



EDITOR: H. J. Kuno

Hughes Aircraft Co., 3100 W. Lomita Blvd., Torrance, California 90509

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## PRESIDENT'S MESSAGE

BY H. SOBOL

Congratulations to the steering committee of the 1978 Symposium. The Ottawa meeting and all the associated events and symposiums were an outstanding success. One of the highlights of an ADCOM President's term is the presentation of awards and certificates at our annual banquet. It was a great honor for me to present all the 1978 awards but especially the Microwave Career Award to Dr. Ernst Weber for his more than fifty years of contributions to our profession. Throughout his career, Dr. Weber has been a leader in education, industry, IEEE, National Academy of Engineering and government committees. He is truly a remarkable person who has had a great influence on all of us.

In this issue of the Newsletter, you'll find a form polling our membership on election procedures for ADCOM. ADCOM is very anxious to get a high return rate from this poll so that we can understand the pulse of the membership with regard to elections. Typically in the past, response rates to our polls have been very low. Even in the IEEE major elections, less than 1/3 of the total membership vote. I would like to urge each of you to respond to the poll. Let's not be apathetic once again.

Midyear membership statistics show about a ten percent drop from last year. This trend, if it continues is truly unhealthy and ultimately will impact the services that MTT provides its members. This latest drop is in the midst of a boom in microwave business. Howard Ellowitz, in his opening remarks for the Microwave Journal Seminar,

mentioned the 20% growth in our business during the past year. Unfortunately, our membership is not following the business growth. We are trying to determine the cause of our drop in membership; however, we should all work to get those microwave people we work with, who are not MTT members, to sign up. Your local chapters have forms and literature that they can provide the prospective members. Please pitch in and help!

I'm sure that most of you have heard of Brodeur's recent book, *Zapping of America*, which discusses "the Government and Industry cover-ups" of the hazards of microwave radiation. The public reaction has been rather swift. New York City has instituted a moratorium on the construction of microwave towers. The City also has proposed an amendment to their health code setting a maximum exposure for public areas of 50/microwatts/sq.cm. from 10 MHz to EHF. This level is 1/200 of today's US industrial standard and 1/2000 of the sun's radiation flux in New York. The City exempts CB operators from the limit and fails to mention any exemption for the amateur bands. A recent article in *Business Week* attributes a fall in microwave oven sales to the Brodeur's book, among other factors. Those of you who have an opportunity to take part in public discussion on the interactions of microwaves with biological systems should do so but be prepared — do your homework, you'll be in for surprises.

The next ADCOM meeting is in Washington, D.C., October 5 and 6.

## BYLAWS

C. T. RUCKER

### UPDATE

Our Spring 1978 Newsletter reported that MTT-S Bylaws have been revised to facilitate proposals by Chapters to host the annual Symposium. Other less important, but necessary, revisions regarding elections were also made. To keep you up to date, the recent revisions are included in this Newsletter. All the Bylaws were published in the Winter 1978 Newsletter so that each MTT-s member should now have the Bylaws and revisions readily available. This is important because of recent activity related to possible further Bylaw revisions outlined below.

### PROPOSAL

The Washington, D.C. Chapter Executive Committee, spearheaded by Dr. Gideon Kantor, has proposed revisions related to both nominations and elections to MTT-S Adcom. Their proposal has received considerable discussion at the February and June Symposium Adcom meetings. Fortunately, Dr. Kantor was able to attend and represent the Washington Chapter at the June meeting. At this meeting it was decided that the overall MTT-S membership should participate in the decision related to the proposed changes. Toward that end, the existing processes for both nominations and elections are summarized below. Then follows a summary of the proposed changes. Finally, a detachable form to use in expressing your opinion is included. This form constitutes a straw-vote of the MTT-S membership because the Bylaws can presently be revised only by formal vote of the Administrative Committee. Adcom needs your inputs, however, to obtain an indication of the general drift of opinion.



## EDITORS NOTE

BY H. J. KUNO

### WHAT IS YOUR OPINION?

Changes to the MTT-s By laws regarding ADCOM election procedures are currently under consideration. ADCOM needs your opinion on the subject. Under the present Bylaws ADCOM elects new members from a slate of candidates a nomination committee selects. The changes under consideration proposed by the Washington, D.C. Chapter makes the nomination be made by petition and the voting be made by the MTT membership at large. A poll is enclosed with this issue. What is your opinion?

## CURRENT PROCEDURES

### FOR NOMINATIONS (Bylaws, Section A, Paragraphs 1 and 2)

At present, the MTT-S President must ensure by February 1 each year, that a Nominations Subcommittee is appointed. The committee must consist of a Chairperson and four or more Society members, not more than half of whom may be Adcom members.

The committee, thus constituted, is responsible for selecting at least two candidates (who must be Society members) for each of the vancancies occurring in the elected membership. There are usually seven vancancies, so fourteen nominees must be tendered. It is the further responsibility of the Nominations Subcommittee to be guided by factors of EFFICIENCY, GEOGRAPHY and NOMINEE ORGANIZATION in their selections. In this way, a balance of membership and equal representation is assured. Finally, petition nominees are added to the ballot along with any Adcom member nomination from the floor.

### FOR ELECTIONS (Bylaws, Section B, Paragraph 1)

At the September (Annual) meeting, the fourteen or more nominees' qualifications are presented to Adcom in quorum. Each eligible member then submits a ballot listing their choice for filling the vancancies (usually six or seven). Any candidate receiving a plurality on the first ballot is elected. Additional ballots are then held in order to fill the remaining vancancies. This process is described in detail in the Bylaws and won't be repeated here because of its length.

### PROPOSED PROCESS (Washington Chapter)

#### FOR NOMINATIONS

The proposed changes relate primarily to the number of nominees and formalization of the slate of nominees. The nomination committee structure will be preserved as in the existing bylaws. Specific proposed changes are:

- 1) At an appropriate meeting of the Adcom each calendar year, the Chairman of the Nominating Committee will announce these nominated by petition of at least 25 society members (this number may be increased to 50). At the same time he will present for approval, a list of at least 18 candidates, in order of preference, for nomination as Adcom members as recommended by this committee. The Nominating Committee will start at the top of the list and solicit each candidate to determine whether or not the candidate wishes to run as a nominee.

(Continued on page 3)

Bylaws (Continued)

This process will be continued until twelve of the candidates have expressed their willingness to be nominated.

- 2) Candidates nominated by petition will be added to the 12 nominees selected above. The number of petition nominees shall not exceed six with acceptance limited to the first six recieved. Nominations by petition will be so designated on the ballot.

**FOR ELECTION**

After selection of nominees, the Nominating Committee will instruct Headquarters to mail out a ballot which contains the 12 names obtained for the Adcom vancancies, plus those nominated by petition (maximum of 6). In addition, the ballot shall include provisions for write-in votes.

"The election of Adcom members shall be by a mail vote of the entire Society membership."

"The ballot shall include a call to the entire Society membership for recommendations for Adcom member nominations for future years. The ballots must be received by (to be defined)."

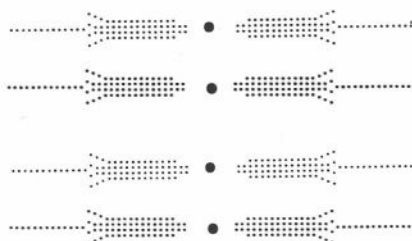
"The six candidates receiving the highest number of votes shall be elected Adcom members."

Each MTT-S member is encouraged to express his views regarding these proposed changes. Feel free to let any Adcom member know your views directly, either in writing or verbally. But please detach the form included in this issue for your convenience, fill it in and mail it so we can assess the overall Society wishes right away! The poll will clqse on January 31, 1979.

**I STRONGLY URGE EACH MTT-S MEMBER TO TAKE A FEW ADDITIONAL MINUTES TO READ THE MATERIAL BELOW, CONSIDER THE EFFECTS AND THEN:**

**VOTE!**

C. T. Rucker  
Bylaws and Procedures



**EXISTING BYLAWS**

**IEEE MICROWAVE THEORY AND TECHNIQUES SOCIETY SECTION I - NOMINATIONS, ELECTIONS AND APPOINTMENTS**

**A. NOMINATIONS**

**1. NOMINATIONS SUBCOMMITTEE**

On or before February 1 of each year, the President of the Administrative Committee shall ascertain that a Nominations Subcommittee has been appointed in accordance with Section IIIA of these Bylaws, which shall consist of a Chairman and four or more members of the Society not more than half of whom may be members of the Administrative Committee.

**2. MEMBERSHIP NOMINATIONS**

Each year, before the annual meeting of the Administrative Committee, the Nominations Subcommittee shall select a slate of at least two members of the Society for each vacancy in the elected membership which will occur on the Administrative Committee on the following JANUARY 1; shall ascertain that they will accept the nomination; and shall transmit the names of the accepting nominees to the President of the Administrative Committee. In addition, the Chairman of the Nominations Subcommittee shall cause to be published and distributed to the entire Society membership a call for nominations. Nominations by petitions signed by 25 members of the Society will also be received by the Administrative Committee on or before the annual meeting. The Administrative Committee may make additional nominations.

The Nominations Subcommittee, in its nominations, and the Administrative Committee, in its elections, shall be guided in their selections by principles of efficiency, geographical, and organizational distribution.

**B. ELECTIONS**

**1. MEMBERSHIP**

The Administrative Committee shall hold an annual meeting each year during the month of September. At the annual meeting, the Administrative Committee shall hold elections to fill vacancies in the Administrative Committee to occur on the succeeding JANUARY 1. A plurality of all elected members of the Administrative Committee not presently eligible for re-election shall elect, provided these holdover members present constitute a quorum. The Administrative Committee may make contingent elections to be effective in case an elected member fails to accept the office, or a disapproval is received from Headquarters. The names of the elected members shall be transmitted to the Chairman of the Technical Activities Board. Unless disapproval of such elected members is received within 60 days of each transmittal, the elections shall become final.

Each eligible holdover member shall submit a ballot listing their choice for filling the six elective positions. The votes shall be counted by a teller's committee appointed by the President of the Administrative Committee, no member of which is either eligible to vote or a candidate for election. All votes shall carry equal weight. Any candidate receiving a plurality on the first ballot is elected. Additional ballots shall be held, listing as candidates those nominees who have not received a plurality of votes. Candidates who have received less than two votes may be removed from consideration by the teller's committee if sufficient candidates remain to fill the remaining vacancies. This process shall continue until all six vacancies are filled. In the event that two successive ballots do not result in the filling of a vacancy nor the reduction in the number of nominees under consideration, the holdover members of the Administrative Committee may elect to remove from the ballot candidates having the fewest number of votes on the previous ballot, and provided that all candidates having received that number of votes are removed from the ballot.



## GUEST EDITORIAL

BY A. CLAVIN

### ACCOUNTABILITY IN RESEARCH

A number of members of MTT have discussed with me recently the stifling effect they perceive with increasing Bureaucracy in R&D. In general, they see excessive, pervasive management and regulation a grave threat to the research processes. It is also my opinion that Bureaucracy will minimize creative activities and innovation in the long run. "Parkinson's law" has not yet been repeated and indicates that Bureaucracy tends to lose sight of what the real objective is and is concerned only in its own management and control function. For example Bureaucrats would have us show explicit relevance and complete planning in our innovative processes. One item the Bureaucrats don't worry about is insuring the innovator time to think.

In this regard Rothwarf and Tauber (Physics Today, August 1, 1977) propose a managerial uncertainty principle

$$\Delta A \cdot \Delta C = K$$

where  $\Delta A$  is the uncertainty in accountability,  $A$ ,  $\Delta C$  the uncertainty in creativity  $C$ , and  $K$  is a large constant related perhaps, to the number of hours in a working day. If Bureaucratic management insists on a high degree of accountability from scientists there will be a corresponding large uncertainty in creativity/productivity with rather mediocre or mundane results.

Scientists must be free to interconnect things in a no-holds barred atmosphere. Thus they can gain new insights and ideas with many possibilities. When they are regimented they become bored and uninventive.

When time to play with ideas is eliminated from the working day by requirements imposed by accountability, I believe that we undergo a deterioration with a corresponding uncertainty in creativity. Our leaders should be aware of these penalties and use moderation in employing "management by objective" principles.

A. CLAVIN  
HUGHES AIRCRAFT CO.  
ADVANCED MISSILE SYSTEMS DIVISION  
CANOGA PARK, CA



## CHAPTER ACTIVITIES

BY R. A. SPARKS

The Symposium in Ottawa proved to be another very busy occasion. Between ADCOM business, day and evening technical sessions, exhibits and the annual banquet there was little time left to see the city.

The dinner and meeting for Chapter Chairmen on Monday evening was well attended again this year with thirteen officers or their representatives present. Short reports on Chapter activities were given and a number of subjects discussed including the important topic of MTT-S membership. Mark Lucas, IEEE Staff Secretary on Membership Development addressed the group and described the current plans of his office in promoting new members and upgrading old members.

The new Information Center placards will be made available to all Chapters requesting them for use at their meetings. All Chapter Chairmen should have received notices to this effect by now. ADCOM has approved a motion to pay the costs associated with these units. The Information Center is a large 2' by 3' display containing pockets for various printed materials information booklets, bulletins and membership application forms. Requests for the Information Center and display materials can be made directly to

IEEE Membership Development  
345 East 47th Street  
New York, New York 10017



### KIYO TOMIYASU WINS GE STEINMENTZ AWARD

Dr. Kiyō Tomiyasu, who is a honorary life member of the MTT-S and an active participant in the MTT-S, received the General Electric Company Steinmantz Award. The award is for recognition of distinguished technical achievement. Accompanying the award is a GE grant of \$5000 in the winners name to the college or university of the winners choice for the furtherance of education in engineering or science.

Dr. Tomiyasu will earmark the \$5000 donation in his name for the California Institute of Technology in Pasadena, where he earned his BSEE. He also holds a M.S. degree from Columbia and a PhD in Applied Science from Harvard. Since 1955 Dr. Tomiyasu has been with GE. He is a Fellow of IEEE and a member of APS.

Congratulations!

# REPORT OF THE DIRECTOR, DIVISION IV

NUMBER 5, MAY 28, 1978

BY DICK DAMON

At the recent series of meetings in Boston of the IEEE major Boards, much of my own time was devoted to presentations and discussions of the report by the ad hoc Committee on Registration, of which I am Chairman. I participated in discussions on registration at USAB on Thursday, May 18, TAB OpCom on Friday, RAB and TAB on Saturday, the Executive Committee on Saturday evening, and the Board of Directors on Monday and Tuesday. The outcome of these discussions was that the Executive Committee and Board of Directors recommended that the ad hoc Committee continue its work, that it prepare reports on various options with a basis for each option, and that these options be presented to the members at a later date. The Committee plans to meet on June 7 to continue its work under these guidelines.

The TAB OpCom and TAB meetings on May 19-20 included the following discussions and actions:

- Additional staff support for G/S will be considered by an ad hoc committee. Power Engineering and Computer Societies each support a sizable staff, both at IEEE Headquarters and elsewhere. These are, of course, the two largest Societies, each constituting a Division by itself, and are better able to afford such staff. It will be determined whether other G/S want such services, which could assist with conferences, publications, member promotion, etc. and whether there are suitable means to share in the funding of such services. Since this issue has been previously raised to me by Division IV AdComs, I intend to be involved in the committee discussions and will welcome your suggestions.
  - The IEEE Board of Directors will be requested to assign complete administrative responsibility for the IEEE Field Awards Program to the Technical Activities Board. This action follows considerable work by the TAB Awards and Recognition Committee and a lengthy review of their recommendations by TAB. Basically, their proposal is to have each G/S/C responsible for its own G/S/C Awards and for one or more Field Awards, so as to establish a clear hierarchy of awards. TAB approved the principle but not the detailed proposal and will undoubtedly reconsider the issue at a later meeting.
  - Approved the establishment of a new IEEE Transactions on Pattern Analysis and Machine Intelligence,
- Discussed a broadened charter for COMAR to include ionizing radiation, ultrasonic radiation and other related topics in addition to radio frequency and microwave radiation. COMAR will discuss the issue at its next meeting on June 26 in Ottawa. Interested parties should make their views known and/or provide volunteer support by getting in touch with the COMAR Chairman, Dr. Donald Justeson.
  - Discussed and finally disapproved a proposed policy on the development of IEEE Position Papers, but established an ad hoc Committee to work with other Boards in developing a viable procedure.
  - Discussed plans for the IEEE 1978 TAB/USAB Conference on United States Technological Policy. This conference, similar to one held in 1977, will meet in Washington, D.C. on September 19-21. A tentative program was subsequently prepared by the Conference Program Committee, of which I am a member.

The Audit Committee met on Sunday, May 21. One important topic was a review of the comments and suggestions by the auditors, Coopers and Lybrand, on IEEE administrative procedures and electronic data processing. In a closely related area, we reviewed the procedures for entering new members onto the IEEE mailing lists and for delivering publications to these members. This review is in response to concerns expressed by several RAB and TAB members. Some recommendations have been made which should help to get publications to new members more quickly. If anyone has specific concerns with new member enrollment, accuracy of mailing lists, etc., with sufficient documentation so that weaknesses in administration can be pinpointed, I will be pleased to take this information before the Audit Committee.

As a final topic, I note that the Nominations and Appointments Committee met on Wednesday, May 24. At this first meeting, committee chairmen were reviewed and we began to develop lists of potential committee members and IEEE officers to be recommended to the Annual Assembly and the Board of Directors. The next meeting of the N&A Committee will be held on July 28. I will welcome volunteers or recommendations for qualified members who are capable and willing to serve in any way.

## IEEE NEWS

New York, August —: Dr. Ivan A. Getting, President of the Institute of Electrical and Electronics Engineers, Inc., IEEE, today asked the chief executives of firms employing electrical engineers for a joint effort in attacking problems affecting the mid-career opportunities of these individuals.

In his personal letter, Dr. Getting suggested that such a cooperative enterprise would enhance the careers of established electrical engineers through positive professional development practices, and result in decreased concerns about job insecurity.

He also spoke of the positive side of such an effort which would make a career in electrical engineering a satisfying experience for the individual with appropriate rewards to the employed engineer, the employer, and the general public.

He asked the business leaders to "share with us any innovative techniques or programs utilized by your organization."

The text of the complete letter follows.

This letter is being sent to you and other executives of U.S. companies that employ electrical engineers in substantial numbers. My purpose, as President of the IEEE, is to enlist your cooperation in an effort to address a problem which is endemic to our profession. The problem, very simply, is employment insecurity — particularly at mid-career. A concomitant problem is pension forfeiture, which adds insecurity to the retirement years.

The problem is one of compelling social importance, which manifests itself in personal tragedy for those who are its victims. Just a few years ago, when engineering layoffs were at their height, the obvious employment insecurity created disillusionment and disenchantment within the profession, with the result that talented young students were turned away by the spectre of truncated careers. Even today, when young engineers are being recruited vigorously and are being offered high entry salaries, the older engineers feel no less insecure and see, in the present clamor for new blood, the seeds of another cycle of mid-career layoffs.

To industry, the problems results in reduced supplies of the best young talent and in the denial of the potential contributions of experienced, mature professionals. To society, which looks to the profession and to technical industry for solutions to many of the great social ills, employment insecurity manifests itself in a diminished national capacity to confront challenges and to sustain U.S. technological preeminence among the nations of the world.

The problem has many ingredients and, surely, they include economic forces and matters of public policy over which the individual employer, to say nothing of his employees, has little control. But it includes, as well, hiring, firing and professional development practices over which the employer does exercise control. It sometimes includes age discrimination which, though not explicit in company policy, may nevertheless be ingrained in practice.

The IEEE, with its 150,000 U.S. members, is committed to deal with this problem as effectively as possible. I recognize, however, that to make progress IEEE needs the cooperation of a concerned industry.

IEEE solicits your participation in this effort. We invite your initiatives and ask that you share with us any innovative techniques or programs utilized by your organization which address one or more aspects of the problem of employment insecurity amongst career-dedicated electrical engineers.

Sincerely yours,

Ivan A. Getting, President  
Institute of Electrical and Electronic  
Engineers, Inc.

August 17, 1978

## History of MTT

BY T. SAAD

ADCOM VI July 1, 1957 through June 30, 1958

Administrative Committee:

W. L. Pritchard, Chairman  
T. S. Saad, Vice-Chairman  
R. D. Wengenroth/P. D. Strum, Secretary-Treasurer

T. N. Anderson	A. A. Oliner
R. E. Beam	S. D. Robertson
A. C. Beck	R. F. Schwartz
A. G. Clavier	George Sinclair
S. B. Cohn	G. C. Southworth
C. W. Curtis	Kiyo Tomiyasu
H. F. Engelmann	Ernest Wantuch
Henry Magnuski	H. A. Wheeler
W. W. Mumford	

The Chairman of the sixth Adcom was Bill Pritchard, the Vice-Chairman was Ted Saad and Pete Strum eventually became the Secretary-Treasurer. Kiyo Tomiyasu continued  
(Continued on page 7)



# FROM THE NATIONAL LECTURER'S DESK

BY CHARLES LIECHTI

If you want to hear WHAT'S NEW IN MICROWAVE FET'S and also want to know WHAT'S NEXT, then come to one of the sixteen lectures that are going to be presented nation-wide. R&D for GaAs FET's and IC's is heating up, and there are many exciting developments underway in the U.S., Europe and Japan.

Everyone interested in this subject is welcome to attend. A special invitation is also extended to members of the Electron Devices and Solid-State Circuits Groups.

The lecture will be given in various locations throughout the country in accordance with the following schedule.

TABLE I  
"MICROWAVE FET'S - WHAT'S NEXT?"  
TENTATIVE LECTURE SCHEDULE

DATE	CITY	LECTURE HOST (Company)	TELEPHONE
Mo, 4 Sep 78	Paris, France	European Microwave Conference	
Th, 19 Oct 78	Palo Alto, CA	Ferdo Ivanek (Farinon)	415-592-4120, Ext. 129
Tu, 2 Jan 79	Tampa, FL	Patrick E. Crane (Sperry)	813-855-4471
We, 3 Jan 79	Atlanta, GA	C. Pat Burns (Georgia Tech)	404-894-3550
Th, 4 Jan 79	Washington, DC	James Douglas (TASC)	703-790-1566
Mo, 8 Jan 79	Baltimore, MD	Michael Gawlowski (Westinghouse)	301-765-7337
Tu, 9 Jan 79	Farmingdale, LI, NY	Nick Worontzoff (AIL)	516-595-4433
Th, 11 Jan 79	West Long Branch, NJ	Albert Kerecman (ECOM)	201-544-2152
Mo, 15 Jan 79	Syracuse, NY	John Luzwick (Syracuse Univ)	315-423-4446
Tu, 16 Jan 79	Boston, MA	Madhu S. Gupta (MIT)	617-253-5628
Tu, 13 Feb 79	Philadelphia, PA	William T. Whistler (GE)	215-962-4465
Tu, 20 Feb 79	Houston, TX	William L. Wilson, Jr. (Rice Univ)	713-527-8101, Ext. 3585
We, 21 Feb 79	Dallas, TX	James R. Griffin (TI)	214-238-5977
Th, 22 Feb 79	St. Louis, MO	Arnold Seifer (Emerson)	314-553-3306
Tu, 20 Mar 79	Phoenix, AZ	Jess Cochran (Sperry)	602-866-0400, Ext. 335
We, 21 Mar 79	San Diego, CA	Dave Munger (NOSC)	714-225-7096
Th, 22 Mar 79	Los Angeles, CA	H. John Kuno (Hughes)	213-534-2121, Ext. 2407

This schedule is subject to minor changes.



## History of MTT (Continued)

as editor of the Transactions and Bob Wengenroth remained Newsletter editor.

The annual meeting held during the term of the previous Adcom was such a success, a group in San Francisco reporting through Kiyo Tomiyasu indicated a strong desire to hold an annual meeting at Stanford University. They had already obtained the approval of the San Francisco section. It was intended that the meeting would be a broad one, covering all the subjects in the field of PGMTT. The Adcom approved the proposal and the meeting was scheduled for the San Francisco area for May 5, 6, and 7, 1958. Because the last two meetings had been on ferrites, it was suggested and agreed that the remainder of the interests of PGMTT should be emphasized although ferrite papers would not be discriminated against. The Chairman of that first bona fide national Symposium was Dr. A. L. Aden, and Kiyo Tomiyasu was made the Chairman of the Technical Program Committee.

# CALL FOR PAPERS SPECIALTY CONFERENCE ON GIGABIT LOGIC FOR MICROWAVE SYSTEMS

Orlando, Florida 3, 4 May 1979

The first speciality conference on gigabit logic for microwave systems will be held in conjunction with the 1979 MTT-S International Microwave Symposium (30 Apr-2 May).

Papers are solicited describing original work in the field of gigabit logic devices and their applications to microwave systems and measurements. The following categories of subject matter are especially solicited:

### Gigabit Logic Devices

- Silicon based technology
- Gallium Arsenide based technology
- Josephson junction based technology
- Cold FET (77°K) logic
- Misc. logic & digital techniques

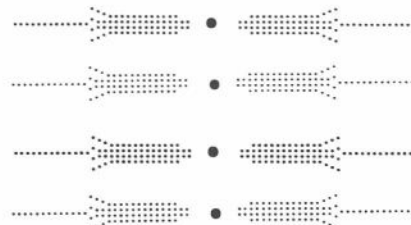
### Gigabit Logic Applications

- Signal processing
- Microwave systems
- Measurements
- Phased arrays
- A/D converters

Authors are requested to submit both a 35 word abstract and a 500 word summary (with illustrations) which clearly explains their contribution, its originality, and relative importance. Abstracts and summaries (5 copies) must be received (with cover letter) on or before 1 December 1978:

**Max Yoder**  
**ONR-427Y**  
**Arlington, VA 22217**

Notices of acceptance or rejection will be mailed to authors by 20 January 1979. Summaries of accepted papers will be reproduced and distributed at the conference together with those of invited papers. Selected papers will be considered for publication in a special issue of MTT Transactions.





# 1979 IEEE/MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM



Orlando, Florida April 30 - May 2, 1979

**STEERING COMMITTEE**  
R.E. Henning, Chairman  
College of Engineering  
University of South Florida  
Tampa, Florida 33620  
(813) 974-2287

**TECHNICAL PROGRAM**  
J.L. Allen, Chairman  
College of Engineering  
University of South Florida  
Tampa, Florida 33620  
(813) 974-2581

J.C. Wiltse, Co-Chairman  
Engineering Experiment Station  
Georgia Institute of Technology  
Atlanta, Georgia 30332  
(404) 894-3494

**FINANCE**  
R.H. Tate, Chairman  
Hewlett Packard Company  
P.O. Box 13910  
Orlando, Florida 32809  
(305) 859-2900

**PUBLICITY**  
W.E. Clausen, Chairman  
Sperry Microwave Electronics  
P.O. Box 4648  
Clearwater, Florida 33518

**LOCAL ARRANGEMENTS,  
REGISTRATION AND  
HOSPITALITY**  
J. Pullara, Chairman  
Martin-Marietta Aerospace  
P.O. Box 5837  
Orlando, Florida 32805  
(305) 352-4516

**DIGEST PUBLICATIONS**  
J.E. Tracy, Chairman  
Martin Marietta Aerospace  
Orlando, Florida 32805  
(305) 352-4448

**EXHIBITS LIAISON**  
H. Ellowitz  
Horizon House  
610 Washington Street  
Dedham, Massachusetts 02026  
(617) 326-8220

## FIRST CALL FOR PAPERS

The 1979 IEEE MTT-S International Microwave Symposium will be held at the Sheraton-Twin Towers Hotel, Orlando, Florida. The symposium theme is "The World of Microwaves" emphasizing the ever-increasing role of microwaves in today's world.

Papers are solicited describing original work in the field of microwaves. Material submitted should not have been previously presented or published. Although any papers concerned with microwave techniques, devices, systems and applications will be considered, the following subject areas are regarded as particularly appropriate for this conference.

- Computer Aided Design and Measurement Techniques
- Microwave and Millimeter Wave Solid State Devices
- Microwave and Millimeter Wave Integrated Circuits
- Low Noise Techniques
- Microwave Passive Components and Networks
- Microwave Ferrite Devices
- High Power Techniques
- Radiometry and Remote Sensing Systems and Applications
- Satellite Communication/Microwave Systems
- Submillimeter Wave Techniques and Devices
- Integrated Optics, Fiber Optics and Optical Techniques
- Microwave Acoustics
- Microwave Field and Network Theory
- Microwaves in Medicine
- Technology Forecasting and New Ideas

Authors are requested to submit both a 35 word abstract and a 500-1000 word summary (up to 6 illustrations), clearly explaining their contribution, its originality, and its relative importance. Abstracts and summaries (5 copies) must be received on or before **December 1, 1978** by:

Dr. James L. Allen  
TPC 1979 MTT-S Symposium  
Electrical and Electronic Systems  
University of South Florida  
Tampa, Florida 33620 USA

Notices of acceptance or rejection will be mailed to authors by January 20, 1979. At that time authors of accepted papers will receive forms and instructions for preparing material to be printed in the Symposium Digest.



## BOOK REVIEW

BY J. B. HORTON

*Digital Communications by Satellite*, Spilker, J. J., Prentice Hall, Inc., Englewood Cliffs, N.J., 1977, 664 pp., \$38.00.

The basic objective of this book, as stated by the author, is to present an up-to-date version of digital communications in a context useful to the designer, analyst and user. Specific objectives cited by the author are:

1. To describe the basic principles and performance of synchronous satellite relays, orbits, propagation, transponders and multiple access techniques.
2. To provide a general review of digital communications in its broadest sense ——— - - - - -
3. To provide a mathematical analysis of the principles and performance of each element of a real digital communications system.

In addition to meeting the above objectives, the author has attempted to provide a single book which summarizes present-day digital communications systems for the student and communications engineer.

It should be emphasized that this is a communications book in the strictest sense. The author assumes that the reader has had basic courses in random processes and communication theory. In fact, much of the material was used as notes for a graduate communications course at Stanford University.

The author introduces the book with a brief history of satellite communications, a discussion on the advantages of digital communications, and a general description of a digital communications system. The text is then presented in four parts.

Part I, Signal Quantizing and Multiplexing, covers sampling of nonband-limited signals, quantizing by pulse code modulation (PCM), delta modulation and differential PCM, and time division multiplexing. These are basic communications topics providing the theoretical base for digital communications.

Part II is devoted to Satellite Communications and covers the basic factors relating to synchronous satellite communications. Topics covered are satellite transponders, multiple-access earth terminals, frequency division multiple access (FDMA), system nonlinearities, and time division multiple access (TDMA) techniques. This part includes the

review of satellite orbit parameters, antenna coverage and atmospheric attenuation. The satellites discussed are the DSCS II, CTS, and Intelsat IV. Brief coverage is given the multibeam antenna (Dion and Ricardi) used on DSCS III and the AN/FSC-78 Satellite Communications earth terminal used with DSCS II.

Part III is concerned with Modulation and Coding In Distorted Channels. Topics in this section are coherent and differentially coherent transmission techniques, carrier-phase tracking and oscillator-phase noise, filter distortion effects on PSK signals, list synchronizers for digital communications, Viterbi decoding of convolution codes, and baseband data transmission. This section covers many of the distortions caused by noise, cochannel interference, filters, etc.

Part IV covers Worldwide Timing by Satellite Relay. Topics covered here are satellite timing concepts and delay-lock tracking of pseudonoise signals. This section covers the NAVSTAR (GPS) satellite system and how it relates to timing in digital communications systems.

To the MTT member, this book may not be very attractive unless his background goes deeply into communications theory, or he is currently a graduate student in communications. Part II will probably be the most interesting since it discusses current operating systems. Transponder design and the design aspects devoted to generating the digital output signals are treated lightly, but well enough for the reader to appreciate some of the problems. Most of the information is general, however, and would be insufficient to do system design.

The most disappointing aspect of the book is that the NASA Tracking and Data Relay Satellite System (TDRSS) is not mentioned. This system is probably most representative of a current digital communications system and will be important to many of the future applications of digital communications by satellite.

Digital Communications by Satellite will probably find its best use as a textbook for graduate students. A communications engineer, including satellite communications systems designers, would not find the book particularly valuable for in depth system design. For the MTT member who is not in the mainstream of digital communications system design, this book will be difficult to read, although I believe that he would find certain parts of the book interesting, e.g., Part II.

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# 1978 INTERNATIONAL MICROWAVE SYMPOSIUM

## 1978 MTT-S SYMPOSIUM REPORT

BY A. L. VANKOUGHNETT

Steering Committee Chairman

The 1978 MTT-S Symposium was held in Ottawa, Canada, June 27 – 30th. During the same week, the Con-

ference on Precision Electromagnetic Measurements (CPEM), the IMPI Microwave Power Symposium and the Symposium on Electromagnetic Fields in Biological Systems were also held in Ottawa. The latter meeting was jointly sponsored by MTT and IMPI. In addition, the annual MTT exhibit with participation of CPEM and IMPI was held in the conference hotel, the Chateau Laurier.



Approximately 1300 persons registered for the four conferences of which 700 were MTT registrants. More than 100 companies were represented in the 80 booths which comprised the exhibit. Four workshops which were associated with the MTT Symposium had an average attendance of 60 persons. The four symposia had a jointly organized social

program which attracted in excess of 300 participants.

The symposium organizing committee is pleased to have hosted the symposium and to have had the opportunity to introduce such a large number of people to Canada.

### SCENES FROM 1978 MTT-S SYMPOSIUM



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