center, Sudbury, MA
- 1440 PHASE AND AMPLITUDE CHARACTERISTICS OF
Q-3 DIELECTRIC WAVEGUIDE COUPLER AND SIX-PORT NETWORK
D. Radovich, J. Paul, Hughes Aircraft Co., Torrance, CA
- 1500 BREAK
- 1530 A COMPUTER-CONTROLLED DIELECTRIC
Q-4 CONSTANT MEASUREMENT SYSTEM: THE MOVING VANE DIELECTOMETER
G. E. Everett, J. W. Battles, Naval Weapons Center, China Lake, CA
- 1550 A TWO-TIER DEEMBEDDING TECHNIQUE FOR
Q-5 PACKAGED TRANSISTORS
R. Vaitkus, D. Scheitlin, Motorola, Phoenix, AZ
- 1610 COMPUTER-AIDED DETERMINATION OF
Q-6 RESONATOR CHARACTERISTICS BASED ON EXPANSION IN NORMAL MODES AND USING AUTOMATIC NETWORK ANALYSER DATA
D. W. Griffin, University of Adelaide, Adelaide, South Australia, Australia
- 1630 A MICROPROCESSOR CONTROLLED PHASE
Q-7 MEASUREMENT SYSTEM FOR 2856 MHz PULSES
J. D. Fox, H. Schwarz, Stanford Linear Accelerator Center, Stanford, CA

THURSDAY MORNING, JUNE 17, 1982

Reunion B/C

MICROWAVE MEASUREMENTS

- Chairman: H. G. Oltman, Jr., Hughes Aircraft Co., Canoga Park, CA
- 0900 MICROSTRIP MEASUREMENTS
R-1 T. C. Edwards, Royal Military College of Science, Swindon, Wiltshire, England
- 0920 MEASUREMENT OF THE CHARACTERISTIC
R-2 IMPEDANCE OF MICROSTRIP OVER A WIDE FREQUENCY RANGE
W. J. Getsinger, Comsat Laboratories, Clarksburg, MD
- 0940 SIMULTANEOUS LARGE-SIGNAL CHARACTERIZATION
R-3 TECHNIQUE FOR TWO-PORT NONLINEAR ACTIVE NETWORKS
D. C. Yang, D. F. Peterson, University of Michigan, Ann Arbor, MI
- 1000 A PROGRAMMABLE LOAD FOR POWER AND NOISE
R-4 CHARACTERIZATION
B. W. Leake, Raytheon Co., Wayland, MA
- 1020 BREAK
- 1040 NOISE WAVES, A CONCEPT LEADING TO DEEP
R-5 INSIGHT AND VERY ACCURATE NOISE CHARACTERIZATION
R. Meys, U. L. B. Brussels, Belgium; M. Milecan, Etudes Techniques et Constructions Aérospatiales, Charleroi, Belgium
- 1100 DE-EMBEDDING THE CAPACITANCE OF A
R-6 RESONANT CIRCUIT USING TIME-DOMAIN REVERSAL AND SUBTRACTION
H. E. Stinehelfer, Sr., Made-It Associates, Burlington, MA
- 1120 AN AUTOMATED POWER METER CALIBRATION
R-7 SYSTEM
R. C. Powell, H. W. Banning, J. R. Byloff, Weinschel Engineering Co., Gaitherburg, MD
- 1140 A BETTER WAVEGUIDE SHORT CIRCUIT
R-8 R. L. Eisenhart, R. C. Monzello, Hughes Aircraft Co., Canoga Park, CA

Reunion G/H

MILLIMETER-WAVE SOLID-STATE DEVICES

- Chairman: J. C. Wiltse, Georgia Institute of Technology, Atlanta, GA
- 0900 141 GHz GENERATION BY A GaAs GUNN-OSCILLATOR-
S-1 UP-CONVERTER CHAIN
H. Barth, AEG-Telefunken, Ulm, West Germany
- 0920 MILLIMETER-WAVE BARITT DIODE MIXERS
S-2 J. Chen, J. R. East, R. O. Grondin, G. I. Haddad, University of Michigan, Ann Arbor, MI; L. Mang, Y. Anand, S. Ellis, D. Densenouci, M/A-COM, Inc., Burlington, MA
- 0940 A W-BAND WIDEBAND CROSSBAR MIXER
S-3 K. Louie, TRW Defense and Space Systems, Redondo Beach, CA
- 1000 BEAM LEAD DIELECTRIC CROSSBAR MIXERS FROM
S-4 60 GHz to 140 GHz
P. Yen, J. Paul, L. Yuan, Hughes Aircraft Co., Torrance, CA
- 1020 BREAK
- 1040 140 GHz QUASI-OPTICAL PLANAR MIXERS
S-5 P. Yen, L. Yuan, J. Paul, Hughes Aircraft Co., Torrance, CA

- 1100 QUASI-OPTICAL POLARIZATION-DUPLEXED
S-6 BALANCED MIXER
K. D. Stephan, N. Camilleri, T. Itoh, University of Texas at Austin, Austin, TX
- 1120 A KA-BAND ORTHOGONAL HYBRID FIN-LINE MIXER
S-7 J. S. Wong, K.-I. Chung, General Dynamics, Pomona, CA
- 1140 NUMERICAL ANALYSIS OF SUBHARMONIC MIXERS
S-8 USING A BILINEAR DIODE MODEL
R. G. Hicks, P. J. Khan, University of Queensland, St. Lucia, Brisbane, Australia

Reunion A

FILTERS AND MULTIPLEXERS

- Chairman: A. E. Williams, Comsat Laboratories, Clarksburg, MD
- 0900 MINIATURE FILTERS AND EQUALIZERS USING DUAL
T-1 MODE DIELECTRIC RESONATOR LOADED CAVITIES
S. J. Fiedziuszko, R. C. Chapman, Ford Aerospace and Communications Corp., Palo Alto, CA
- 0920 MODE SUPPRESSOR FOR DIELECTRIC RESONATOR
T-2 FILTERS
C. L. Ren, Bell Telephone Laboratories, North Andover, MA
- 0940 COUPLING COEFFICIENT BETWEEN MAGNETIC
T-3 LOOP AND A DIELECTRIC RESONATOR IN AN EVANESCENT WAVEGUIDE
P. Guillon, Y. Garault, Universite de Limoges, Limoges, France
- 1000 THE GENERALISED INTEGRATED-POLE DIRECT
T-4 COUPLED CAVITY FILTER
D. S. G. Chambers, J. D. Rhodes, Filtronic Components Ltd., Shipley, West Yorkshire, England
- 1020 BREAK
- 1040 IMPROVED SELECTIVITY IN CYLINDRICAL TE₀₁₁
T-5 FILTERS BY TE₂₁₁/TE₃₁₁ MODE CONTROL
D. E. Kreinheder, T. D. Lingren, Hughes Aircraft Co., Canoga Park, CA
- 1100 VARACTOR TUNED MICROWAVE FILTERS
T-6 I. C. Hunter, J. D. Rhodes, Filtronic Components Ltd., Shipley, West Yorkshire, England
- 1120 SYNTHESIS OF LOW-PASS ELLIPTIC FILTERS FOR
T-7 MIC AS A CLASS OF NON-COMMENSURATE DISTRIBUTED CIRCUITS
M. Salerno, R. Sorrentino, Universita di Roma, Roma, Italy
- 1140 AN 11 GHz CONTIGUOUS BAND OUTPUT
T-8 MULTIPLEXING NETWORK FOR INTELSAT VI SPACECRAFT
R. Tong, J. Dorey, P. Mabson, W. C. Tang, E. Klein-Lebbink, C. M. Kudsia, Com Dev Ltd. Cambridge, Canada

Reunion E/F

MICROWAVE INTEGRATED CIRCUITS

- Chairman: C. Buntschuh, Narda Microwave Corp., Hauppauge, NY
- 0900 PHASE VELOCITY COMPENSATION IN PARALLEL-
U-1 COUPLED MICROSTRIP
S. L. March, Compact Engineering, Garland, TX
- 0920 THE EQUAD: A FLAT AMPLITUDE, OCTAVE
U-2 BANDWIDTH PLANAR QUADRATURE NETWORK
R. V. Snyder, R. S. Microwave Co., Butler, NJ
- 0940 MIC DIRECTIONAL FILTERS USING DIELECTRIC
U-3 RESONATORS
M. L. Majewski, N. A. McDonald, Royal Melbourne Institute of Technology, Melbourne, Australia

- 1000 VARIABLE COUPLING DIRECTIONAL COUPLERS
U-4 USING VARACTOR DIODES
S. Toyoda, Osaka Institute of Technology, Osaka, Japan
- 1020 BREAK
- 1040 AN IMPROVED PIN DIODE ATTENUATOR FOR
U-5 HIGH RELIABILITY MIC APPLICATIONS
P. Horkin, Martin Marietta Aerospace, Denver, CO
- 1100 AN ANALYTIC DESIGN APPROACH FOR 2-18 GHz
U-6 PLANAR MIXER CIRCUITS
R. B. Culbertson, A. M. Pavio, Texas Instruments, Dallas, TX
- 1120 A COMPACT BROADBAND MULTIFUNCTION MIC
U-7 MODULE
E. C. Niehenke, Westinghouse Electric Corp., Baltimore, MD
- 1140 THE USE OF SAMPLING TECHNIQUES FOR
U-8 MINIATURIZED MICROWAVE SYNTHESIS APPLICATIONS
B. E. Gilchrist, R. D. Fildes, J. G. Galli, Watkins-Johnson Co., Palo Alto, CA

THURSDAY AFTERNOON, JUNE 17, 1982

Reunion E/F

MICROWAVE BIOLOGICAL EFFECTS

- Chairman: A. Rosen, RCA Laboratories, Princeton, NJ
- 1400 CHANGES IN CARDIAC-CELL MEMBRANE NOISE
V-1 DURING MICROWAVE EXPOSURE
R. L. Seaman, R. L. De Haan, Georgia Institute of Technology, Atlanta, GA
- 1420 A SELF-BALANCING MICROWAVE RADIOMETER FOR
V-2 NON-INVASIVELY MEASURING THE TEMPERATURE OF SUBCUTANEOUS TISSUES DURING LOCALIZED HYPERTHERMIA TREATMENTS OF CANCER
F. Sterzer, R. Paglione, F. Wozniak, RCA Laboratories, Princeton, NJ; J. Mendecki, E. Friedenthal, C. Botstein, Montefiore Hospital and Medical Center, Bronx, NY
- 1440 THERMAL DRIFT IN MICROWAVE THERMOGRAPHY
V-3 J. Shaeffer, A. M. El-Mahdi, Eastern Virginia Medical School, Norfolk, VA; R. J. Bielawa, J. F. Regan, K. L. Carr, M/A-COM, Inc., Burlington, MA
- 1500 DYNAMIC 'IN VIVO' PERFORMANCE OF
V-4 TEMPERATURE CONTROLLED LOCAL MICROWAVE HYPERTHERMIA AT 2.45 GHz
R. Knochel, W. Meyer, Philips GmbH, Hamburg, West Germany; F. Zywiets, University of Hamburg, Hamburg, West Germany

Reunion B/C

COMPUTER-AIDED DESIGN

- Chairman: S. F. Adam, Hewlett Packard Co., San Jose, CA
- 1400 LARGE SIGNAL GaAs FET AMPLIFIER CAD
W-1 PROGRAM
A. Platzker, Raytheon Co., Bedford MA; Y. Tajima, Raytheon Co., Waltham, MA
- 1420 A COMPUTER-AIDED APPROACH TO THE
W-2 NONLINEAR DESIGN OF MICROWAVE TRANSISTOR OSCILLATORS
V. Rizzoli, A. Lipparini, Universita Degli Studi Di Bologna, Bologna, Italy
- 1440 AN OPTIMIZATION TECHNIQUE FOR LUMPED-
W-3 DISTRIBUTED TWO-PORTS
K. W. Iobst, NASA Goddard Space Flight Center, Greenbelt, MD; K. A. Zaki, University of Maryland, College Park, MD

- 1500 ODD ORDER IMPEDANCE MATCHING NETWORKS
W-4 FOR LOW COST MICROWAVE INTEGRATED CIRCUITS
A. N. Riddle, R. J. Trew, North Carolina State University, Raleigh, NC
- 1520 BREAK
- 1540 PROCESSING SYSTEM FOR DESIGN AND ANALYSIS
W-5 OF MICROWAVE-INTEGRATED CIRCUITS LAYOUT
S. S. Saviani, A. J. Giarola, Universidade Estadual de Campinas, Sao Paulo, Brazil
- 1600 A NOVEL APPROACH TO COMPUTER AUTOMATED
W-6 MICROWAVE CIRCUIT MASK DESIGN
T. Dowling, J. Birch, S. Temple, S. Monaghan, H. E. Stinehelfer, Sr., N. Cavallaro, A. Davis, Raytheon Co., Bedford, MA
- 1620 AUTOMATIC ARTWORK GENERATION FOR
W-7 MICROWAVE INTEGRATED CIRCUITS
W. H. Childs, J. L. McGregor, Compact Engineering, Rockville, MD
- 1640 COMPUTER-AIDED DESIGN OF MILLIMETER-WAVE
W-8 E-PLANE FILTERS
Y. C. Shih, T. Itoh, University of Texas at Austin, Austin, TX; L. Q. Bui, Hughes Aircraft Co., Torrance, CA

- 1500 CW InP GUNN DIODE POWER COMBINING AT 90 GHz
Y-4 J. J. Sowers, J. D. Crowley, F. B. Fank, Varian Associates, Santa Clara, CA
- 1520 BREAK
- 1540 ON THE HARMONIC OPERATION OF
Y-5 MILLIMETERWAVE GUNN DIODES
W. H. Haydl, Fraunhofer Institut fur Angewandte Festkorperphysik, Freiburg, West Germany
- 1600 PERFORMANCE CAPABILITIES OF INDIUM
Y-6 PHOSPHIDE $n^+ - n - n^+$ TRANSFERRED ELECTRON DEVICES AT MILLIMETRE WAVE FREQUENCIES
I. G. Eddison, I. Davies, Plessey Research (Caswell) Ltd., Towcester, Northants, England
- 1620 HIGH FREQUENCY LIMITATION OF GaAs TRANSIT-
Y-7 TIME DIODES
N. Lee, D.-S. Pan, University of California at Los Angeles, Los Angeles, CA
- 1640 V-BAND InP GUNN DIODE
Y-8 Y. Deng, H. Zhang, Y. Sheng, J. Fang, Nanjing, Solid State Devices Research Institute, Nanjing, People's Republic of China

Reunion E/F

GaAs MONOLITHIC CIRCUITS

Chairman: D. W. Maki, Hughes Aircraft Company, Torrance, CA

- 1540 X-, Ku-BAND GaAs MONOLITHIC AMPLIFIER
X-1 Y. Tajima, R. Mozzi, E. Tong, L. Hanes, B. Wrona, Raytheon Co., Waltham, MA; T. Tsukii, Raytheon Co., Goleta, CA
- 1600 GaAs MONOLITHIC WIDEBAND (2-18 GHz) VARIABLE
X-2 ATTENUATORS
Y. Tajima, R. Mozzi, E. Tong, L. Hanes, B. Wrona, Raytheon Co., Waltham, MA; T. Tsukii, Raytheon Co., Goleta, CA
- 1620 MONOLITHIC VOLTAGE CONTROLLED OSCILLATOR
X-3 FOR X- AND Ku-BANDS
B. N. Scott, G. E. Brehm, Texas Instruments, Dallas, TX
- 1640 AN X- BAND FOUR-BIT MONOLITHIC PHASE SHIFTER
X-4 Y. Ayasli, A. Platzker, J. L. Vorhaus, L. D. Reynolds, Raytheon Co., Waltham, MA
- 1700 A MULTI-CHIP GaAs MONOLITHIC
X-5 TRANSMIT/RECEIVE MODULE FOR X-BAND
R. A. Pucel, Y. Ayasli, D. Wandrei, J. L. Vorhaus, Raytheon Co., Waltham, MA; S. Temple, R. Waterman, A. Platzker, C. Cavicchio, Raytheon Company, Bedford, MA

Reunion G/H

SOLID STATE MILLIMETER-WAVE SOURCES

Chairman: H. J. Kuno, Hughes Aircraft Co., Torrance, CA

- 1400 A BROADBAND, SOLID STATE, MILLIMETER-WAVE
Y-1 SYNTHESIZER
M. P. Fortunato, K. Y. Ishikawa, Hughes Aircraft Co., Torrance, CA
- 1420 41 GHz 10 WATT SOLID STATE AMPLIFIER
Y-2 D. W. Mooney, F. J. Bayuk, TRW Defense and Space Systems, Redondo Beach, CA
- 1440 A MEDIUM POWER SOLID STATE AMPLIFIER FOR
Y-3 V-BAND
P. H. Wolfert, J. D. Crowley, F. B. Fank, Varian Associates, Santa Clara, CA

Reunion A

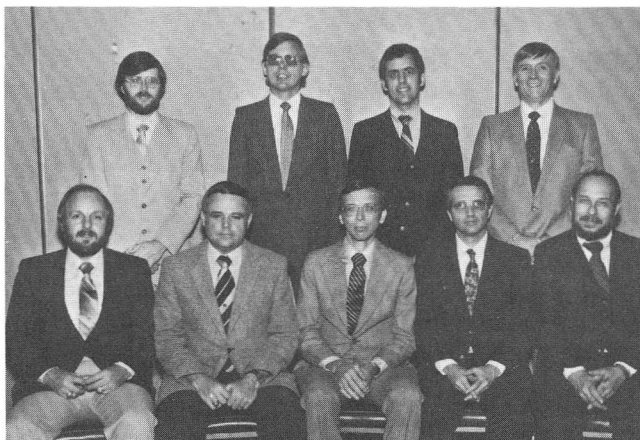
FITTERS AND PASSIVE NETWORKS

Chairman: R. Levy, Microwave Development Laboratories, Inc., Natick, MA

- 1400 EQUIVALENT TRANSFORMATIONS FOR MIXED
Z-1 LUMPED AND DISTRIBUTED CIRCUITS (INVITED)
R. Sato, Y. Nemoto, Tohoku University, Sendai, Japan; K. Kobayashi, Yamagata University, Yonezawa, Japan
- 1430 OCTAVE-WIDE MATCHED SYMMETRICAL,
Z-2 RECIPROCAL, 4- AND 5-PORTS
F. C. de Ronde, Laboratoires d' Electronique et de Physique Appliquee, Limeil-Brevannes, France
- 1450 PASSIVE SUPERCONDUCTING MICROWAVE
Z-3 CIRCUITS FOR 2-20 GHz BANDWIDTH ANALOG SIGNAL PROCESSING
J. T. Lynch, A. C. Anderson, R. S. Withers, P. V. Wright, S. A. Reible, M.I.T. Lincoln Laboratory, Lexington, MA
- 1510 WAVEGUIDE POWER DIVIDER USING METALLIC
Z-4 SEPTUM WITH RESISTIVE COUPLING SLOT
F. Takeda, O. Ishida, Y. Isoda, Mitsubishi Electric Corp., Kamakura, Kanagawa, Japan
- 1530 BREAK
- 1600 A SIMPLIFIED "REAL FREQUENCY" TECHNIQUE
Z-5 APPLICABLE TO BROADBAND MULTISTAGE MICROWAVE AMPLIFIERS
B. S. Yarman, RCA Laboratories, Princeton, NJ; H. J. Carlin, Cornell University, Ithaca, NY
- 1620 CAD OF WAVEGUIDE BAND-PASS FILTERS WITH
Z-6 PLANAR CIRCUITS
Li Si-fan, Chen Yi-yuan, Nanjing Institute of Technology, Nanjing, People's Republic of China
- 1640 SUB-MINIATURE, MICROWAVE PRINTED CIRCUIT
Z-7 FILTERS WITH ARBITRARY PASSBAND AND STOPBAND WIDTHS
B. J. Minnis, Philips Research Laboratories, Redhill, Surrey, England

1982 IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM

STEERING COMMITTEE



FRONT ROW (L TO R): J.E. Chapman, Jr., M.H. Beasley, L.E. McCarty, G.T. Tahu, Jr., J.W. Wassel; BACK ROW (L TO R): K.D. Mays, W.L. Crutcher, K.R. Varian, H.E. Cobb.



FRONT ROW (L TO R): W.R. Wisseman, S.L. March, D.N. McQuiddy, Jr., J.K. Butler, J.M. Owens; BACK ROW (L TO R): J.R. Griffin, B.N. Scott, R.C. Voges, T.B. Cannon, R.I. Carter.

Missing from Pictures: T. Itoh, D.R. Robertson, C.V. Smith, Jr., A.E. Salis, H.I. Ellowitz, B.R. Halford.

EDUCATIONAL SERVICES

The IEEE has pledged to use its resources to help members cope with the rapid change faced in an electrical or electronics engineering career and to work to increase the public's understanding of technology.

Those objectives surfaced during a meeting held November 30 and December 1, 1981 in Savannah, Georgia in which IEEE leaders and experts in education gathered to discuss upgrading the educational services the IEEE offers its members.

The group outlined a five-year plan for IEEE efforts in education, and the Board of Directors, at its December meeting following the education convocation, approved the plan in principle.

Edward W. Ernst, IEEE Vice President for Educational Activities, said that his first action will be to form a professional development committee under the Educational Activities Board (EAB) and the Regional Activities Board (RAB), as recommended by the convocation. This committee will guide the continuing education program for the entire Institute, for the approved plan places the EAB in charge of coordination of educational activities. It charges each of the IEEE entities,

however, with the responsibility of meeting "the educational needs of its members and/or constituents within the geographic, technical, and/or professional areas of its responsibilities".

The plan, as approved by the IEEE Board of Directors, includes the separation of the budget for continuing education activities from the budget for other educational programs. In the past, surpluses from IEEE short courses and home study programs were used to support other activities; now they will be used as "risk capital" to fund experimental continuing education activities, such as the recent short course via satellite. Also, funds from other educational activities, such as accreditation, will no longer be used to pay continuing education deficits.

Besides continuing education and increasing the public understanding of technology, a responsibility of the three year old Committee on the Public Understanding of Technology, the convocation outlined five year programs for other educational activities, including improving the quality of entry-level engineers, developing and promulgating IEEE positions, and improving the use of technology aids in education. Some aspects of the program will require further Board action for implementation.

REGISTRATION FEES AND OTHER SYMPOSIUM EXPENSES

	Received By May 17, 1982		Received After May 17, 1982	
	IEEE Member	Non Member	IEEE Member	Non Member
MTT-S SYMPOSIUM SESSIONS				
Full Attendance (Includes MTT-S Digest)	\$60	\$75	\$75	\$90
Single Day Attendance (No Digest)	\$35	\$35	\$35	\$35
Retiree, Student, Or Life Member (No Digest)	\$15	NA	\$15	NA
MW & MMW MONOLITHIC CIRCUITS SYMPOSIUM (Includes MW & MMW Monolithic Circuits Digest)				
	\$45	\$55	\$60	\$60
MTT-S WORKSHOPS (Includes Lunch)				
1. Advances in Optical Communications	\$35	\$40	\$45	\$50
2. Medical Applications of Electromagnetic Energy	\$35	\$40	\$45	\$50
3. Automatic RF Techniques (Includes ARFTG Banquet)	\$75	\$85	\$85	\$95
ADDITIONAL DIGEST COPIES				
MTT-S Symposium	\$24	\$32	\$24	\$32
MW & MMW Monolithic Circuits Symposium	\$24	\$32	\$24	\$32
MTT-S OFFICIAL FUNCTIONS				
Banquet			\$25 ea.	
MTT-S SOCIAL PROGRAM				
Tour 1: Art About Town			\$18 ea.	
Tour 2: Where the West Begins			\$20 ea.	
Tour 3: Dallas Heritage			\$12 ea.	

PERSONAL FINANCIAL PLANNING

A comprehensive self-study course from the IEEE's Successful Management Series can help you to achieve two important objectives — financial security, both now and in the future — by showing you how to apply sound business techniques to your personal financial life. You'll learn to create a sensible financial plan geared to your particular family circumstances — a plan that will help you keep more of what you earn in 1982, and put it to work to provide a secure financial future.

Produced by Education for Management, Inc. and approved by both the IEEE Educational Activities Board and the IEEE Engineering Management Society, the course utilizes the case-study approach to learning as pioneered by Harvard University.

Self-administered "Instructional Programming" quizzes with answers appear throughout the text to reinforce important concepts. An extensive "Practice Case Study" leads you through a typical management problem and its solution. An experienced instructor will

receive your mailed answers, if you submit the examinations for grading (optinal) and gauge your understanding of the complete test. Each "Examination Case" is instructor analyzed and the final examination is graded.

Course sections include: Consumption and Standards of Living, Income: Salary and Benefits, Income Taxes, the Importance of Credit, the Economic Need for Life Insurance, Casualty Insurance, Estate Planning, Investing, Retirement, and the Implementation of a Personal Financial Plan. The revised 1982 edition of Personal Financial Planning contains coverage of the Economic Recovery Tax Act of 1981 which will affect your financial planning.

The self-study course is available to IEEE members for \$75 and to non-members for \$90. In addition, a \$2 billing charge will be added to all non-prepaid orders. Should you be dissatisfied with the material, it can be returned within two weeks for full refund or credit as applicable. Upon successful course completion, two Continuing Education Achievement Units (CEAUs) plus an IEEE Certificate of Achievement are awarded.



TAB HIGHLIGHTS

by C.T. Rucker

Two Technical Activities Board (TAB) meetings have been held since Dick Sparks reported on TAB activities in the Fall Newsletter. Highlights of the December 1981 meeting are outlined below. The February 1982 meeting will be outlined in the next Newsletter.

- As of January 1, 1982, a new IEEE *Society on Social Implications of Technology* was formed. Therefore, TAB dissolved the long standing *Committee on Social Implications of Technology* because it is no longer needed.
- At present, all Society Presidents meet one day before the TAB meeting in an informal "Presidents' Forum". A proposal to formalize this meeting as a "Presidents' Assembly" was defeated.
- A motion to more clearly identify the lines of responsibility of both sponsoring entities and IEEE Headquarters staff with respect to conference budget approval was passed. The motion is being implemented by revision to IEEE Policy 10.8A — Approval of Conference Budgets.
- In December, TAB approved a one-time contribution to the IEEE General Fund of \$170,000 by the Technical Societies. This contribution helps to defray increasing costs of accounting and other services provided to Societies by Headquarters.
- A motion to endorse the IEEE Pre-College Guidance Brochure passed unanimously.
- A motion by the Los Angeles Section to amend the IEEE Bylaws to create a distinction in IEEE membership status between electrical/electronics engineers and non-EE members was defeated. It was noted that IEEE Bylaw 105 adequately covers this subject.
- An IEEE position paper on "Human Exposure to Microwaves and other Radiofrequency Electromagnetic Fields" was endorsed by TAB. This paper was generated by the IEEE Committee on Man and Radiation (COMAR) chaired by Dr. O. P. Gandhi. In an unrelated action, TAB approved the continuation of COMAR for another three years.
- Since it is often nearly impossible in non-US Regions of the IEEE to obtain five Fellow references to endorse candidates for Fellow grade membership, a motion to allow four Fellow and one Senior grade references was passed by TAB.

- A motion placing all Society scholarships under the purview of the TAB Awards and Recognition Committee was passed.
- A motion to establish a TAB Distinguished Technical Achievement Award was defeated. It was felt that such awards should be left to the respective Societies and Councils.
- A motion was passed which requested the IEEE Executive Committee to instruct the 1982 Vice President of Technical Activities to establish an ad hoc committee which will make recommendations on proposed Division realignments at the February 1982 meeting. The recommendation is expected to call for an increase in the number of Division Directors from 7 to 10.



NEW BOOKS

Addison-Wesley Book Company recently announced the publication of Volume 1 of a three volume set on *Microwave Remote Sensing*. Written by Fawwaz T. Ulaby, Richard K. Moore, and Adrian K. Fung, **Microwave Remote Sensing Fundamentals and Radiometry** presents the fundamentals of microwave measurements of the earth and develops the concepts necessary for designing systems that can observe the earth through the use of microwaves. The 474 page book retails for \$46.50 and is designated as ISBN Number 0-201-10759-7.

Volumes 2 and 3 are scheduled for publication later this year. Their titles will be **Radar Remote Sensing and Surface Scattering and Emission Theory** and **Volume Scattering and Emission Theory; Advanced Systems and Applications**.

Also available is the 592 page **Remote Sensing: Optics and Optical Systems** by Philip N. Slater, published in 1980. The book carries ISBN number 0-201-07250-5 and a selling price of \$34.50.



WEINSCHEL REELECTED

Dr. Bruno O. Weinschel, past IEEE Secretary, has been reelected Chairman of the American Association of Engineering Societies (AAES) Engineering Affairs Council. The AAES is a federation of 38 engineering societies that represents one million engineers. The AAES councils coordinate the organization's activities on behalf of the engineering profession.

REPORT OF THE DIRECTOR, DIVISION IV

by A. C. Schell

Membership Matters

Firstly, a few year-end statistics on membership — for the Institute as a whole, membership was up 3.7% in 1981, to over 221,000. Society membership increased by 6% to 250,000. However, most of this growth was in the Computer Society, which gained 15% in members. Division IV increased by 1.7%, and of its seven Societies, three suffered declines.

There are valid reasons for trying to increase membership apart from a simple "more is better" philosophy. Our goals are to advance the theory and practice of electrical and electronic engineering and to advance the standing of the members of the profession. The primary mechanisms for these are our meetings and publications. The advancement of our field requires more than depositing journals in archives; it is an active process of timely exchange among contributors and interested co-workers. The health of our meetings and Transactions requires that we reach a sizeable portion of those who are currently in the field. We need to involve them as participants and partners in our activities.

Glenn Thoren, Division IV representative to the IEEE Membership Development Committee, has a number of ideas for increasing membership, and he is working with Society officers and Chapter Chairmen to revitalize our membership campaigns.

A few more statistics — Division IV is fourth in membership size of the seven Divisions, with 13% of the total. In assets, Division IV ended 1981 above where it was the previous year, with 25% of all Society funds. However, four of the seven Societies are contemplating deficits in their 1982 budgets. (Note: MTT-S is **not** one of these. Editor) Division IV publishes about 35% of the total Society journal pages, and in 1982 will publish over 13,000 pages.

IEEE Position Paper

The position paper on "Human Exposure to Microwaves and Other Radiofrequency Electromagnetic Fields," developed by the Committee on Man and Radiation (COMAR), has now been approved by the IEEE Executive Committee. It therefore expresses a formal opinion of the Institute. The paper gives a brief summary of the issues, and takes the position that there is no cause for concern over the levels of electromagnetic fields at which the general population is exposed. More specifically, it states there is no scientific consensus supporting the proposition that biological damage occurs at levels below 1 mw/cm², but prolonged exposure at intensities above 100 mw/cm² is harmful. This position paper is the first step by the

IEEE at communicating to the public the present state of knowledge of the biological effects of microwaves, and, as might be expected, it calls for continued research on effects and surveillance of levels of exposure. (Note: the text of the position paper was published in the last issue of the MTT-S Newsletter, Number 102. Editor)

New Transactions Available

A new Transactions on Computer-Aided Design of Integrated Circuits and Systems is now being published by the Circuits and Systems Society. Topics covered are hardware descriptive languages, modeling and process simulation, CAD systems, layout and routing, testing, and simulation. Members of all Societies may subscribe to this Transactions, without becoming a member of the Circuits and Systems Society, for a charge of \$6.00 in 1982.



NEW BOOKS

Addison-Wesley Book Company recently announced the publication of Volume 1 of a three volume set on Microwave Remote Sensing. Written by Fawwaz T. Ulaby, Richard K. Moore, and Adrian K. Fung, **Microwave Remote Sensing Fundamentals and Radiometry** presents the fundamentals of microwave measurements of the earth and develops the concepts necessary for designing systems that can observe the earth through the use of microwaves. The 474 page book retails for \$46.50 and is designated as ISBN number 0-201-10759-7.

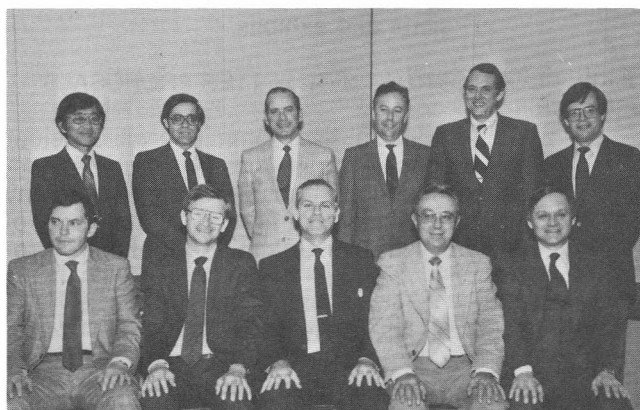
Volumes 2 and 3 are scheduled for publication later this year. Their titles will be **Radar Remote Sensing and Surface Scattering and Emission Theory** and **Volume Scattering and Emission Theory; Advanced Systems and Applications**.

Also available from Addison-Wesley is the 592 page **Remote Sensing: Optics and Optical Systems** by Philip N. Slater, published in 1980. The book carries ISBN number 0-201-07250-5 and a selling price of \$34.50.

John Wiley and Sons has recently announced three additional titles which may be of interest. **VHSIC (Very High Speed Integrated Circuits)** is a 160 page book by A. Barna which retails for \$17.50. M.J. Adams has written **An Introduction to Optical Waveguides**, covering planar, rectangular, and circular guides. The 384 page volume sells for \$51.95. **Physics of Semiconductor Devices** has recently been revised and updated by S.M. Sze. The second edition contains 912 pages and is priced at \$45.00

MICROWAVE THEORY AND TECHNIQUES SOCIETY

ADMINISTRATIVE COMMITTEE



FRONT ROW (L TO R): V.G. Gelnovatch, P.T. Greiling, R.A. Sparks, S.F. Adam, J.E. Degenford, Jr., BACK ROW (L TO R): H.J. Kuno, B.E. Spielman C.T. Rucker, H. Howe, Jr., E.C. Niehenke, R.B. Hicks.



FRONT ROW (L TO R): S.L. March, T. Itoh, G. Jerinic, F.J. Rosenbaum, R.H. Knerr, BACK ROW (L TO R): D. Parker, J.C. Aukland, G.R. Basawapatna, H.G. Oltman, Jr., A.A. Oliner, T.S. Saad. Missing: J.M. Roe and B.E. Berson.

MTT-S ADCOM AT WORK

JANUARY 18 AND 19, 1982



MTT-S BY-LAWS

Publication of the by-laws of the Microwave Theory and Techniques Society began in the Fall 1981 issue of the Society's Newsletter (Number 101). Part 2 was subsequently published in the Winter 1982 Newsletter (Number 102). Publication of the Society's by-laws is concluded with the current installment.

BY-LAWS OF THE IEEE MICROWAVE THEORY AND TECHNIQUES SOCIETY

SECTION IV MEETINGS AND SYMPOSIA

A. MEETING NOTICES

No meeting of the Administrative Committee shall be held for purpose of transacting business unless each Administrative Committee member shall have been sent notice of the time and place of such meeting at least twenty (20) days prior to the scheduled date of the meeting.

B. MEETINGS IN ABSENCE OF QUORUM

If less than a quorum attended a duly called meeting, tentative actions may be taken which will become effective upon subsequent ratification, either at a meeting or by mail, by a sufficient number of members as to constitute a majority of the voting members of the Administrative Committee. Minutes of such meetings shall be mailed by the Secretary to each Committee member who shall register his disapproval of any actions taken at such meetings within 30 days after the mailing of said minutes. Ratification of such action by said Committee member is automatic.

C. SYMPOSIUM

1. LETTER PROPOSAL SUBMISSION

Letter proposals by Chapters to sponsor the Symposium for a given year should be submitted to members of the Administrative Committee at least five years prior to the date of the proposed meeting and no later than May 1.

These proposals should be brief and must contain at a minimum:

- (a) a statement signifying the willingness of a Chapter to host the Symposium,
- (b) A proposed technical and administrative organization showing adequate local interest and participation and,

- (c) a proposed facility available and adequate to house both technical sessions and exhibits.

2. CONSIDERATION OF LETTER PROPOSALS

The Administrative Committee will consider letter proposals received by May 1 at the Symposium meeting. Proposals received after May 1 will be considered if agreed by a majority of the Administrative Committee members present.

3. SELECTION OF SITE

The Administrative Committee will utilize adequate letter proposals for long range planning purposes. When appropriate, one or more proposing Chapters will be informed of the Committee's acceptance of their proposal, thus allowing necessary long term site selection and facilities commitments to be made.

4. FINAL PROPOSAL SUBMISSION

At an appropriate time, no later than 28 months prior to the proposed meeting, a thorough proposal will be requested from the host Chapter for consideration by the Administrative Committee at their Symposium meeting. The purpose of this proposal is to insure adequate planning and attention to detail found necessary for previous Symposia. Upon request, the Chairman for the Committee on Meetings and Symposia will provide samples of reports or proposals generated for previous meetings.

5. CHAPTER NOTIFICATION

Society Chapters are to be informed of these provisions via the Newsletter and by individual letter by the Chairman of the Membership Services Committee in January of each year.

D. OTHER TECHNICAL MEETINGS

Society participation in technical conferences will be in accordance with IEEE policies and practice. Participation of the Society as a joint sponsor, co-sponsor, or co-operator of meetings of another IEEE Group, IEEE Section or a non-IEEE organization requires a vote of approval by the Administrative Committee. The policy governing the extent of participation in such meetings by the Society shall be in accordance with the policy of the Society and the IEEE.

SECTION V FINANCES**A. BURSAR**

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

B. 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.

C. 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, and the approval of two Administrative Committee officers is required for payments to any member of the Society or of the Administrative Committee. The Chairman of the Finance Committee will be responsible for requesting all disbursements from IEEE Headquarters.

D. AUTHORIZED BUDGETS

The Administrative Committee may establish an annual operating budget for the operation of any committee and/or activity by a majority vote. Requests for advances, reimbursements, or the payment of bills submitted within the limits of the established budget for any committee, shall be sent by the Committee Chairman to the Chairman of the Finance Committee in accordance with Paragraph C above.

E. SYMPOSIUM ADVANCES

The Administrative Committee may make an advance to the Steering Committee of an annual Symposium of the Society.

F. 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.

SECTION VI MISCELLANEOUS COMMITTEE BUSINESS**A. ADMINISTRATIVE YEAR**

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

B. THE MICROWAVE PRIZE

The Society shall present an award known as *The Microwave Prize* annually. The prize shall be awarded to the author of that paper, published in the IEEE Transactions on Microwave Theory and Techniques, Proceedings of the IEEE, or other official IEEE publication, which is judged to be the most significant contribution in the field of interest of the Society. The paper must have been published during the year ending June 30th preceding the award. The selection of the recipient of *The Microwave Prize* will be the responsibility of the Awards Committee, who will make their recommendation to the Administrative Committee at the annual meeting of the Administrative Committee. The President of the Administrative Committee shall inform the recipient of *The Microwave Prize* as soon as possible after the Administrative Committee has approved the award. The award shall consist of a suitable certificate, a cash sum of three hundred dollars, and a feature publication in the IEEE Transactions on Microwave Theory and Techniques. If the paper as published has more than one author, a certificate will be presented to each author and the cash sum will be divided equally among the authors, except in the case there are four or more authors each shall receive a cash sum of \$100.00.

C. MICROWAVE CAREER AWARD

The Society shall present an award known as *The Microwave Career Award*. This award shall be considered annually but not necessarily presented annually. The award shall be made to an individual for a career of meritorious achievement and outstanding technical contribution in the field of microwave theory and techniques. The individual must be a member of the IEEE.

Selection of the recipient of the award will be the responsibility of the MTT-S Awards Committee which will make its recommendation to the MTT-S Administrative Committee at its Annual Meeting. Nominations for the award can be submitted by any member of the Society. The award shall consist of a suitable certificate, a plaque, a cash sum of one thousand dollars, and a feature publication in the IEEE Transactions on Microwave Theory and Techniques.

(Continued on page 22)

MTT-S BYLAWS (From page 21)

A travel allowance may be authorized by the MTT-S Administrative Committee. The travel allowance is for those individuals with insufficient organizational funding for travel to receive the award.

1. GUIDELINE FOR MICROWAVE CAREER AWARD

The award shall be made to an individual for a career of meritorious achievement and outstanding technical contribution in the field of microwave theory and techniques. The eligibility requirements are publication in technical journals, presentation of lectures, contributions to be considered in conjunction with any or all of the areas of contributions mentioned above.

D. MICROWAVE APPLICATION AWARD

The Society shall present an award known as *The Microwave Application Award*. This award shall be considered annually but not necessarily presented annually. The award shall be made to an individual for an outstanding application of microwave theory and techniques.

Selection of the recipient of the award will be the responsibility of the MTT-S Awards Committee which will make its recommendation to the MTT-S Administrative Committee at its Annual Meeting. Nominations for the award can be submitted by any member of the Society. The award shall consist of a suitable certificate, a cash sum of three hundred dollars, and a feature publication in the IEEE Transactions on Microwave Theory and Techniques.

1. GUIDELINE FOR MICROWAVE APPLICATION AWARD

The award shall be made to an individual for an outstanding application of microwave theory and techniques. The eligibility requirements are creation of a new device, component, or technique; novel use of a device or component; or a combination of any or all of the above. Publication of a paper is not required.

The award is aimed primarily toward young or emerging workers.

SECTION VII CHANGES TO THE BY-LAWS

Changes to these By-laws shall be made in accordance with Article IX, Section 2, of the Constitution of the Society.

NO NO NEW NAME

The IEEE will not be changing its name — at least not in the near future. The IEEE Board of Directors at a recent meeting in Savannah, Georgia voted to accept the recommendation of the ad hoc committee studying the name-change possibilities that "the proper environment for name change does not exist at this time".

"The name means too much right now to change it," said committee chairman Robert Lucky, past Executive Vice President of the IEEE. "The committee realized how hard we have worked to get the current name recognized in the general public and in the Government". Dr. Lucky said that the IEEE membership gave the committee "tremendous feedback" and he estimated that 90 percent of the reaction which he received was against a change.



TVRO MARKET

The home satellite terminal market promises to grow in a matter much like the recent sales boom in small personal computers. The prediction comes from a 289-page report, "Home Satellite Terminal Market," from Frost & Sullivan (New York, NY). The study notes that several thousand home terminals have already been installed. Future growth is linked to declining cost of the satellite earth terminals. Receiving antennas from 12 to 16 feet in diameter, which cost more than \$100,000 in 1975 and could handle only one channel, have been replaced by 24-channel terminals which sell for about \$12,000. For those willing to install their own terminals, the cost could be as little as \$3,000.

Developments over the past few years also document this predicted growth in satellite earth terminals. Reasons for this optimism include the following:

- the formation of a Society for Private and Commercial Earth Stations, which held its first national convention in 1979;
- publication of SATGuide, a home users' satellite television guide; and
- COMSAT's announcement that it would develop programming for direct satellite broadcasting.

The report also foresees growth in those markets associated with home terminal systems: antennas, receivers, and low-noise amplifiers. A copy of report #882 costs \$1,100 and is available from Frost & Sullivan, 106 Fulton St., New York, NY 10038, (212) 233-1080.

NEW IEEE FELLOWS

The IEEE recently announced the names of 130 newly elected Fellows of the IEEE. Of this total, ten were sponsored by the Microwave Theory and Techniques Society. An additional eleven new Fellows were cited for their contributions to technology of interest to members of our Society. In the list of electees that follows, the ten new MTT-S sponsored Fellows are listed first.

Kenneth J. Button, Massachusetts Institute of Technology, for pioneering work on microwave ferrites and ferrite devices.

James J. Gallagher, Georgia Institute of Technology, for original and sustained contributions to molecular spectroscopy and frequency control and for the advancement of millimeter-wave technology.

Vladimir G. Gelnovatch, U.S. Army Electronics Technology and Devices Laboratory, for contributions to the field of microwave circuit design and optimization.

Horst W.A. Gerlach, U.S. Army Eradcom, Harry Diamond Laboratories, for the design and development of microwave tubes and solid-state sources for missile fuze systems.

James W. Gewartowski, Bell Telephone Laboratories, for contributions to microwave solid-state circuits.

Samuel Hopfer, General Microwave Corp., for contributions to microwave components and instruments, especially to wide-band power measuring devices.

Tatsuo Itoh, University of Texas at Austin, for contributions to dielectric and printed waveguide technology for millimeter-wave integrated circuits.

Don Parker, Hughes Aircraft Company, for technical direction of the development of high-power solid-state sources.

Charles T. Rucker, Georgia Institute of Technology, for contributions to the development of techniques for power combining of microwave semiconductor devices.

S. Perry Schlesinger, Columbia University, for contributions to the study of electromagnetic wave-plasma interactions and relativistic beam high-power millimeter-wave sources.

Richard L. Abrams, Hughes Research Laboratories, for contributions to optical communications and non-linear optics and for technical leadership in the development of CO₂ waveguide lasers.

Mani L. Bhaumik, Northrop Corporation, for contributions to the research and development of high-energy lasers and new laser systems.

Fred A. Blum, Gigabit Logic, for leadership in and contributions to the development of high speed electronic and opto-electronic devices using III-V compounds.

Larry A. Coldren, Bell Telephone Laboratories, for contributions to surface-acoustic-wave resonator filters, long delay lines, and monolithic acousto-electric signal processing devices.

Kuh-ichi Miyaji, Shibaura Institute of Technology, for contributions to the development of microwave tubes and solid state image converters.

Kiyoshi Nagai, Toshiba Corporation, for contributions to the development of phased-array antennas.

Morton I. Schwartz, Bell Telephone Laboratories, for leadership and personal contributions to the practical realization of optical fiber technology.

James J. Spilker, Jr., Stanford Telecommunications, Inc., for contributions to the development of digital satellite communications and navigation systems.

Gary A. Thiele, University of Dayton, for contributions to computational methods in electromagnetic theory.

Andrew M. Werth, Digital Communications Corp., for leadership in the design and development of digital satellite communications systems.

Richard C. Williamson, Massachusetts Institute of Technology, for contributing reflective grating devices to the field of surface-acoustic-wave filters.



SPECIAL TRANSACTIONS ISSUE ON MILLIMETER WAVES

Papers are solicited from workers in industrial, government and university applied research and development organizations. Subjects will cover the highlights of the entire technical area. These will include power generation and amplification, for example IMPATTs, Gunn and Tunnel devices, injection locking, noise, TWTs, EIOs and Gyrotrons; modulation techniques such as amplitude, frequency, phase and high data rate digital modulators; switching and control devices such as PIN diodes, phase shifters and T/R devices; ferrite devices; signal reception devices including mixers, detectors and receivers; millimeter-wave integrated circuits, hybrid and monolithic; noise characterization and reduction, noise measurements, phase locking low noise receivers; passive components and transmission media; instrumentation and measurements; active antennas; systems and subsystems for radar, radiometry, communications and sensors, navigation and guidance.

Prospective authors are encouraged to submit papers before 30 April 1982 to: V. G. Gelnovatch or Harold Jacobs, US Army Electronics Technology & Devices Laboratory, ATTN: DELET-M, Fort Monmouth, NJ 07703.

MICROWAVE TUNE-UP

A microprocessor-based system that uses microwave technology is said to time automobile combustion engines with greater accuracy than before. Designed for use in the factory or research laboratory, the system is reported to be more precise than other methods in making the critical tradeoff between engine performance and efficient fuel consumption (see illustration below).

In the design of any combustion engine, there is an optimum point in the piston's motion at which firing is best done. This point is usually a few degrees before the piston reaches top dead center (the point where the piston chamber is smallest). Other timing techniques, even those employing electrical technology, do not pinpoint top dead center with the accuracy obtainable with microwaves. Nor do they use microprocessors. One widely used technique relies on a notch in the flywheel to indicate the point where the piston should fire. A timing light flashes synchronously with the ignition spark to illuminate that point, and a mechanic makes the adjustment by sight.

The Microwave Engine Timing System, developed by Jodon Inc. of Ann Arbor, Mich., uses a Motorola 6809 microprocessor to monitor three sensors. These give different signals to determine the difference in phase angle between the flywheel position at ignition and at top dead center.

The first sensor tells the processor the exact relative phase angle of the flywheel with a resolution of 0.1°. The second sensor, a solenoidal pickup that attaches to the spark plug jack, flags the occurrence of the

ignition spark. The third sensor, the most sophisticated, is a microwave transceiver that creates a standing electromagnetic wave in the primary position chamber. The microprocessor samples this wave at regular intervals and stores the discrete amplitude values in random-access memory.

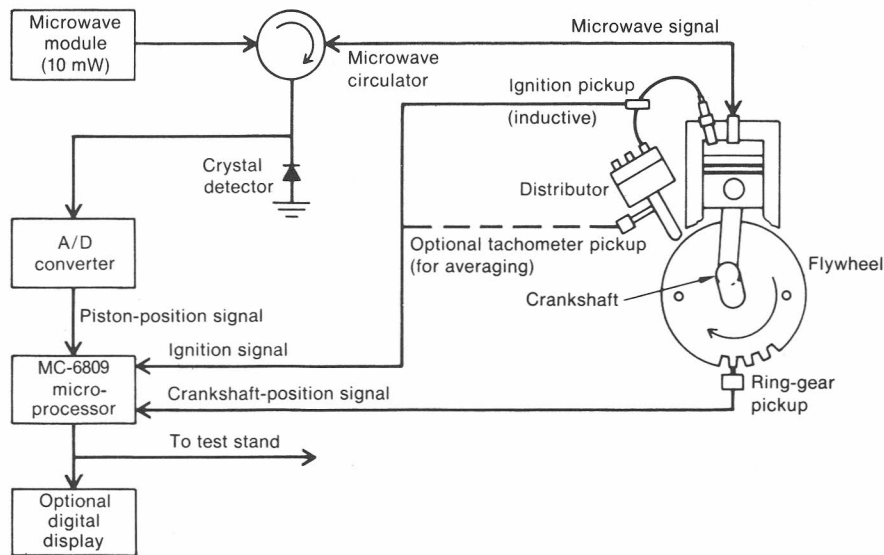
Since the waveform fluctuates symmetrically about top dead center as the size of the piston chamber varies, it must be represented as a function of angular flywheel position, rather than real time, before top dead center can be calculated. The reason for this is that the piston's motion is not constant in time; it accelerates in its downward motion after ignition and decelerates, because of frictional forces, on its return upward. Jodon's patented pattern-matching algorithm accommodates the real-time wave samples and calculates top-dead-center position in angular degrees of flywheel position.

The timing error can be read on a display console in 5 to 10 seconds. Or the system can interact with a larger computer in a more fully automated scheme.

Another advantage of the Microwave Engine Timing System is that it can be used on both spark and diesel engines. Instead of the solenoid sensor used to signal ignition in spark engines, the diesel system has a light-sensitive pickup that detects the brightness of the pressure-induced ignition.

The system is currently in use in a Chevrolet laboratory in Moraine, Ohio, where a new V-8 diesel engine is being developed. Jodon plans to introduce commercially a version for car dealers and service stations.

Reprinted from January 1982 IEEE Spectrum



ARFTG HIGHLIGHTS

The most recent Automatic RF Techniques Group (ARFTG) meeting was held November 5-6, 1981 at RCA Laboratories, Princeton, New Jersey. At the meeting, Barry Perlman of the host facility reviewed the development of Plana/100, phased-locked automatic network analyzer (ANA) software that enhances the accuracy of the 8409 series of Hewlett-Parkard network analyzers. Bob Paglione, also of RCA Laboratories, reported on an automatic testing program for solid-state amplifiers.

From TRW Defense and Space Systems in Redondo Beach, California, John Tippitts discussed a technique for measuring the scattering parameters of non-insertable devices, such as waveguide components, on an ANA. Delay lines and a special software package are used to separate the effects of adapters from the device itself.

Harold Stinehelfer, Sr. of Made-It Associates, Burlington, Massachusetts demonstrated a new calibration procedure for the time-domain analysis program, MAMA. Using the software interface between MAMA and COMPACT, Stinehelfer showed how discontinuities at a test port could be identified and eliminated in the time domain.

Mario A. Maury, Jr. of Maury Microwave Corp., Cucamonga, California reported on his firm's effort to develop two-port calibration standards. Bob Nelson of the National Bureau of Standards, Boulder, Colorado complained mildly about the lack of system-based calibration standards and discussed the NBS standards program.

Stu Perlow, also of RCA Laboratories, described an in-house RF circuit analysis program which is claimed to be easier to use than commercially available CAD software. However, it currently contains no optimization. However, FTOP (Fast Topology Optimization Program) introduced by James Rautio of General Electric Space Division, Valley Forge, Pennsylvania can perform circuit analysis and optimization and can plot the results on a Smith chart or other high-resolution coordinate displays.

One of the most ambitious reports at the meeting was presented by Martin Walker and John Corrigan of Comsat General Integrated Systems (CGIS), Palo Alto, California. They described a modular test system that will ultimately mesh with the design and manufacturing elements to form one larger, integrated system. The test station, intended to slash microwave test time, can graphically display up to four simultaneous tests in real time, simplifying and expediting circuit alignment. The prototype test station will be evaluated at the Watkins-Johnson Co., Palo Alto, California, later this year.

NEW IEEE TRANSACTIONS

The new IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems is now available to all members of the IEEE at the same rates charged to members of the Circuits and Systems Society. The rates for 1982 are \$6.00 for printed or microfiche editions or \$11.00 for both.

CALL FOR NOMINATIONS TO ADMINISTRATIVE COMMITTEE



by R. B. Hicks

All MTT-S members should note that they may assist the Nominations Subcommittee in obtaining nominees for the 1983 Adcom election. MTT members may enter an MTT Society member's name as a nominee by mailing a petition for that nominee with 25 Society members' signatures to me or the Adcom President prior to 1 September 1982.

The Bylaws of MTT-S state that the Nominations Subcommittee should select a slate of at least two members of the Society for each vacancy which occurs on the Administrative Committee on January 1 of the next year. Each nominee is contacted to assure his willingness to serve and his ability to attend Adcom meetings. Nominees by the Nominations Subcommittee are selected by the principles of efficiency, geographical, and organization distribution. Elections of the nominees are made by members of the Adcom not eligible for re-election at that time.

This year we will elect six (6) members for a term of three years. The holdover members will be geographically divided as follows: East (5), Central (4), and West (3).

Incumbents who may stand for re-election are geographically located as follows: East (2), and West (3).

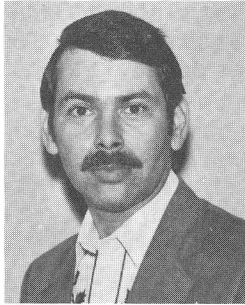
It may also be of interest to consider that the present Adcom is composed of fourteen (14) members from industry, two (2) members from universities and non-profit organizations and two (2) from Government agencies. Members whose terms expire are distributed as follows: industry (4), universities and non-profit organizations (1) and Government agencies (1).



1982 IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM

TECHNICAL PROGRAM COMMITTEE

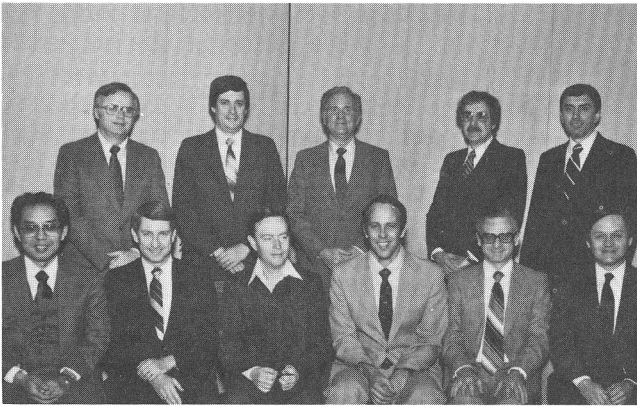
CO-CHAIRMEN



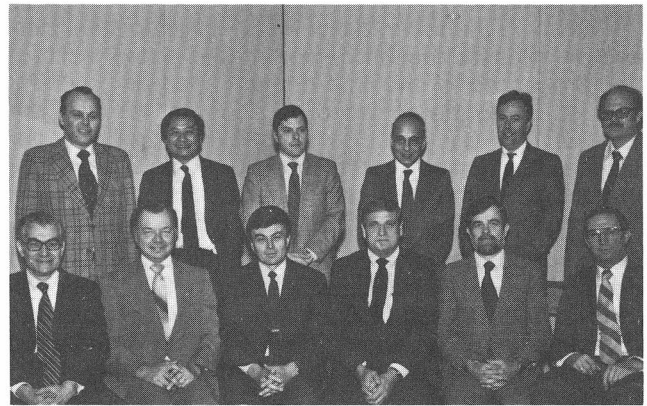
STEVEN MARCH



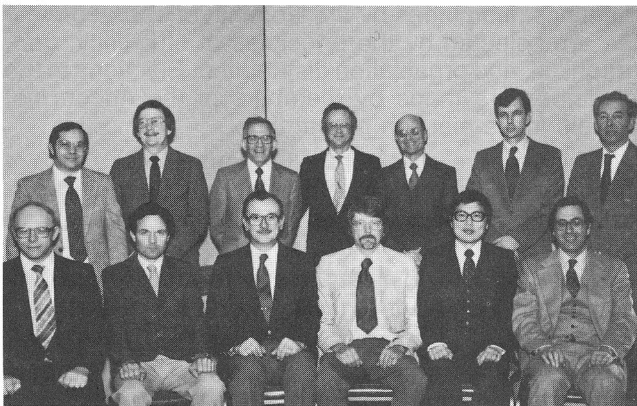
JEROME BUTLER



FRONT ROW, (L TO R): R.S. Kagiwada, R.B. Potter, F. Ivanek, J.M. Owens, G. Schaffner, J.E. Degenford, Jr.; BACK ROW: J.W. Dees, D.W. Maki, J.B. Horton, T.J. Lukaszek, G.V. Croshaw.



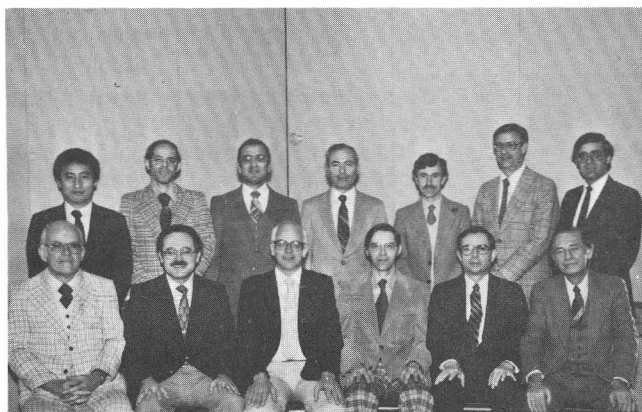
FRONT ROW, (L TO R): A.A. Oliner, J.W. Mink, R.H. Knerr, L.R. Whicker, R.C. Van Wagoner, E.F. Belohoubek; BACK ROW, (L TO R): M. Yoder, W.S.C. Chang, V.G. Glenovatch, J.J. Taub, H. Howe, Jr., A. Rosen.



FRONT ROW, (L TO R): R. Levy, A.E. Williams, W.R. Wisseman, F.E. Reisch, H.Q. Tserng, E.D. Cohen; BACK ROW (L TO R): M.W. Medley, Jr., R.C. Voges, T.S. Saad, J.F. White, B.R. Hallford, V. Sokolov, H. Goldie.



FRONT ROW, (L TO R): J.E. Raue, C.R. Boyd, Jr., R.A. Pucel, H.G. Oltman, Jr., S.F. Adam, R.V. Garver; BACK ROW, (L TO R): G.P. Rodrigue, C.T. Rucker, G.R. Basawapatna, P.T. Greiling, H.J. Kuno, N.R. Dietrich.



FRONT ROW, (L TO R): G.F. Engen, M.A. Maury, Jr., C. Buntschuh, E.J. Denlinger, J.A. Wiltse, M. Caulton; BACK ROW, (L TO R): T. Itoh, C.M. Krowne, A.E. Atia, M. Cohn, J.B. Knorr, D. Parker, B.E. Spielman.

ADDITIONAL TPC MEMBERS: D.B. Anderson, B.E. Berson, D.M. Bolle, A.G. Cardeosmenos, C.T. Chao, A. Clavin, D. Claxton, A. Fung, R. Gutmann, R.B. Hicks, E.L. Hunt, Y. Konishi, S. Okwit, J.M. Osepchuk, F.J. Rosenbaum, J. Rouse, C.V. Smith, Jr., H. Sobol, F. Sterzer, C.H. Sutton, R. Swartley, K. Tomiyasu, B.T. Vincent, R.J. Wenzel, J.J. Whelehan, Jr.

..... *
**ONE DAY SYMPOSIUM
 IN PHILADELPHIA**

The Benjamin Franklin Symposium on Advances in Antennas, Propagation, and Microwave Techniques, sponsored by the Philadelphia Chapters of MTT-S and AP-S, will be held on Saturday, May 15, 1982 from 8:30 AM to 4:30 PM. The Symposium will be accompanied by a tutorial course on Microwave Measurements, which will be offered on the preceding day, May 14, 1982, from 8:00 AM until 4:30 PM.

The Executive Chairman of the Symposium is Prof. H. N. Kritikos of the University of Pennsylvania. The Program Chairman is D. Staiman, RCA Corp., Government Systems Division, Moorestown, N.J. For further information, contact Dr. Kritikos at 200 South 33rd Street, Philadelphia, PA. 19104, (215) 243-8112 or (215) 243-8106.

For additional information on the tutorial course, contact Dr. O.M. Salati, Moore School of Electrical Engineering, University of Pennsylvania, Philadelphia, PA 19104, (215) 243-8110.

The conference fees, payable to the "IEEE Philadelphia Chapter", are as follows: IEEE Member, \$30.00; Nonmember, \$35.00; IEEE Student Member, \$20.00; Student Nonmember, \$25.00; IEEE Member Tutorial Course, \$40.00; Nonmember Tutorial Course, \$45.00; Late Registration Fee (after April 30), add \$5.00.

The Symposium site is the University Holiday Inn, 36th and Chestnut Streets, Philadelphia. Rooms are available at \$40.00 or \$46.00 per night for single or double occupancy, respectively.

..... *
MAKING CONNECTIONS

The Electronic Connector Study Group (ECSG) is seeking members. It is the only internationally recognized body offering an open forum for the exchange of information between connector engineers, technicians, and manufacturers. Information is exchanged through local meetings, an annually published handbook, and the ECSG News, which is the only newsletter in the field.

For membership information, contact Ernie Mehr, P.O. Box 167, Fort Washington, PA 19034 or telephone (215) 279-7084.

..... *
NEW MAGAZINE

Another new magazine which will contain material of interest to many Microwave Theory and Techniques Society members has recently published its inaugural issue. Test and Measurement World will be published monthly by Interfield Publishing Company, Inc., 215 Brighton Avenue, Boston, MA 02134, (617) 254-1445. The magazine will concern itself with advances in test and measurement technology from DC to light, from angstroms to meters, from nonoseconds to light-years, etc.

PATENT PRIMER

A primer for engineers and scientists on patents and patenting is available from the IEEE Professional Communication Society. This 100-page collection is an enlarged reprint of the June 1979 issue of the IEEE Professional Communication Society Transactions. The new edition includes new articles on patenting man-made life forms and how to protect against and cope with patent infringement, with an update on Supreme Court decisions about inventions involving software. It is not written in legalese.

Not only are patents a protective mechanism but they are also an underused source of technical information. The 1979 issue was widely used in both industry and the legal profession to take the mystique out of patenting and to educate and encourage would-be inventors.

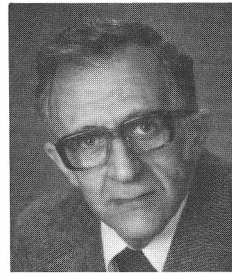
The contents of the 1982 collection are listed below. This is *not* a subscription issue of the Transactions.

Collection of Papers on Patents

- Patents: Incentive to Innovate and Communicate — An Introduction
- Historical Aspects of Patent Systems
- The Plight of the Independent Inventor
- Patents and the Engineer
- The Business Value of Patents
- Management Criteria for Effective Innovation
- The Right Way to Keep Laboratory Notebooks
- Good Habits Before Filing a Patent Application
- Publication, Public Use, and Sale as Bars to Patenting
- Patenting Inventions Based on Algorithms II
- The U.S. Patent Classification System
- Patents as Technical Literature
- Writing an Invention Disclosure
- Guide for Patent Drawings
- How to Read Inventions Abroad
- Patenting U.S. Inventions Abroad
- Trade Secret vs Patent Protection
- How the Courts Interpret Patent Claims
- How to Obtain Court-Enforceable Patent Rights
- Fighting Patent Infringement
- Patentability of Man-Made Life Forms

Copies may be ordered from the Editor of the Transactions on Professional Communication at \$6.50 each (quantity prices available). Please make checks payable to IEEE Professional Communication Society and send to R. J. Joenk, IBM Corp., Dept. 588/022, P. O. Box 1900, Boulder, CO 80302. Telephone: 303-447-5764.

History of MTT



by T. S. Saad

ADCOM XV

JULY 1, 1966 THROUGH DECEMBER 31, 1967

ADMINISTRATIVE COMMITTEE: S. W. Rosenthal, *Chairman*
R. W. Beatty, *Vice Chairman*
F. R. Arams, *Secretary-Treasurer*

H.E.M. Barlow	A.A. Oliner
J. H. Bryant	R. A. Rivers
M. Cohn	P. A. Rizzi
S. B. Cohn	T. S. Saad
R. C. Hansen	G. Shapiro
R. E. Henning	K. Tomiyasu
I. Kaufman	F. G. R. Warren
	L. Young

HONORARY LIFE MEMBERS: A. C. Beck
A. G. Clavier
W. W. Mumford
G. C. Southworth

EX OFFICIO MEMBERS: H. M. Altschuler
D. D. King
R. H. Kingston
S. Okwit
E. N. Torgow
G. Wade

The Chairman of the XVth Adcom was Saul Rosenthal. The Vice Chairman was Bob Beatty. Sy Okwit was Editor of the Transactions and Gus Shapiro continued as Editor of the Newsletter.

Other committee chairmen appointed by Saul Rosenthal were: Seymour Cohn, Awards; Pete Rizzi, Constitution and By-Laws; Bob Kingston, Editor of the Journal of Quantum Electronics; Ted Saad, Chapter Relations; Gene Torgow, Nominations; John Bryant and Hal Altschuler, Finance; Rudy Henning, Meetings; Leo Young, New Technical Activities; Kiyo Tomiyasu, Quantum Electronics; and Gene Torgow, Standards.

One of the significant actions taken by the XVth Adcom was the rephasing of the Group administrative year from the July to June period to the January to December calendar year. This was approved at the first meeting in October 1966. Subsequently, at the November 1966 meeting of TAB, a motion was passed that all Groups should uniformly adopt the administrative year to correspond with the calendar year, starting in January 1968.

MTT, in the meantime, decided that they would begin their rephasing immediately by extending the XVth Adcom through December 31st of 1967. This



action meant that Chairman Rosenthal would have an 18 month term of office, as would all the Members of Adcom. Consequently, in December of 1966, it was voted that MTT should institute all of the necessary "housekeeping" procedures to change the By-Laws, making provisions to continue the present Adcom officers and committee members through December 31, 1967.

As a consequence of the rephrasing, the XVth Adcom held seven meetings. The meetings of October and December 1966 and September of 1967 were held at IEEE Headquarters. The meetings of February and May 1967 were held in Boston. The meeting of March 1967 was held in New York City, in conjunction with the IEEE Convention, and the meeting in December 1967 was held at Stanford Research Institute, Menlo Park, CA.

The concept of a national lectureship, which had been proposed in the prior Adcom, was formalized and initiated during the XVth Adcom. Financial assistance from IEEE Headquarters was solicited and a budget of \$2,000 per year was approved to partly defray the expenses of the National Lecturer. The National Lectureship Program was carried out by a subcommittee of the Chapter Relations Committee. Since the concept was new, there was much to do in the matter of selecting an appropriate speaker, contacting the local Chapters to arrange for a schedule, etc. The first National Lecturer selected by the Adcom was Art Oliner. The subject of his talk was entitled "The Microwave Field in Transition; Challenges for Microwave Theory." He visited five chapters — Milwaukee, New Hampshire, Foothills, Los Angeles and San Diego. The general consensus of the Adcom and the Chapters was that the National Lectureship concept was a success and should be continued into the future.

As already noted, most of the changes in the Constitution and By-Laws had to do with the rephrasing of the group year. This meant that such matters as nominations, elections, and specific dates for various functions had to be changed. Also, it required that the Adcom members, including the Chairman and Vice Chairman, have their terms of office extended.

One other By-Law change required that the Editor of the Journal on Quantum Electronics, if not an elected Member of the Administrative Committee, to be made an ex-officio Member of the Adcom during this tenure as Editor.

The financial condition of the Group continued to occupy a great deal of Adcom time and concern. The steady decrease in the surplus was a constant reminder that something would have to be done, but no one seemed to have an answer as to just what that was to be. Part of the problem stemmed from the fact that there was no certainty that IEEE support for the Group would continue. In 1967, IEEE provided \$20,000 of support to MTT. However, in the same year, the Journal of Quantum Electronics cost MTT \$5,600. Although there was some indication that the financial picture of MTT might not degrade completely in the Adcom year,

it was nevertheless true that with the increased publication of Transactions and the increased drain due to the Journal of Quantum Electronics, it would be difficult to anticipate any additional surplus in the following years. To help understand the situation a financial workshop was held at IEEE Headquarters with members of the MTT finance group, including Saul Rosenthal, John Bryant, and Frank Arams.

At the May meeting in Boston, an extended discussion was held on the problem. The alternatives available to the Group were evaluated and a number of resolutions were approved after considerable discussion. Among the resolutions that were approved were the following:

1. That MTT not consider space advertising at this time.
2. Advise TAB that MTT encourages the introduction of voluntary page charges for all IEEE publications.
3. Advise TAB that MTT opposes an increase in its own basic Group fee this year.
4. That MTT move in concert with ED to increase the JQE subscription rate and Group fee for MTT members electing JQE in place of the MTT Transactions to \$7.
5. That MTT request page charges for the Journal of Quantum Electronics (JQE).
6. If page charges are instituted for JQE, then the increase in the Group fee should not take effect. However, if they are not instituted, then the increase in Group fees should take effect.
7. Subject to the approval of the Group on Election Devices, the Editor of JQE should be instructed to stay within the approved budget, as MTT will not support any overrun.

Needless to say, the meeting that generated these proposals was a long and wide-ranging one; each resolution occupied many minutes of heated discussion.

One of the areas that had been discussed during several meetings was the matter of display advertising in the Transactions. It was interesting because, on two separate occasions, the MTT Adcom went on record as favoring advertising in the MTT Transactions. However, when they analyzed the ultimate return to MTT, it appeared that only 25% of the charge for advertising would be realized by the Group. Based upon asking approximately \$240 per page of advertising, it appeared that page charges of \$55 per page would be more desirable and consequently the vote went in that fashion. Although it was ultimately rejected, the MTT was one of the only groups in the IEEE that opted for advertising in the Transactions on the two voice votes.

In 1966 the Transactions became a monthly publication. As might be expected, there was the usual concern about finances and also the problem of backlog. Based upon information obtained from Headquarters, it was anticipated was that the cost per page would increase by more than 20% from \$52 per page

for the 1960-1965 period to \$65 a page. As it turned out, the cost was considerably below that number, and in fact, was less than \$49 per page for the issues published in 1966. In 1965, 928 pages of the Transactions were published on a bi-monthly basis for a cost of \$50,247. In 1966, on a monthly basis, 762 pages were published for a cost of \$37,107. The projection for 1967 was for 836 pages at a cost of about \$44,000.

One of the problems faced by the Adcom was the proliferation of journals. As a consequence, and because of the many specialty fields within MTT, Sy Okwit proposed that special issues on specific, well-defined technical areas be published by the MTT Transactions. A number of special issues were discussed and one was scheduled for the Spring of 1968. It was to be a Special Issue on Noise edited by Bill Mumford. MTT also learned that ED was planning to publish a special Transactions on Microwave Integrated Circuits. Sy Okwit spoke with the Editor of the ED Transactions and an agreement was reached whereby the special issue would be a joint one involving MTT, ED, and the Solid State Circuits Council. This was tentatively scheduled for May 1968.

The fears that some members had regarding the prospect of the Transactions becoming a monthly publication were found to be groundless and despite occasional delays in publication, the Transactions continued to be a source of strength for the Group.

Efforts to obtain foreign abstracts continued. A number of abstracts were obtained from Japan, Italy and Australia. In addition, attempts were made to get coverage in France, Poland and Austria. It was also agreed that abstract editors, like authors, should be sent free copies of the Transactions.

Six issues of the Newsletter were published during this extended period. The format was as outlined in the prior Adcom, giving great visibility to the Chapters. The September 1966 issue of the Newsletter contained the first MTT membership directory printed in more than 5 years, listing members by Region and Chapter. Perhaps more significant, as far as the Newsletter was concerned, was that 1967 was the last year of Gus Shapiro's editorship.

In Spring 1967, the IEEE New Technical and Scientific Activities Committee (NTSAC) created a computer-aided design subcommittee publishing the "CADAR" (Computer-Aided Design, Analysis, and Realizability) Newsletter. By the Summer, the CADAR Council had 15 members and was mailing 1,000 copies of its newsletter. At the December meeting of the Adcom, it was moved that the MTT Adcom approve financial support to the CADAR Council, subject to the approval of the proposed new CADAR Constitution and By-laws by the IEEE Technical Activities Board. The financial contribution by MTT was limited to \$200 per year.

Based upon available information, it appeared that the only function CADAR would serve was to publish a newsletter distributed to its mailing list. The mailing list was to be created from those IEEE members who

actually asked to receive the newsletter. It would have no other technical publication, and it would have no dues paying members.

Although there was an MTT adhoc Committee on Standards, it was not clear to them or to IEEE Headquarters as to exactly what their function would be and how they would fit in with the rest of the Group's Standards Committees. At one point, they were waiting for IEEE to give definition to their function, but at another time, it was suggested that they decide on their own what the scope of the MTT Standards Committee would be relative to IEEE standards. In any event, the year was spent mostly in discussion of the issue, with very little accomplished.

The Chairman of the Joint Council on Quantum Electronics for the year was Benjamin Lax; Walter Kahn was Secretary. Professor Saito proposed Tokyo for the site of the 1976 International Quantum Electronics Conference. The 5th International Quantum Electronics Conference was scheduled for May 1969 in Miami. It was intended that there would be exhibits and that Lou Winner would be the conference manager.

The Conference on Laser Engineering and Applications (CLEA) was held June 6 to 8, 1967 in Washington, DC. In addition to a technical program, there were exhibits managed by Lou Winner. When news came out of the conference, there was some concern on the part of the Armed Forces Communications and Engineering Association (AFCEA), which was planning to hold its annual meeting in Washington at the same time. Although AFCEA was 1/10th the size of the IEEE, it included high ranking members of the armed forces and NASA and its relations with IEEE had always been excellent. W.K. MacAdam, President-elect of the IEEE and Dick Emberson, IEEE Director of Technical Services, spoke to the Adcom on the problem (and requested that the MTT and CLEA be kind to AFCEA). However, due to the limited number of booths, the meeting did not constitute a major conflict with the AFCEA meeting. CLEA had 880 registrants, 25 booths, and a surplus to JQE of \$7,249.95. The 1969 CLEA conference was planned for May in Washington D.C.

Although no action was taken of any significance relative to the Solid State Circuits Council, there was much discussion on the question of whether papers should appear in the Journal of Solid State Circuits or in the MTT Transactions. The debate continued all year long. To help resolve the problem, Saul Rosenthal formed an adhoc Solid State Committee chaired by Frank Arams, with Warren Cooper and Bob Garver as members.

Although little action was taken, an adhoc Technical Committee on Millimeter-Waves was set up with Don King as Chairman. There was some discussion as to whether another conference on millimeter-waves would be appropriate, either by itself, or as part of the Microwave Symposium. Also, the question of a millimeter-wave issue of the Transactions or a joint

issue with an optical journal was discussed, but no conclusions were drawn on either suggestion.

During 1967, the IEEE Publications Board Task Force on Transactions and Journals completed an evaluation of the Transactions and Journals of all of the IEEE Groups. To the credit of the Editor and his reviewers, the MTT Transactions' evaluation read "This is an excellent publication, one of the best among IEEE journals."

One of the areas of concern to the Adcom, and one in which a good deal of work was needed, was that of Chapter-Group membership relations. At this time, there was a minimum of interaction between the Adcom and the Chapters, and between the Adcom and the membership. In an effort to improve the situation, an adhoc Chapter Relations Board was set up. It consisted of the Chapter Activities and Membership Committees working closely with the Newsletter. The planned activities of the Board centered around a number of items:

1. Stimulate the leaders of the Chapters and give them a strong tie to the Administrative Committee.
2. Ask Adcom members to visit local Chapters on a regular basis.
3. Provide the Chapters with material to assist them in soliciting speakers and arranging for meeting dates. This would include a list of potential speakers, their topics, and availability.
4. Upgrade the poster campaign on an annual basis.
5. Other items included the MTT National Lecture-ship and a telephone campaign by which the Chairman of the adhoc Committee would be in touch with the Chairmen of the various Chapters.

In summary, the new Board had as its mandate a program to try to have the membership feel a part of MTT and for the Adcom, in turn, to show them that they are in fact part of the membership. The program as described was carried out, a speakers' roster was provided, telephone calls were made to all Chapter Chairmen, and Adcom members made visits to local Chapters during the course of their travels. Although membership in the Group did not seem to change significantly during the period, the interest in Group activities appeared to improve.

The 1967 Symposium took place in Boston from May 8th to 11th. Although the Symposium was called the International Microwave Symposium, there was some difficulty in raising funds to bring foreign speakers to the meeting. Despite the success of the 1966 Symposium, the Government refused to provide funds for foreign speakers coming to the 1967 Symposium, and, as a consequence, industry was solicited for funds. Fortunately, enough funds were provided to assist at least two of the speakers. Attendance at the Symposium was 794. As usual, the Symposium banquet was the highlight; Dana Atchley served as master of ceremonies. Professor J.C. Slater spoke of his experiences more than 20 years earlier at the M.I.T. Radiation Laboratory. Bill Mumford received the Morris

E. Leeds Award for 1966, and Art Oliner received the Microwave Prize for 1966 for his paper entitled "Equivalent Circuits for Discontinuities in Balanced Strip Transmission Line," published in the March 1955 Transactions on Microwave Theory and Techniques.

Interest in the International Microwave Symposium, on an ongoing basis, was building very strongly. The 1968 Symposium was scheduled to be held in Detroit. In discussions concerning the 1968 Symposium, the question of parallel sessions came up. It was moved that the Technical Program Committees of MTT International Microwave Symposia be authorized and encouraged to schedule parallel sessions in order to provide complete coverage of the microwave field. The effect of this proposal was to stimulate more contributions from well-qualified individuals on topics of current interest to all microwave people, including some topics which might not have received adequate attention in the past.

At the September meeting of the Adcom, proposals for holding the 1969 Symposium were presented by the Dallas, Long Island, and Los Angeles Chapters. Dallas was selected. During the course of the Adcom year, there was considerable discussion about the possibility of having the 1970 MTT Symposium in Washington, DC. The reason for bringing the matter up so early had to do with the problem of making hotel reservations. In any event, it was becoming clear that most of the Chapters would need greater lead time to properly plan a Symposium in their area.

There were a number of other meetings that were of interest to Adcom. MTT participated in the 1967 Communications Conference, organizing a microwave session at the meeting. MTT also participated in an August meeting on High Frequency Generation and Amplification held at the School of Electrical Engineering, Cornell University. This was a new bi-annual conference. The International Microwave Power Institute (IMPI) organized a symposium for March of 1967 at Stanford University. Although MTT did not offer sponsorship, it did offer cooperation by publicizing the event in the Newsletter. Because of the emergence of IMPI as a viable organization, there was some discussion about the possibility of an MTT council on industrial applications.

The IEEE Convention continued to be a problem to the MTT members. The sessions in the 1967 Convention were on two topics which should have been of great interest to the membership. The first session was on the growing inventory of microwave components and the second one described "Microwave Miniaturization: A Progress Report." Both sessions involved invited papers by leaders in their fields. Despite the excellent papers and speakers, the interest was relatively minimal. This caused the microwave manufacturers and exhibitors concern as to whether their participation in the IEEE Convention was worth while. In an effort to resolve the problem, an adhoc Committee made up of representatives from our industry met with Dick Emberson, Will Copp, and others in March 1967 on two separate occasions. There was complete

cooperation from IEEE Headquarters and the show management. It was agreed that a section of the Convention floor in 1968 would be set aside and identified as a microwave area. In addition, application papers, pertaining to the products on exhibit, would be presented. This was the first time in the history of the IEEE Convention in which special consideration was given to a narrow segment of the industry. The four topics chosen for the 1968 Convention were Microwave Integrated Circuits, Microwave Instrumentation and Measurements, Microwaves in Space, and Materials for Microwaves.

At the March Adcom meeting, the Nominations Committee presented its slate of candidates and the following individuals were elected for three year terms: R.A. Rivers, G.I. Haddad, D.D. King, F.G.R. Warren, P.J.B. Clarricoats and F.R. Arams. During the year Irv Kaufman had resigned and Al Clavin was elected to replace him from May 7 through December 31, 1967. Al Clavin was also elected for a one year term to complete the term of Saul Rosenthal, who had served on the Adcom as past Chairman. Earlier, Bob Beatty had indicated that he would be unable to serve as Chairman the following year. As a result, Rudy Henning was elected Adcom Chairman for 1968. Leo Young was elected Vice Chairman.

During the year, there was discussion about the necessity to reorganize the Adcom. Chairman-elect, Rudy Henning, reported that he was investigating a new organizational structure for the Adcom with the aim of increasing efficiency, cutting down meeting time, implementing a future planning function, etc.

The XVth Adcom, in many respects, was a landmark Adcom. It was the only 18 month Adcom in our history. It was the first Adcom during which the Transactions were published on a monthly basis throughout the entire Adcom term. It was the Adcom during which the concept of the National Lecturer was initiated. Not only was it a landmark, it was a vintage Adcom as well.

- 1983 — Boston, MA
- 1984 — San Francisco, CA
- 1985 — St. Louis, MO
- 1986 — Baltimore, MD

While it has been a general practice in the past to move the symposium geographically around the country in order to average out the travel burdens on the membership, proposals from any portion of the country will be considered.

A major change in symposium policy which may help smaller Chapters is the availability, if desired, of professional help in such areas as registration, publications, publicity, and site management. Thus, a small Chapter which might not have the facilities or membership to arrange the entire symposium would only have to handle a limited number of topics such as the technical program committee, digest, finances, workshops, etc. In line with this, a Chapter may wish to propose the possibility of hosting the symposium at a recognized convention site not necessarily in the same city as the Chapter.

Simple letter proposals, in accordance with the bylaws, should be submitted before June of this year to:

Harlan Howe, Jr.
Chairman, Meetings and Symposia
c/o M/A-COM, Inc.
South Avenue
Burlington, Mass. 01803



PROPOSALS NEEDED FOR FUTURE SYMPOSIA

by Harlan Howe, Jr.

Because of the long-lead times required, the Administrative Committee of the Microwave Theory and Techniques Society is soliciting letter proposals for the 1987 and later IEEE MTT-S International Microwave Symposia. Symposium locations have been selected through 1986. They are:

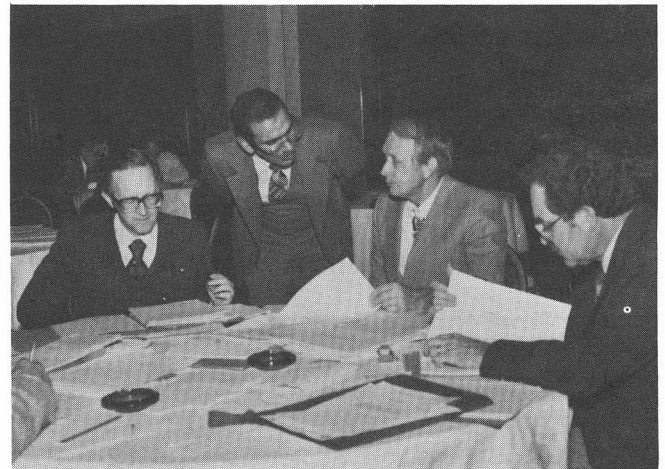
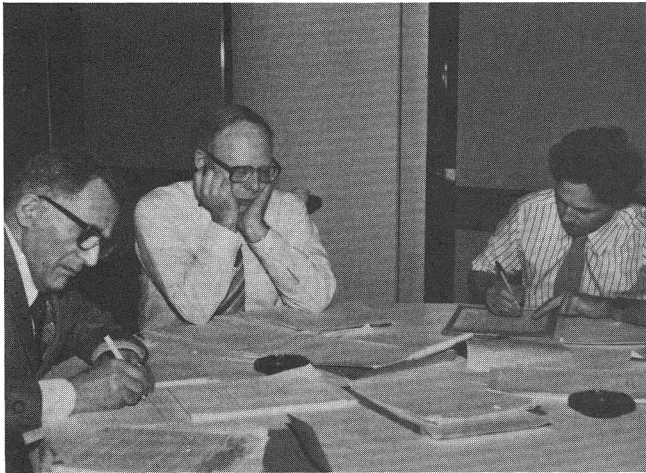
NEW IEEE TELEPHONE EXCHANGE

As of March 29, 1982, the IEEE's New York telephone exchange was changed from 644 to 705 because the office is switching to a new electronic telephone system. To reach the IEEE Headquarters, telephone (212) 705- (direct-dial extension). Extensions for some of the major IEEE offices are: General Manager (7910), Public Relations (7866), Technical Activities (7890), Publishing Services (7560), Educational Services (7860), Conference Activities (7895), Standards (7960), Spectrum (7555), and General Information (7900).

Telephone numbers for the IEEE New Jersey Service Center and the Washington, D.C. office remain unchanged.

SCENES FROM THE TECHNICAL PROGRAM COMMITTEE MEETING

JANUARY 19, 1982



CALL FOR PAPERS

NASCODE III, Third International Conference on the Numerical Analysis of Semiconductor Devices and Integrated Circuits

When: June 15-17, 1983

Where: Galway, Ireland

Deadline for Submission: February 18, 1983

Submission: Abstract and summary typed single space within a 225mm by 150mm rectangle. Six pages maximum

Submit to: NASCODE Conference, 39 Trinity Collge, Dublin 2, Ireland

25th Midwest Symposium on Circuits and Systems

When: August 30-31, 1982

Where: Houghton, Michigan

Deadline for Submission: April 17, 1982

Submission: Two copies of 300 word summary

Submit to: Prof. Paul Lewis, Department of Electrical Engineering, Michigan Technological University, Houghton, MI 49931

Sixteenth Asilomar Conference on Circuits, Systems, and Computers

When: November 8-10, 1982

Where: Pacific Grove, California

Deadline for Submission: June 1, 1982

Submission: 50 to 100 word abstract plus 4 to 5 page summary in triplicate

Submit to: Herbert E. Rauch, Lockheed 52-56/205, Palo Alto Research Laboratory, 3251 Hanover Street, Palo Alto, CA 94304

Sixth International Conference on Digital Satellite Communications

When: September 19-23, 1983

Where: Phoenix, Arizona

Deadline for Submission: September 30, 1982

Submission: Abstract

Submit to: Howard B. Briley, Communications Satellite Corp., 950 L'Enfant Plaza, S.W., Washington, D.C. 20024, (202) 863-6248

1982 GaAs IC Symposium

When: November 9-11, 1982

Where: New Orleans, Louisiana

Deadline for Submission: May 28, 1982

Submission: Original plus ten copies of one page abstract

Submit to: Dr. Thomas M. Reeder, Tektronix, Inc., MS 50-370, P.O. Box 500, Beaverton, OR 97077, (503) 627-5496

Seventh Annual International Conference on Infrared and Millimeter Waves

When: February 14-18, 1983

Where: Marseille, France

Deadline for Submission: September 10, 1982

Submission: Author, address and 35-40 word summary

Submit to: Kenneth J. Button, M.I.T. National Magnet Laboratory, Building NW-14, Cambridge, MA 02139, (617) 253-5561



MTT-S COMMITTEE DIRECTORY

The following additions, changes, or corrections need to be made to the MTT-S Committee Directory which formed a part of the Winter 1982 issue of the MTT-S Newsletter (Number 102)

ADDITIONS

To Section IV, MTT Society Representatives, add the following:

- to Research and Development Committee — R.A. Sparks
- to Optical Communications Council Planning Committee — R. H. Knerr and F. J. Rosenbaum
- to Joint TAB/USAB Committee on Communications and Information Policy — R.B. Hicks

CHANGES

To Section VI, Chapter Chairmen:

- Chicago Chapter — the Chairman should be E.R. Carlson. All other information is correct.
- Princeton Chapter — the Chairman should be H. Huang. His telephone number is (609) 734-2447. All other information is correct.

CORRECTIONS

- To Section IV (Standing Committees) Item F (Standards Coordinating Committee), on Page 2, the word "nonreceptive" three lines from the bottom should be changed to "nonreciprocal".

To Section VI, Chapter Chairmen:

- Canaveral Chapter — should be Orville instead of Oliver
- Los Angeles Chapter — the correct mailing address is Building 231/1519 in lieu of 231/1521.

OTHER

- All listings for B. Berson should include his middle initial, i.e., B.E. Berson (4 places)
- All listings for J.E. Degenford should be changed to J.E. Degenford, Jr. (4 places)

SHORT COURSES

Advanced Geological Remote Sensing is being offered April 20-22, 1982 by George Washington University, Washington, DC at a fee of \$590 per pupil. The instructor, Dr. James V. Taranik, is located at NASA Headquarters in Washington, D.C. For further information, contact Continuing Engineering Education Program, George Washington University, Washington, D.C. 20052, (202) 676-6106 or (800) 424-9773.

Modern Antennas is a short course being offered April 20-23, 1982 by the Technology Service Corporation for a fee of \$590 per pupil. The course instructors are Dr. J. Frank, Mr. Helmut, E. Schrank and Dr. Edward B. Joy. The course will be held at the Holiday Inn, Bethesda, Maryland. More information can be obtained from Technology Service Corporation, 8555 Sixteenth Street, Suite 300, Silver Spring, MD 20910, (301) 565-2970.

Radar Systems Engineering: Detection, Tracking, and Signal Processing will be offered by the Continuing Education Institute, April 26-30, 1982 at the Columbia Inn, Columbia, Maryland. The course instructors are: Dr. P.N. Robinson, Hughes Aircraft Company; Dr. P. Grieve, Grumman Aerospace Corporation; and Dr. M.M. Stuart, a private consultant. The course fee is \$795. For further details, contact Continuing Education Institute at (213) 824-9545 or (301) 596-0111.

Digital Communication and Satellite Systems will be offered by UCLA, May 17-21, 1982. The course coordinators and lecturers are K. Yao, L.B. Milstein, J.K. Omura, I. Rubin, and B. Sklar. The fee for course Engineering 885.77 is \$795. Contact Short Course Program Office, UCLA Extension, 6266 Boelter Hall, Los Angeles, CA 90024, (213) 825-1295 or (213) 825-3344 for further information.

Mapping From Space: Techniques and Applications is also being offered by George Washington University. The course dates are May 17-20, 1982 and the fee is \$685 per student. Instructors include A. Colvocoresses, W. Chapman, J. Hammack, R. McEwen, A. Warren, and A. Zobrist. Contact Continuing Engineering Education Program, George Washington University, Washington, D.C. 20052, (202) 676-6106 or (800) 424-9773 for more information.

Microwave Circuits: Theory and Applications will be presented May 24-28, 1982 at the University of California, Los Angeles and July 12-16, 1982 at the University of Maryland. The course instructors are Les Besser, Robert J. Wenzel, and Steven March. The fee for Engineering 881.39 has been set at \$795 per pupil. For additional information contact the Short Course Program Office, UCLA Extension, 6266 Boelter Hall, Los Angeles, CA 90024, (213) 825-1295 or 825-3345

or University of Maryland, University College, Conferences and Institutes Program, Adelphi Road, College Park, MD 20742, (301) 454-2322.

Radar Principles for Technical Managers is another George Washington University short course. It is being offered June 3-4, 1982 at a fee of \$530 per pupil. The course instructor is Major General J.C. Toomay (retired). For additional information contact George Washington University at the address and telephone number given above.

Fundamentals of Electro-Optical Systems Analysis is an additional UCLA short course being offered June 7-11, 1982. The coordinator and lecturers for Engineering 823.10 are K. Seyrafi, G.L. Clark, G.J. Hoover, and R.A. McClatchey. The course fee is \$795 per person. For additional details, contact UCLA Extension at the address and telephone number given above.

June 7-11, 1982 are also the dates for **Applied Remote Sensing for Terrain Analysis**. This George Washington University course is being taught by Dr. J.E. Estes and Dr. D.P. Gold. The fee for this course is \$760 per student. George Washington University can be contacted at the address and telephone number given in one of the listings above for more information.

Computer Modeling of Electromagnetic Phenomena will be given June 15-17, 1982 by Georgia Institute of Technology. The course is sponsored by the Engineering Experimental Station at Georgia Tech. The fee for the course is \$275 per pupil. For more information, call or write: Department of Continuing Education, Georgia Institute of Technology, Atlanta, GA 30322, (404) 894-2547.

Microwave Circuits: Theory and Applications will be presented September 27-October 1, 1982 in Boston, Massachusetts and at the Hyatt Rickey's Hotel, Palo Alto, California, October 25-29, 1982. The course is being offered by the Continuing Education Institute at a fee of \$850 per student. The instructors are Les Besser, Robert Wenzel, and Steven March. For further information, contact Continuing Education Institute, 10889 Wilshire Boulevard, Suite 1030, Los Angeles, CA 90024, (213) 824-9545 or at (301) 596-0111.

George Washington University will also be offering **Radar Systems and Technology**, course number 203DC, May 10-14, 1982; **Satellite Communications Processing and Transmission**, course number 594DC, May 10-18, 1982; **Hazardous Electromagnetic Radiation**, course number 588DC, May 17-18, 1982; **Fiber and Integrated Optics**, course number 378DC, May 24-28, 1982; **Modern Data Communications**, course number 241DC, June 7-11, 1982; and **ECM and ECCM for Digital Communications**, course number 426DC, June 14-18, 1982.

THESES

Three theses of interest to members of the Microwave Theory and Techniques Society have been reported to the Newsletter Editor. They are:

- **Studies on Microwave Slot-Line and Integrated Fin-Line**, Rainee N. Simons, Indian Institute of Technology, New Delhi, India, August 1981
- **The Effects of Delayed Secondary Avalanche Phenomena on the High Efficiency Operation of GaAs Millimeter Wave IMPATT Diodes**, Glen R. Thoren, Cornell University, Ithaca, N.Y. (Advisors: Profs. G.C. Dalman, C.A. Lee, and J. Frey), January 1981.
- **A Cavity Resonator Method for Permittivity Measurements at Microwave Frequencies**, Antonio O. Martins de Andrade, University of Sao Paulo, Brazil, (advisor: Prof. J.T. Senise), April 1981.

Hopefully, these three listings are the beginning of a new column which, with your inputs, will be expanded in the future.

Infrared and Millimeter Waves is a four volume set edited by Kenneth J. Button of Massachusetts Institute of Technology and James C. Wiltse of Georgia Institute of Technology (Volume 4 only). The topics are: **Volume 1, Sources and Radiation**, 338 pages, \$53.50; **Volume 2, Instrumentation**, 384 pages, \$55.50; **Volume 3, Submillimeter Techniques**, 448 pages, \$53.00; **Volume 4, Millimeter Systems**, 384 pages, \$52.50. All four volumes can be purchased for \$175.00.

A corrected and enlarged edition of **Table of Integrals, Series, and Products** by I.S. Gradshteyn and I.M. Ryzhik has been prepared by A. Jeffrey of University of Newcastle on Tyne. The 1205 page book (ISBN 0-12-294760-6) is available for \$19.50.



MEETINGS OF INTEREST

The following list of meetings of potential interest to MTT-S members covers a period of approximately 7 months. All efforts will be made to maintain a complete compilation. Any additions should be sent to the MTT-S Newsletter Editor.

- **The 1982 IEEE International Symposium on Circuits and Systems** will be held at the University of Rome, Rome, Italy, May 10-12, 1982. Contact Prof. V. Cimagalli, Istituto de Comunicazioni Electriche, Universita di Roma, Via Endussiana, 00184 Roma, Italy, (396) 4740234 for further details.
- San Diego, California is the site of the **32nd Electronics Components Conference**. The Sheraton Harbor Island Hotel is the May 10-12, 1982 conference site. Further details are available from G.H. Donaldson, Sandia Laboratories, Division 2154, Albuquerque, N.M. 87185, (505) 264-8538.
- May 17-19, 1982 are the scheduled dates for the **Plasma Science International Conference**. The conference will be held at Carleton University, Ottawa, Ontario, Canada. Contact John Alcock, National Research Council, Ottawa, Ontario, K1A 0R6 Canada, (613) 993-3016 for additional information.
- **The Northern Electronic Show and Convention, Northcon '82**, will be held May 18-20, 1982 at the Seattle Center Coliseum, Seattle, Washington. More information is available from Dale Litherland, Electronic Conventions, Inc., 999 N. Sepulveda Blvd., El Segundo, CA 90245, (213) 772-2965.
- May 18-20, 1982 are the dates for the **IEEE National Aerospace and Electronics Conference (NAECON)** to be held at the Dayton Convention Center, Dayton, Ohio. Contact NAECON, 140 East Monument Avenue, Dayton, Ohio 45402, (513) 223-6266 for additional information.



MORE NEW BOOKS

Academic Press recently announced several new or revised books which are possibly of interest to the Microwave Theory and Techniques Society membership.

Four of the books deal with fiber optics. They are:

- **Optical Fibers** by T. Okoshi, University of Tokyo, 320 pages, ISBN 0-12-525260-9, \$39.00
- **Optical Fiber Telecommunications** by Stewart E. Miller and Alan G. Chynoweth, Bell Telephone Laboratories, 705 pages, ISBN 0-12-497350-7, \$59.50
- **Fundamentals of Optical Fiber Communication**, Second Edition, by Michael K. Barnoski, TRW Technology Research Center, 376 pages, ISBN 0-12-079151-X, \$29.50
- **Principles of Optical Fiber Measurements** by Dietrich Marcuse, Bell Telephone Laboratories, 384 pages, ISBN 0-12-470980-X, \$39.50

Academic Press has also recently published the **Gunn-Hilsum Effect**, by Melvin P. Shaw of Wayne State University, Harold L. Gruber and Peter R. Solomon of United Technologies Research Center. The book (ISBN 0-12-638350-2) contains 256 pages and is priced at \$31.00.

- **The Sixth International Defense Electronics Exposition** will be held at the Hanover Fair Grounds in Hanover, West Germany, May 18-20, 1982. Further information is available from Dr. Fred Morritz, Cahners Exposition Group, 222 West Adams Street, Chicago, IL 60606, (312) 263-4866.
- **The 1982 Joint International IEEE/AP-S Symposium, National Radio Science Meeting, and Nuclear Electromagnetic Pulse Meeting** will be held in Albuquerque, New Mexico on May 24-28, 1982. Contact Dr. Kendall F. Casey, The Dirkwood Corp., 1613 University Blvd., N.E., Albuquerque, NM 87102 for more information.
- **Electro 1982** will be held May 25-27, 1982 at the Boston Sheraton Hotel and the Hynes Auditorium in Boston, Mass. Further information can be obtained from Dale Litherland, Electronic Conventions, Inc., 999 North Sepulveda Blvd., El Segundo, CA. 90245, (213) 772-2965.
- The Promise of Remote Sensing is the theme of the **1982 International Geoscience and Remote Sensing Symposium (IGARSS '82)**, which will be held June 1-4, 1982 at the University of Munich, Munich, West Germany. For more information contact either K. Carver, NASA HQ — Office of Space and Terrestrial Applications (Code ER), Washington, D.C. 20546, (202) 755-6038 or Prof. A. Sieber, Institute for Radio Frequency Technology, Oberpfaffenhofen, D-8031 Wessling, Federal Republic of Germany, phone (08153) 28305.
- **The Fifth European Conference on Electrotechnics** will be held June 14-18, 1982 in Copenhagen, Denmark. A technical exhibition will be included. Further information is available from Dr. Peter W. Becker, Electronics Laboratory, The Technical University of Denmark, DK-2800 Lyngby, Denmark.
- **The 1981 IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM** will be in Dallas, Texas, at the Hyatt Regency Hotel, June 14-19, 1982. More information is available from Dr. David N. McQuiddy, Jr., Texas Instruments, Inc., Mail Stop 255, P.O. Box 226015, Dallas, TX 75266, (214) 995-2808.
- Following the MTT Symposium, **The 1982 IEEE Microwave and Millimeter-Wave Monolithic Circuits Symposium** will be held June 18, 1982 at the Hyatt Regency Hotel in Dallas, Texas. contact Dr. H.J. Kuno, Hughes Aircraft Company, 3100 W. Lomita Blvd., P.O. Box 2999, Torrance, CA 90509, (213) 517-6378 for further details.
- June 21-25, 1982 are the dates for the **1982 IEEE International Symposium on Information Theory**, which will be held at Les Arcs, an alpine resort near Bourg St. Maurice, France. Contact Prof. Carl W. Helstrom, Dept. of Electrical Engineering & Computer Science, C-014, University of California at San Diego, La Jolla, CA 92093, (714) 452-3816 or Prof. Bernard Picinbono, Labo des Signaux & Systemes, Ecole Superieure d'Electricite, Plateau de Moulon, F91190 Gif-sur-Yvette, France for more information.
- **The XII International Quantum Electronics Conference** will take place June 22-25, 1982 at the Kongress Zentrum in Munich, West Germany. Further details can be obtained from B. Bolger, Philips Research Laboratories, Eindhoven, The Netherlands or Dr. P. F. Liao, Bell Telephone Laboratories, Crawfords Corner Road, Holmdel, NJ 07733, (201) 949-3000.
- The University of Colorado, Boulder, Colorado is the site of the June 28-July 1, 1982 **Conference on Precision Electromagnetic Measurements**. For more information, contact Robert Kamper, National Bureau of Standards, Boulder, CO 80303, (303) 449-1000.
- July 20-23, 1982 are the dates for the **Joint Intermag and Magnetism and Magnetic Materials Conference**, which will be held in Montreal, Quebec, Canada, at the Hotel Sheraton - Mt. Royal. This meeting combines the 28th Annual Conference on Magnetism and Magnetic Materials and the Intermag Conference. Prof. Arthur Yelon, Ecole Polytechnique, University of Montreal, Montreal, Quebec, Canada H3C 3A7, (514) 344-4751 can supply more information.
- **The 25th Midwest Symposium on Circuits and Systems** will be held in Houghton, Michigan, August 30-31, 1982. For additional information, contact Prof. Paul Lewis, Department of Electrical Engineering, Michigan Technological Institute, Houghton, MI 49931.
- **The Seventh Colloquium on Microwave Communication** will be held in Budapest, Hungary, Sept. 6-10, 1982. Contact the Secretariat of the Seventh Microwave Colloquium, H-1525 Budapest, 114 POB 15, Hungary for more details.
- September 8-10, 1982 are the dates for the **International Symposium on Electromagnetic Compatibility**. The conference site has been selected as the Marriott Hotel in Santa Clara, California. Additional information is available from Andrew Nalbandian, 20617 Debbie Lane, Saratoga, CA 95070, (408) 742-5336.
- Helsinki, Finland is the site of the **12th European Microwave Conference**. Held at Finlandia Hall, the conference will take place September 13-17, 1982. For additional details, contact Prof. M. Tiuri, Helsinki University of Technology, Radio Laboratory, Otakaari 5A, 02150 Espoo 15, Finland.

- **The 1982 Western Electronic Show and Convention (WESCON)** will be held September 14-16, 1982 in Los Angeles, California. Contact Dale Litherland, Electronic Conventions, Inc., 999 N. Sepulveda Blvd., El Segundo, CA 90245, (213) 772-2965 for further details.
- September 20-22, 1982 are the dates for the **1982 Electronic and Aerospace Systems Convention (EASCON)**, which will be held in Washington, D.C. at the Sheraton Hotel. More details are available from Mr. S.J. Campanella, Comsat Laboratories, Washington, D.C., (202) 428-4258.
- Engineering and medicine are the topics of three conferences to be held in Philadelphia, Pennsylvania at the Marriott Hotel during the week of September 20-24, 1982. **The 1982 Frontiers of Engineering in Health Care Conference** will be held September 20-21, 1982. Contact Dr. Alfred R. Potvin, University of Texas at Arlington, Biomedical Engineering Program, P.O. Box 19138, Arlington, TX 76019, (817) 273-2249 for more details. On September 22, 1982, the **Computers in Medicine (COMP MED '82) Conference** will take place. Dr. Morton Schwartz, California State University, Dept. of Electrical Engineering, Long Beach, CA 90840, (213) 498-5102. **The 35th Annual Conference on Engineering in Medicine and Biology** will be held September 22-24, 1982. Additional information is available from the Alliance for Engineering in Medicine and Biology, Suite 210, 4405 East-West Highway, Bethesda, MD 20814, (301) 657-4142.
- **The 1982 International Conference on Circuits and Computers** will be held September 29 - October 1, 1982 at the New York Hilton, New York, New York. For more information, contact Charles W. Gwyn, Sandia National Laboratories, Department 2110, Albuquerque, NM 87185.
- **Autotestcon, the 1982 IEEE International Automatic Testing Conference** will be held at the Dayton Convention Center, Dayton, Ohio, October 11-13, 1982. More details are available from Oscar Sepp, ASD/AEG, Wright-Patterson Air Force Base, Dayton, Ohio 45433, (513) 255-2996.
- **The First Annual Military Communications Conference** will be held October 17-20, 1982 in Bedford, Massachusetts at Stouffer's Bedford Glen. The conference theme is "Progress in Spread Spectrum Communications." More information can be obtained from Dr. Fred W. Eilersick, Communications Division, MITRE Corp., Bedford, MA 01730, (617) 271-3343.
- **Radar '82** will be held at the Borough of Kensington and Chelsea Town Hall, London, England, October 18-20, 1982. More information is available from the Secretariat, Conference Department, Institution of Electrical Engineers, Savoy Place, London WC2R 0BL, England, or R.T. Hill, 2802 Birdseye Place, Bowie, MD 20715.
- **Military Microwaves '82** will be held in London, England, October 20-22, 1982 at the Cunard International Hotel. The first day will be devoted to papers on electro-optics. There will be an associated exhibition. More details can be obtained from Roger C. Marriott, Microwave Exhibitions and Publishers, Ltd., Convex House, 43 Dudley Road, Turnbridge Wells, Kent TN1 1LE, England, telephone (0892) 44027, telex 94604 MEPNCL.
- **The 1982 IEEE Ultrasonics Symposium** will be held at the Town and Country Hotel, San Diego, California, October 27-29, 1982. Contact Dr. John De Klerk, Westinghouse Research Laboratories, Beulah Road, Pittsburgh, PA 15235, (412) 256-7267 for more details.
- **The 1982 Government Microcircuit Applications Conference (GOMAC)** will be held in Orlando, Florida, November 2-4, 1982. For more information, contact Palisades Institute For Research Services, 201 Varick Street, New York, NY. 10014.
- The Asilomar Hotel and Conference Grounds in Pacific Grove, California is the site for the **Sixteenth Asilomar Conference on Circuits, Systems, and Computers**. For more information on the November 8-10, 1982 meeting, contact Chi Hsieh, Farinon Operation, Harris Corp., 1691 Bayport Avenue, San Carlos, CA 94070, (415) 592-4120, Ext. 158.
- **The 1982 GaAs IC Symposium** will be held November 9-11, 1982 in New Orleans, Louisiana. For additional information, contact Dr. Thomas M. Reeder, Program Chairman, Tektronix, Inc., MS 50-370, Beaverton, OR 97077, (503) 627-5496.
- The International Society For Hybrid Microelectronics will be holding the **1982 International Microelectronics Symposium** at the MGM Grand Hotel in Reno, Nevada. For more information on the November 15-17, 1982 conference, contact Jay L. Kimball, Hytek, 16780 Lark Avenue, Los Gatos, CA 95030.
- The Sheraton Bal Harbour Hotel in Miami, Florida is the location for **GLOBECOM '82, The Global Communications Conference**. Contact B.S. Branch, 666 N.W. 79th Street, P.O. Box 520100, Miami, FL 33152, (305) 263-3362 for additional data.



OPTICAL FIBER TECHNOLOGY

The publication of Optical Fiber Technology II, a book of selected reprints, has been announced by the IEEE Press. This volume, sponsored by the IEEE Quantum Electronics and Applications Society, was edited by Charles K. Kao of the Electro-Optical Products Division of International Telephone and Telegraph Company.

This book provides the reader with a broad background on the latest progress with optical fibers. From several thousand available publications, the editor chose 37 of the best papers to be reprinted. These are arranged by subject into the following eleven categories: Introduction and Survey, Fiber Waveguide Theory, Materials and Fabrication, Measurement, Fiber Cable, Radiation Effects, Connector Splices and Couplers, Fiber Transducers, Receivers, System Design, and Applications. Emphasis is placed on key developments since the 1976 publication of the IEEE Press book, Optical Fiber Technology, edited by D. Gloge. Subject and author indices are included.



BALTIMORE TO HOST 1986 MTT-S SYMPOSIUM

The 1986 IEEE MTT-S International Microwave Symposium will be held in Baltimore, Maryland during the first week in June. The MTT-S Adcom voted unanimously to hold its annual Symposium in Baltimore during its October 1981 Administrative Committee meeting held in Baltimore.

The technical sessions and exhibits will be held in the Baltimore Convention Center, and can provide seating for 2000 persons. The Hyatt Regency Hotel and the Baltimore Hilton will provide 1000 rooms at discount rates. The Holiday Inn and Lord Baltimore Hotels have an additional 870 rooms, and many new hotels are being planned at this time. The hotels and Convention Center are located within a two block area and are accessible by over-the-street walkways.

The Symposium site of the Baltimore Inner Harbor will provide direct access to planned sail and motor excursions of the Inner Harbor and Chesapeake Bay. The Inner Harbor area contains the new National Aquarium at Baltimore, the Maryland Science Center and Planetarium, the World Trade Center, and the historic U.S. frigate Constellation. A side trip to historic Annapolis is planned, consisting of the Harbor Queen boat trip, a walking tour of colonial houses, and a visit to the U.S. Naval Academy.

The local Symposium Steering Committee currently consists of MTT-S members from AAI Corporation, Bendix Corporation, Communications Satellite Corporation, the Department of Defense, Johns Hopkins University, Amecom Division of Litton Industries, NASA Goddard Research Center, the Naval Research Laboratory, and Westinghouse Electric Corporation. Mr. Edward C. Niehenke and Dr. Marvin Cohn, both of Westinghouse, will serve as Steering Committee Chairman and Technical Program Committee Chairman, respectively.

Steven N. Stitzer
Chairman, Publicity Committee
1986 IEEE MTT-S International Microwave Symposium



MULTIPLE MEMBERSHIPS

Study of a recent IEEE matrix on Society Memberships revealed that only 20 percent of all MTT-S members also belong to the Antenna and Propagation Society, twenty-five percent also belong to the Electron Devices Society, and twenty-three percent belong to the Communications Society. Additionally, sixteen percent belong to the Computer Society, over eight percent to each of the Circuits and Systems Society and the Components, Hybrids and Manufacturing Technology Society. Also, eight percent belong to the Sonics and Ultrasonics Society. The numbers total over 100 percent due to some MTT-S members belonging to more than two Societies.



CHICAGO CHAPTER

In addition to the meetings listed in the previous issue of the MTT-S Newsletter, the Chicago MTT-S Chapter has held four additional meetings:

September 21, 1981 — Primary Feeds for Reflector Antennas, Dr. Alan W. Rudge

October 19, 1981 — Recent Advances in Computer-Aided Design for the Microwave Designer, Dr. William H. Childs

November 9, 1981 — The Use of Electromagnetic Energy in Cancer Therapy, Dr. John W. Strohbeh

February 8, 1982 — Acoustic Microscopy: Methods, Applications, Outlook, Dr. Lawrence W. Kessler



THE INSTITUTE OF
ELECTRICAL AND
ELECTRONICS
ENGINEERS, INC.

Non-Profit Organization

U.S. Postage

PAID

PERMIT NO. 20683
LOS ANGELES, CALIF.

Third Class

0176180
THEODORE S SAAD
3 HURON DR
NATICK

17N *
FEB25
MA 01760