



EDITOR: S. L. March

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

Number 101, Fall 1981



## 1981 IEEE/MTT-S International Microwave Symposium



## SYMPOSIUM REFLECTIONS

by Al Clavin

One sits back with sort of a washed out feeling and a pleasant smile on his face. Well, we pulled it off! This was my feeling the day after the 1981 MTT-S International Microwave Symposium ended. The Steering Committee had been planning this event for over five years. Those many meetings lasting endless hours. Discussions as to whether we should have the Symposium at the Ambassador Hotel or move to the Bonaventure. How are we ever going to coordinate with APS and URSI? How many would come? Our advance programs were late. Would the digest arrive at the hotel on time? Well, it all came together and the Steering Committee is tired and happy.

### Counting the house

Not only did the people come to the Symposium, we broke all the records for any similar Symposium. The total registration including APS and URSI was 2,050. Of this the MTT-S total was 1,502. Of this total, 207 registered for one day only. Workshop registration was 448, broken down as follows: ARFTG, 177; Computer Aided Design, 88; Power GaAs FETs, 183. The Awards Banquet was attended by 504 people. Registrants for the exhibits only totaled 1,000. Together with exhibitors who did not register, we estimate there were 4,000 antenna and microwave-oriented people at the Symposium.

## The Technical Conference

The members of the Technical Program Committee selected 160 excellent papers out of the 258 submitted. These papers were presented in four parallel sessions covering a span of 3½ days. Papers were presented in 24 technical sessions and a joint MTT-S/AP-S plenary session, which was held Wednesday morning. I estimate that over 1,000 people attended the plenary session. The sessions which had the highest attendance were FET Applications, Millimeter Wave Integrated Circuits, and GaAs Monolithic Circuits.

Panel sessions were held Monday and Wednesday evenings. The attendance was also high for these panel sessions, which included the following topics:

"Microwave Devices Technology Transfer from Research and Development to Manufacturing"

"State of the Art in Millimeter/Sub-Millimeter Wave Receivers"

"Manpower Problems in Microwave and Antenna Engineering"

"Impact of GaAs ICs on Microwave Systems"  
Workshops were held Thursday and Friday on the following topics:

Workshop on "Automatic Radio Frequency Measurements"

Workshop on "Advanced Computer-Aided Design Techniques for the 1980s"

Workshop on "Power GaAs FETs"

(continued on page 4)



## PRESIDENTS MESSAGE

by Fred J. Rosenbaum

### *Some Personal Reflections on the Microwave Symposium*

The 1981 IEEE MTT-S International Microwave Symposium is now history, joining the ranks of great Symposia past. The Los Angeles meeting had a strong impact on me since this year I attended as President of our organization. Viewed objectively, the Symposium represents the power, the prestige and the professionalism not only of the MTT-S but of the microwave industry at large. I received many fine compliments on the level of sophistication of the Symposium and on the exhibits and their management. I am particularly indebted to Al Clavin, Symposium Steering Committee Chairman, Don Parker, Technical Program Committee Chairman, and Chuck Swift, Local Arrangement Chairman, for the outstanding event that they put on for us. The time and effort put forth by them and the many volunteer members of the Steering Committee showed in the smooth functioning of the Symposium and the various events surrounding it. We, the Society, benefit from their collective efforts, while they alone suffer the hard work and anxiety that go with producing the Symposium.

I recall the first Symposium I attended; Detroit 1968. There were 45 papers presented over 3 days and the only parallel sessions were 2 informal panels held one evening. The meeting seemed rather intimate and friendly, to me, a relative newcomer to the field. I remember meeting Leo Young for the first time and having the feeling that an interest in microwaves was all one needed to be welcomed into the fellowship.

That sense of openness, warmth, and fraternity has stuck with me, and has grown over the years of my association with MTT-S. There is a bond between MTT-S members. One can pick up the phone and call someone you know only through the literature and ask for information, or discuss a common problem. One can explain this connection logically, in terms of common interest and experiences. However, I believe it goes deeper than that. There is idealism involved. We are working in a difficult technical area, and what one learns helps another. We are not in microwaves for ourselves alone. Otherwise how can you explain the sense of anticipation you get when you prepare to go to the Symposium? How else can you understand why busy people will volunteer to run the Symposium, to review for the Transactions, to take responsibility for the Society's welfare, through AdCom. As President I have seen how hard people work on behalf of the membership and I can only accept it with astonishment.

So, this year's Symposium was a great one, and next year's will be another great one, and so on so long as we continue to recognize that under the power and the prestige and the professionalism lies that one more important base of idealism that makes it all worthwhile.

## IN MEMORIAM

Fay L. Young died unexpectedly in Bethesda, Md., on May 14 at the age of 56. Although not an IEEE member, she gave much of her time to Institute matters.

Long concerned about pension law inequities in the U.S., Mrs. Young coauthored a book, *Everything You Should Know About Pension Plans*, with her husband, long-time IEEE volunteer officer and 1980 IEEE President Leo Young. Subsequently, she became an active member of the IEEE's Pensions Task Force.

Beginning in February 1978, Mrs. Young contributed the first in a series of columns on pensions to THE INSTITUTE. Responding to questions from readers, these columns proved highly popular with IEEE members and appeared on an almost bimonthly basis for three years.

In addition, Mrs. Young personally answered hundreds of questions on pensions mailed directly to her by members. She also testified on pension matters in Congress, before both the House of Ways and Means Committee and the President's Commission on Pension Policy.

Born in Sunderland, England, as Fay Merskey, Mrs. Young was educated at Newcastle and London Universities, earning a master's degree in psychology. She worked as a teacher and school psychologist in England, Israel, and the U.S. She became a U.S. citizen in 1958.

*Reprinted from The Institute, Volume 5, Number 7, July 1981*

## PENSION REFORM

A number of bills have been introduced in Congress which would increase the availability of individual retirement account (IRA) use by mobile professions like engineering. The Senate Finance Subcommittee on Savings, Pensions and Investment Policy recently held hearings on two such bills. One, introduced by Sen. Roobert Dole (R-KS), would permit an individual to make a tax-deductible contribution of up to \$1000 to an IRA even if the individual is covered by an employer-sponsored retirement plan. Another bill, introduced by Sen. John Chafee (R-RI), would increase allowable IRA contribution levels, permitting tax-deductible contributions of up to \$2000 a year and non-deductible contributions of up to \$8000. Contact the subcommittee at 2227 Dirksen Senate Office Building, Washington, DC 20510; (202) 224-4515.

*Reprinted from IEEE Impact, Vol. V, No. 3, June 1981.*





## ADCOM HIGHLIGHTS

by R.A. Sparks

The June MTT-S International Microwave Symposium found the MTT-S ADCOM back in session at the Los Angeles Bonaventure early Sunday morning on June 14th. The long agenda was to carry the meeting through the day with final adjournment occurring shortly after 5 P.M.

### Action Items

A committee chaired by Barry Spielman reported on its efforts to coordinate the activities of the Electron Devices Society and Microwave Theory and Techniques Society in the area of monolithic circuits and high speed GaAs integrated circuits. A proposal submitted by the committee was endorsed by the ADCOM that includes recommendations for:

- twice the annual conference activity in this general field of interest
- MTT-S cooperating sponsorship together with ED-S
- coordination of publications for IEEE archival records
- joint MTT-S/ED-S membership on Steering and Technical Program Committees

The Wednesday panel session on System Use of GaAs Integrated Circuits was a result of the committee's activity this year with a workshop or a one-day symposium planned for subsequent years. The GaAs IC Symposium that is scheduled for the Fall of each year will comprise the other meeting date. This technology area is expected to have a major impact on future microwave system design and it will be important for all microwave engineers to remain abreast of new developments.

The ADCOM reviewed a proposal presented by George Oltman whereby ARFTG (Automatic Radio Frequency Techniques Group) would affiliate with the MTT-S and become a Technical Committee. Members of the ADCOM met with the ARFTG Executive Committee later in the week and the details necessary to finalize the affiliation should be complete by the end of the year.

An important item which could affect all future Microwave Symposia was discussed next. It concerned the participation and utilization of professional consultants by local Steering Committees. There are definite advantages and some disadvantages that are perceived by members of ADCOM in their use. The growth in size of the Symposium in recent years, largely due to the increasing participation of exhibitors, has had a major impact on many aspects of Symposium

management and organization. Harlan Howe, Chairman of the Meetings and Symposia Committee, was assigned the task of exploring this matter further and arranging a presentation at a future ADCOM meeting.

The sum of \$1,000 was approved as a contribution from MTT-S to the Center for the History of Electrical Engineering and a similar amount was donated to the Energy for the 80's Foundation.

Reports on the February and June Technical Activities Board (TAB) meeting were presented and are summarized elsewhere in this issue.

### Financial

The Finance Report given by Jim Degenford indicated that MTT-S is healthier, financially, than it has ever been. MTT-S has a current net worth in excess of \$400K. Adding to this the projected surplus from the 1981 MTT-S Symposia and interest income for the remainder of the year a balance of half a million dollars by 1 January 1982 is projected.

What to do with these funds has become a major concern of the ADCOM. Student awards, scholarships, grants to universities and rebates to Society members were suggested as constructive ways to spend the surplus. President Fred Rosenbaum has been tasked to chair the Adhoc Committee to investigate the use of these funds. As an initial step, he plans to have the ADCOM meet one or two extra days in October, after its next regularly scheduled meeting, to discuss the matter further. Task groups have been formed to investigate specific suggestions. We would especially like to get input from MTT-S members and Chapter officers regarding their ideas on the constructive use of these surplus funds. Write to Fred Rosenbaum, me or any other member of ADCOM.

### Long Range Planning

In a report on Long Range Planning, I introduced the issue of teleconferencing which is a current subject of study by the IEEE Technical Activities Board (TAB). Two-way video conferencing via satellite or microwave relay system will be commercially available at reasonable cost in the very near future by several suppliers. Cost of travel, on the other hand, promises to get increasingly more expensive. It has been proposed that MTT-S conduct an experiment in the next year whereby the National Lecture on "Microwave Communications" be offered to selected Chapters via current teleconferencing services. This proposal will be explored further with ADCOM and Chapter Chairmen over the next six months. Any one having thoughts or comments on teleconferencing and how it might benefit IEEE members, please feel free to write or call me at any time.

At the suggestion of TAB, all society ADCOMS have been asked to evaluate the need for and/or the desirability of establishing an Education Committee within each organization to coordinate with the Educational Activities Board, EAB. Bob Hicks and I have been asked by the MTT-S ADCOM to develop recommendations in this regard and, again, are open to suggestions from any member. Continuing education, whether formal or informal, is an essential ingredient to a successful engineering career.





## SYMPOSIUM REFLECTIONS (cont.)

**The Awards Banquet**

The Awards Banquet was held on Tuesday evening and there was to be a pool-side cocktail party preceeding the banquet. On Tuesday afternoon, the temperature outside was 104°. Since we felt that it would be too uncomfortable outside, we asked the hotel to make arrangements to move the cocktail party inside. Within two hours the arrangements were complete and the entire third floor foyer was used for the cocktail party. What could have been a disaster turned into a very enjoyable social gathering.

In preparing for the banquet, Chuck Swift, our Arrangements Chairman, woke his family up at 3 a.m. to go to the flower market. They obtained some beautiful gloxinias for table decorations. As to the food, again the hotel looked good — and serve us a prime rib roast beef feast for our banquet. We ate while being serenaded by a mariachi band. The meal was topped off with the "March of the Pinguins." Fifty flaming baked Alaskas were carried into the dimly lit room, a most unusual ceremony. The penguins were enthusiastically greeted by long lasting applause.

The serious business of the evening was carried out with appropriate formality by Dr. Fred Rosenabum, the Adcom Chairman. He presented the Microwave Career Award to Dr. Kiyo Tomisayu, the Microwave Applications Award to Dr. Julius Lange, and the Microwave Prize to Dr. Hatsuaki Fukui. Dr. Stephen Adam received the Past President's pin and a certificate elevating him to Fellow of the IEEE. Steve's fellow award was presented by Dr. Allen Schell, Division IV Director. Distinguished service awards were given to Larry Whicker and Hal Shrank for their long and distinguished service to MTT-S. Certificate of Recognition were presented to Larry Whicker, Richard Van Waggoner, Ken Button, Steve Temple and Glen Thoren. Dr. Robert Pucel, 1980-81 National Lecturer, received a beautiful plaque for his many talks to MTT-S Chapters.

The Awards Presentations were followed by a most interesting talk by Dr. Irving Bengelsdorf on how the brain works, "Snakeroot, Tremors and Mental Illness." Later in the evening we were entertained by a young versatile group called The Brothers McDougale, who sang everything from rock and roll to barber shop quartet numbers.

**The Exhibition**

Howard Ellowitz and the staff from Horizon House did an outstanding job arranging the exhibition. Approximately 155 booths were sold. My personal observations were that the booths themselves were of fine quality and they were staffed by qualified technical people who could answer detailed questions about their products and services. I heard many comments regarding the excellent interaction between exhibitors and conference attendees. The exhibitors must also have been pleased, because Howard has reported that nearly all of the exhibitors signed up again for next year's MTT-S Symposium in Dallas.

**Acknowledgements**

A Symposium of this magnitude is put together by a large number of volunteer workers. Each member of the Steering Committee worked long, hard hours to insure the success which we had in Los Angeles. It is hard to single out any one individual for praise. However, I'm

sure that all my committee members will acknowledge the special efforts of Chuck Swift, Chairman of the Arrangements Committee.

I appreciate the cooperation offered by Bob Elliott, Chairman of AP-S/URSI. I certainly must compliment the Bonaventure Hotel staff who seemed to make everything come together properly for us during the week. Thanks to Susan Cisco for beautiful photographs which were used for posters and for the cover on Jorg Raue's Symposium Digest. Also I appreciate the many complimentary letters and kind remarks I received following the Symposium. These are the things that make it all worthwhile.

**TAB HIGHLIGHTS**

by R.A. Sparks

Two Technical Activities Board (TAB) meetings have been held in 1981. What follows is a summary of both meetings.

FEBRUARY 11 - 13, 1981

The IEEE Technical Activities Board meetings of 11 - 13 February were attended by the Vice President of the Microwave Theory and Techniques Society. Some of the important activities included:

- TAB discussed the proposed new TAB Division composition which recommends changing the TAB Division structure from seven to ten Divisions and realigns the divisional assignment of the Societies. The issue will be referred through the Board of Directors to the IEEE Long Range Planning Committee.
- An Energy for the 80's Foundation was established. Funds for establishing the Foundation will be solicited from all IEEE Societies and an additional \$75,000 outside of IEEE.
- TAB members were advised that eight openings might soon exist on the National Science Foundation (NSF) Board and were urged to submit the names of potential candidates to the TAB Search Committee.
- TAB members were advised that the Executive Committee of the IEEE approved the formation of an IEEE Society on Social Implications of Technology subject to submission of its Constitution and clarification of its field of interest.
- An adhoc committee was established to investigate the current state of development of systems for teleconferencing and to report on the potential use of such systems in the IEEE.

(continued on page 5)



# SCHEDULING THE 1981-82 MTT-S NATIONAL LECTURE

*by Ferdo Ivanek*

The announcement containing an outline of the lecture, Microwave Communication Technology, has been published in the MTT-S Newsletter, Number 99, Winter 1981, pp. 1 and 8.

So far, I have received scheduling requests by correspondence from Gary Vance, Chairman, MTT/APS, San Diego; Alexander C. Brown, Jr., Chairman, AP/ED/MTT, Phoenix; Mahesh Kumar, Chairman, MTT/ED, Princeton; Jerry Hausner, Chairman, MTT, Long Island; and verbal requests by Jim Crescenzi, Vice-Chairman, MTT, Santa Clara Valley; and Peter Staecker, Chairman, MTT, Boston. I would like to thank all of them for their early initiative and expressions of interest.

I expect to be able to start scheduling the lectures very soon. However, I can already provide preliminary information that could be helpful. My business travel commitments make it impossible to schedule any lecture during September and October. For November and December, I would prefer to schedule my lectures in conjunction with the National Telecommunications Conference to be held in New Orleans from November 29 to December 3. This suggests a choice between the weeks of November 23 and December 7, and a preferred grouping of lectures in the Southeast.

I shall keep collecting inputs for my lecture in order to continuously improve the presentation and build a better basis for the required publication in the MTT Transactions. For this purpose, I shall appreciate it if the meeting organizers would suggest appropriate visits to local companies and/or universities with activity in microwave communication technology.

It is indeed a challenge to prepare for the next one in the long succession of excellent MTT National Lectures presented by leading experts in their fields. My theme calls primarily for a balanced compilation of selected information, which makes it a sort of collective effort. In this sense I invite not only factual inputs but also any suggestions that could help me in the preparation of the lecture.

I can be reached at:

Dr. Ferdo Ivanek  
Harris Corporation  
Farinon Electric Operation  
1691 Bayport Avenue  
San Carlos, CA 94070  
(415) 595-8732, Ext. 229

## TAB HIGHLIGHTS (cont.)

JUNE 4 - 5, 1981

The TAB meeting of 4 - 5 June was attended by MTT-S President Fred Rosenbaum and MTT-S Vice President Richard Sparks. TAB activities and decisions included:

- An IEEE position paper on "Human Exposure to Microwaves and Radio Frequency EM Fields" was presented. Some of the information seemed controversial and, hence, it was tabled until the next meeting on 21 August.
- Fees for the 34,000 student members of IEEE were increased to \$5.00.
- A Technical Achievement Award sponsored by TAB was established. This will allow EMC Society as well as other smaller Societies to get an IEEE award since heretofore the major field awards were in areas which the highly specialized Societies did not work.
- A revised pre-college guidance booklet was distributed for comment. The booklet introduces the high schooler to careers in electrical, electronics, and computer engineering fields.
- An IEEE energy briefing package draft is being pulled together for use at meetings open to the general public. It presents a balanced view of all sources of energy, based on authoritative data. It is a slide show with script and a list of answers to most asked questions. Contact H. U. Brown at IBM, 1133 West Chester Ave., White Plains, NY 10604 for details.





## CHAPTER ACTIVITIES

by H.J. Kuno

In conjunction with the 1981 IEEE MTT-S Microwave Symposium in Los Angeles in June, the Annual Chapter Chairmen's Meeting was held. It was well attended and lively discussions on various subjects were held (see the meeting report by F. Bernues). Many Chapters have had a very active year. Their meetings will be summarized in the next MTT-S Newsletter.

In addition to the regular meetings, a number of Chapters held workshops and lecture series for Chapter members. Judging from the attendance and feedbacks, they are very well accepted.

The 1980/81 National Lecturer, Bob Pucel, had a very busy year. He visited 31 locations a summarized in the accompanying table. The 1981/82 National Lecturer, Ferdo Ivanek, is getting busy preparing and scheduling his lectures.

The other day I received a letter from Professor Suetake, which I would like to share with many of you who know the former Chairman of the Tokyo Chapter, one of the most active Chapters.

Dear Dr. Kuno:

On the 1st of April, I retired from Tokyo Inst. of Tech. due to the rule of the faculty members of our school, which is applied to the professor who becomes 60 years old. This is true; not an April Fool's story. I was granted the title of "Honorary (Emeritus) Professor of Tokyo Inst. of Tech." on the next day, April 2.

And then on the same day, I was promoted as the professor of Kanagawa University whose location is near Yokohama. I will start my third life from now on.

Today in a pile of papers I found a letter which should have been sent to you last year. I am very ashamed of it, but I will send this letter after more than a year's delay.

Please forgive an "Absent Minded Professor" and give my best regards to all my friends in MTT-S.

Sincerely yours,

Kuniro Suetake  
Honorary (Emeritus) Professor  
of Tokyo Inst. of Tech.

His delayed letter read:

Dear Dr. Kuno:

Echo from Tokyo

I am very happy to inform you that we had an excellent meeting with more than 100 participants welcoming Mr. E. Cohen of the Naval Research Laboratory.

Mr. Cohen was promoted with much effort by Mr. Bert Berson, MTT-S Technical Committee Chairman, Dr. Leo Young, and the go-between (actual promoter) Dr. F. Hasegawa.

In Japan, we have an interesting proverb "adding pupils in the eyes of painted dragon". When a famous painter drew a dragon, he did not add pupils in its eyes and left them quite vacant. So one asked him the reason why. He answered if he drew the pupils in his dragon, it would become alive. Nobody believed his talk. So he added the pupils with his brush to the dragon's eyes. As soon as he did, all of the sudden the dragon became alive, raised a big storm around it, and had "GONE WITH THE WIND" violently.

I think Mr. Cohen did act in a role to add "the special pupils" into our meeting with his excellent paper, good presentation, and interesting performance. All participants were very pleased to hear his talk.

Also I believe Mr. Cohen has gotten useful up-to-date information from the presentations done by the Japanese members.

I heartily appreciate your sending the very best person to our meeting. Thank you very much for your kind cooperation.

Sincerely,

Kunihiro Suetake  
Chairman of MTT Tokyo Chapter

(continued on page 8)

## TAX INFORMATION FOR OVERSEAS CONFERENCE ATTENDEES

The U.S. Internal Revenue Service recently rewrote regulations regarding tax deductions for U.S. resident's travel to overseas conventions. Here's what you ought to know: Non-reimbursed expenses will be deductible if the taxpayer can prove that the conference or meeting is directly related to the active conduct of his/her trade or business and that it is reasonable for the conference to take place outside North America. Basically this means that IEEE members properly attending overseas meetings will no longer be subject to the "two foreign conventions per year" limitation.



## NEW EDITORS APPOINTED

by R.H. Knerr

At the January 1981 meeting MTT-S Adcom approved the MTT Transactions Editor's proposal to cover patents in the MTT Transactions. This service we hope will be valuable to all our members especially those who are not served by large patent organizations. The first collection of Abstracts appeared in the August issue (MTT-29-8). As pointed out in the Editorial of that issue, judgement has to be used as to which patents should be published and Norman R. Dietrich, our new Associate Editor for Patent Abstracts, is eminently qualified to do so.

Occasionally, we publish Asian Abstracts in the MTT Transactions to bring to your attention work which may be relevant to MTT-S members, but are published in Asian journals which are not easily accessible to most of us. The next Asian Abstracts will appear in the October 1981 issue of the MTT Transactions and has been compiled by Dr. Eikichi Yamashita, who succeeds Dr. T. Okoshi as our Associate Editor for Asian Abstracts.

Biographical sketches of both of our new MTT Transactions Associate Editors are given below.

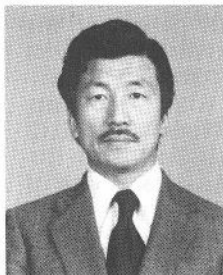
### Norman R. Dietrich



Norman R. Dietrich is a Member of the Technical Staff of the Bell Telephone Laboratories, Inc. at Allentown, PA. He received the BSEE degree from Lafayette College, Easton, PA, in 1966 and the MSEE degree from Lehigh University, Bethlehem, PA

in 1972. He has been active in microwave device and circuit development since 1962. These include MASERs, ferrite devices, microwave I.C.'s, and solid state power and low-noise amplifiers.

### Eikichi Yamashita



Eikichi Yamashita (M'66 SM'79) received the B.S. degree from the University of Electro-communications, Tokyo, Japan and the M.S. and Ph.D. degrees from the University of Illinois, Urbana, all in Electrical Engineering, in

1956, 1963 and 1966, respectively.

From 1956 to 1964, he was a Member of the Research Staff on millimeter-wave engineering at the Electrotechnical Laboratory, Tokyo, Japan. From 1961 to 1963 and from 1964 to 1966, he studied millimeter wave solid-state devices at the Electro-Physics Laboratory, University of Illinois. He became an Associate Professor in 1967, and in 1977 Professor in the Department of Applied Electronics at the University of Electro-Communications, Tokyo. Some of his research work has been on microstrip transmission line, hybrid modes of Goubau lines, wave propagation in a gaseous plasma, and optical fibers.

Dr. Yamashita is a member of the Institute of Electronics and Communications Engineers of Japan and Sigma Xi.

## IEEE ADDS NEW EMPLOYMENT REFERRAL SERVICE

Engineers can now turn to a new employment referral service endorsed by the Institute of Electrical and Electronics Engineers (IEEE). Free to IEEE members, and available at a modest charge to non-members, the new service provides a mechanism for engineers to register their credentials on a personalized basis onto a computer data base which is accessed by subscribers/employers.

The new service, Professional Abstract Registries™, PAR, is an independent employment information system which has been endorsed by the IEEE following successful test studies. In addition to the IEEE, PAR has been approved by the National Society of Professional Engineers and the Engineers' Society of Western Pennsylvania.

In operation, an engineer who wishes to register completes a PAR resume form. The information is entered into a computer system which can be directly accessed by the subscriber/employer. When the subscriber/employer indicates an interest, PAR informs the registrant who is free to follow-up the inquiry.

Registrant information is updated quarterly, and complete confidentiality can be assured at the request of the registrant.

Unlike many "skills bank" systems in which registrant data is limited to key words and characteristics, the PAR system provides for free-vocabulary, full document data entry and search capability, and further allows the subscriber/employer to address the data interactively.

For example, the registrant can use free-vocabulary to indicate job objective, related academic courses, current relevant experience, patents and geographic preference.

Non-IEEE members may use the PAR system for a \$14 per year fee. All inquiries should be directed to: PAR, Data Base Innovations, Inc., 28 Lower Main Street, Ossining, New York 10562. Toll free call: 800-431-2616; in New York: 914-762-2522.



## CHAPTER ACTIVITIES (cont.)

## SUMMARY OF 1980-1981 MTTs NATIONAL LECTURE

The data tabulated below summarizes the presentation dates and attendance figures for the 1980/81 National Lecture on Monolithic Circuits by Bob Pucel.

October 7	Atlanta	45
October 8	New Jersey Coast (Holmdel)	50
October 23	San Francisco	125
October 28	San Diego	26
October 30	Los Angeles	101
October 24	Santa Rosa (HP)	80
November 18	Philadelphia	25
November 19	New York/Long Island	32
December 1	Minneapolis (Honeywell)	40
January 6	West Florida Coast (Clearwater)	14
January 7	Cape Canaveral - Melbourne	24
January 8	Orlando	14
January 20	Phoenix	38
January 21	Dallas	54
January 22	St. Louis	35
March 19	Boston	59
March 31	Ottawa	31
April 1	Syracuse	42
April 2	Schenectady	45
April 7	Raytheon, Northboro	85
April 14	Washington, D.C.	70
April 16	Princeton	27
April 22	North Jersey Coast	14
April 23	Champaign-Urbana, Univ. Illinois	50
May 12	Columbus	28
May 13	Chicago	29
May 19	Thomson-CSF/Paris	45
May 21	Selenia/Rome	24
May 27	Melecon/Tel Aviv	100
June 9	Raytheon, Wayland	32
June 11	Raytheon, Sudbury	23
Total		1,407

Date Chapter Attendance

## REPORT OF THE DIRECTOR, DIVISION IV

by Allan C. Schell

The rapid rise in number and size of electronics shows and conventions has also raised a number of questions about their operation and control. In part as a response to scheduling conflicts and in part over concerns of management control, the Board of Directors of the IEEE has established an ad hoc committee on conferences and conventions. Chaired by Bob Lucky, the Executive Vice President, the committee is charged with developing a unified policy on 1) Institute level participation and management control of conferences and conventions, 2) financial aspects, 3) establishment of new conferences, 4) schedule conflicts, 5) roles of volunteers and paid staff, 6) Section-Society participation, and 7) incorporation. This ambitious menu is to be

(continued on page 10)

## CHAPTER CHAIRMEN'S MEETING REPORT

by F. Bernues

On June 15, 1981, the annual MTT-S Chapter Chairmen's meeting took place at the Bonaventure Hotel, site of the 1981 Symposium. The meeting was chaired by John Kuno, Chairman of the Membership Service Committee. Eighteen Chapter Chairmen and fifteen Adcom members were present at the meeting including F. Rosenbaum, MTT-S Society President.

After the meeting was called to order at 6 P.M., Adcom President Rosenbaum had a few words welcoming the participants and emphasizing the importance of Chapter activities to the overall vitality of the MTT Society. The meeting then continued with John Kuno presenting a summary of the Chapter activities and Francisco Bernues presenting the checklist for Chapter officers and a Speakers list. Dr. Kuno introduced the 1981-1982 National Lecturer, Dr. Ferdo Ivanek, who spoke about plans for the upcoming year. Chapter Chairmen are encouraged to contact Dr. Ivanek at (415) 595-8732, ext. 229, to formalize arrangements.

Ed Niehenke presented a Membership Development Report and led a discussion on means and ways of promoting new membership, especially student members. Steve March and Bert Berson reported on the MTT-S Newsletter and the Adcom Technical Committees, respectively.

The most active part of the meeting was the reports by the Chapter Chairmen. G. Lindgren, Chairman of the Los Angeles Chapter, host city for the Symposium, gave a report on the technical activities of that Chapter. He was followed by P. Staecker (Boston), B. Scott and K. Varian (Dallas), B. Hargis (Chicago), Y. Konishi (Tokyo), G. Vance (San Diego), C. Hsieh (Santa Clara Valley), D. Dawson (Baltimore) and A. Friend (Washington D.C.). Their reports were detailed and were followed by lively discussions.

It was particularly interesting to note the success achieved by the Chapters who organized one-day symposia, workshops, or short courses. The Baltimore Chapter organized a series of three lectures on GaAs Technology and Devices which created a lot of interest, judging by the attendance figures (200 people on the average). The Santa Clara Valley Chapter organized a one-day short course on "Advanced Microwave Techniques for Commercial Applications", with 5 lecturers and 198 people in attendance. The Washington D.C. Chapter organized a course, "Microwave Devices in Circuits" with 7 lecturers and an average attendance of over 70 people.

Fred Rosenbaum praised the Chapters for their innovative approach to their technical meetings and expressed his hope that the contributions of the Chapters to the MTT-S overall objectives will continue to be an important part of the Society's endeavors and thanking all Chapter officers for their efforts in maintaining the vital link between MTT-S Adcom and the membership.



## EDITOR'S NOTES

by S.L. March

This is my second issue as Editor of the MTT-S Newsletter. In the first issue, I inaugurated a new feature, Meetings of Interest, and began publishing corrections to the 1981 MTT-S Committee Directory. Both of these columns are continued in this issue. In fact, Meetings of Interest has been expanded and now lists 34 conferences which will be held within the next ten months and which are of potential interest to the microwave community. I plan to continually update this column and maintain as complete a schedule of meetings as possible. If I have inadvertently omitted any, either write or call me with the appropriate information, which will then be included in the next Newsletter.

The 1982 Microwave Theory and Techniques Society Committee Directory will be published in January. I hope that the Directory will be accurate to the names, affiliations, addresses, and telephone numbers of the Chapter Chairmen and other Committee members. Please inform me of any changes which should be made in the Directory before November 20th.

In the next issued of the Newsletter, I will be starting another new feature. The theme of this new column will be recent doctoral dissertations on MTT-related technology. To be successful, I will need the assistance and cooperation of the academicians involved in microwave technology or related fields. Kindly send me the name of the new Ph.D. graduate, the name of the University at which the degree was conferred, the dissertation title and date, and the name of the thesis advisor, and these will be published.

Remember, this is your Newsletter. There is ALWAYS room in the Newsletter for publicity releases on forthcoming local or national meetings, items of interest from local Chapters, or other materials relevant to MTT-S and its members. However, the information must reach the Newsletter Editor in a timely manner. For your assistance, I have established deadlines for the next two issues of the MTT-S Newsletter. **For inclusion in the Winter 1981 issue, material must be received by November 20th. In order to be included in the Spring 1982 Newsletter (April 1982), the information must be received by February 20, 1982.** Information and/or articles should be sent to:

Steven L. March  
Editor, MTT-S Newsletter  
COMPACT Engineering Division, CGIS  
1106 Bobbie Lane  
Garland, TX. 75042

## RELIABILITY REPORTS

A recent issue of the Reliability Society Newsletter, Volume 27, Number 3, July 1981, contained an extensive list of reliability reports prepared under sponsorship by the Rome Air Development Center (RADC) from 1975 through 1980. Reports generated under Reliability Branch, Reliability and Compatibility Division (RADC/RBR) contract generally are concerned with device reliability. The list contained several reports of possible interest to the microwave community. They are:

1. Reliability Study of Microwave Power Transistors; R.N. Clarke and B. Stallard; TRW, Lawndale, PA.; RADC-TR-75-18 (AD A007788)
2. Reliability Study of Microwave Transistor Packaging; D.J. LaCombe and R.J. Naster, General Electric, Syracuse, N.Y.; RADC-TR-75-292 (AD A020739)
3. Reliability Prediction for Microwave Transistors; D.J. La Combe and R.J. Naster, General Electric, Syracuse, N.Y.; RADC-TR-76-177 (AD A027849)
4. Reliability Study of High Efficiency IMPATT Devices; J.L. Heaton; RADC-TR-78-203
5. Reliability Study of GaAs FET; R. Lundgren, Hughes Research, Malibu, CA.; RADC-TR-78-213 (AD A061473)
6. Reliability Study of Microwave Transistors under Transient and Mismatched Loads; D.J. La Combe, R.J. Naster, and O. Nalin, General Electric, Syracuse, N.Y.; RADC-TR-78-226 (AD A063364)
7. Reliability Prediction for Microwave Solid-State Devices; G.F. Guth; RADC-TR-79-50 (AD A069386)
8. Reliability Evaluation of GaAs Power FETs; H.M. Macksey, Texas Instruments, Dallas, TX.; RADC-TR-80-124

Unless otherwise indicated and except for certain reports of limited distribution, the documents may be obtained by the general public from: National Technical Information Service, Department of Commerce, 5285 Port Royal Road, Springfield, VA. 22151 (800-336-4700)

With the same exception, U.S. defense contractors may obtain copies from: Defense Technical Information Center, Cameron Station, Alexandria, VA. 22314 (202-694-6864).

When ordering documents from either agency, the AD number should be cited as well as the RADC TR number. Listings with complete Technical Report numbers, but no AD number, have been printed but were not assigned an AD number at the time this listing was completed.

# CONDUCTOR LOSS EQUATIONS CORRECTED

by Hal Sobol

Multilayer conductor systems are frequently used in microstrip hybrid integrated microwave circuits. The multilayer system usually consists of a very thin layer of a relatively high resistivity metal to serve as an adhesion layer for the thicker, low resistivity main conductor. Occasionally a buffer metal layer is used between the adhesive and the main conductor to prevent interactions which tend to degrade conductivity of the main conductor. For example, a Ti-Pd-Au metal system microstrip at 50 GHz will have losses 10% higher (in dB) than the pure gold system.

In the past I published curves and equations (1), (2) showing the effect of thin layers on loss. The curves are correct, but unfortunately the equations contain typographical errors in certain publications (3). Since some engineers are now including these equations in computer programs, I thought it necessary to correct the errors.

The correct equation for the ratio of the two-layer attenuation to the single conductor loss is:

$$\alpha_{R_{SI}} \left[ 1 + \frac{R_{SII}}{R_{SI}} \exp(4t/\delta_I) + 2 \left( \frac{R_{SII}}{R_{SI}} \right)^2 - 1 \right] (\sin 2t/\delta_I) \exp(2t/\delta_I) - \left[ \frac{R_{SII}}{R_{SI}} - 1 \right]^2$$

$$\alpha_{R_{SII}} \left[ 1 + \frac{R_{SII}}{R_{SI}} \exp(4t/\delta_I) - 2 \left( \frac{R_{SII}}{R_{SI}} \right)^2 - 1 \right] (\cos 2t/\delta_I) \exp(2t/\delta_I) + \left[ \frac{R_{SII}}{R_{SI}} - 1 \right]^2$$

The equation given for the above two-layer loss case is correct in Reference (1) but is wrong in Reference (2).

The equation for the ratio of the three layer loss to the single conductor loss given by Equation 25 on page 41 of Reference (1) is correct but there is an error in the definition of one of the terms used in the equation. The correct definition of C is:

$$C = \left( \frac{R_{SII}}{R_{SI}} - \frac{R_{SIII}}{R_{SI}} \right) \left( \frac{R_{SII}}{R_{SI}} + \frac{R_{SIII}}{R_{SI}} \right) \exp \left( -\frac{2t_{III}}{\delta_{II}} \right)$$

As noted above the calculated loss curves shown in both references are correct.

## References

- (1) H. Sobol and M. Caulton, "Technology of Microwave Integrated Circuits", Advances in Microwaves, Vol. 8, Academic Press, Chapter 2, 1974
- (2) H. Sobol, "Applications of Integrated Circuit Technology to Microwave Frequencies". Proceedings of the IEEE, Volume 59, No. 8, August 1971, Page 1200-1211.
- (3) private conversation with S. March, Compact Engineering.

## DIVISION DIRECTOR'S REPORT (cont.)

digested at the December meeting of the Board of Directors. While the focus of many of these issues is the large regional show, the technical meetings of the Societies are also under study. For example, the relationship between the Steering Committee or Board of a meeting and the Society Adcom is felt to need strengthening in some instances. One concern that I share with other members of this ad hoc committee is that the enthusiasm and effort of those who run successful conferences should not be dampened and hobbled by unnecessary rules and restraints. The conferences and conventions are among the IEEE's more valuable resources, and what is working well may not need a lot of fixing.

A position paper on the topic of Human Exposure to Electromagnetic Fields has been prepared by the Committee on Man and Radiation (COMAR). A draft of the paper was discussed at the June meeting of TAB. After commenting on the need for balance and presentation and the possible inclusion of footnotes, the Technical Activities Board approved the paper in principle. The COMAR Chairman, Dr. Om Gandhi, has circulated a revised draft to the Society Presidents for their further review and comment.

An unresolved issue is the allocation of accounting and administrative services provided to the societies that are presently borne by the IEEE general fund. It is institute policy that each entity should be charged for the services it uses, the TAB Opcom Operations Committee has been concerned with how these costs are allocated. A potential set of rates has been developed, consisting of a per-member charge for records and payment processing, a per-report charge for accounting and tax services, a charge per Society for audits, and a per employee charge for each budget employee who is assigned full-time to a Society. At the June meeting these rates did not receive much attention, but ultimately TAB must decide on the equity of this or any alternative formula. No one is eager to pay, but there seems to be a consensus to accept a fairly apportioned share of the costs.

The Quantum Electronics and Applications Society, in cooperation with the Optical Society of America, has formed a committee to study the feasibility of a journal covering optical fiber communications and integrated optics. Interested parties are encouraged to provide input to the Chairman, Lawrence Anderson, whose address is Bell Laboratories, 555 Union Blvd., Allentown, PA 18103. The committee plans to report its findings to the December 1981 TAB meeting.





# PERMANENT ARTIFACTS SOLICITED

*by Ted Saad*

For the past two years, MTT-S has sponsored an Historical Exhibit at its annual Symposium. Most of the items on exhibition were loaned to us by interested individuals or by such organizations as the MIT Historical Collections, the U.S. Army Electronics Command, Foothills College, Raytheon Corp., Naval Research Laboratories, Harry Diamond Laboratory, Hughes Aircraft Co., Westinghouse Electric Co., ITT Gilfillan, Narda Microwave, etc. We expect that future exhibitions will also include items borrowed from organizations and individuals interested in the history of microwave technology. However, the MTT Society is interested in building up its own permanent collection of artifacts.

If you have any artifacts which you think would be appropriate for the Historical Exhibit and which you would be willing to donate, we would like to hear from you. Although we made an effort to collect permanent artifacts this past year, we were only mildly successful. We did manage to obtain a few early vacuum tubes, a vintage 1940 707D klystron, a 725A magnetron, and a collection of diodes manufactured in 1955. In addition, we now have a modest collection of books that cover much of the history of our technology. But we need a lot more material and you can help.

You may wonder what makes an artifact. If you did not see the Exhibit in either Washington or Los Angeles, let me give you some suggestions. From M.I.T. and the U.S. Army we were able to borrow old magnetrons, old TR tubes, old ATR tubes, and old waveguide components. We also displayed old slotted lines, directional couplers and variable attenuators, all in waveguide. If you have items of this type, which you consider to be obsolete, and which you do not plan to use in the future, we would be very interested in adding them to our permanent collection. If you wonder whether a particular item would be appropriate, please, either call or write me.

One aspect of the Historical Collection, which I feel is important and will grow in importance with time, is the history behind the artifacts. If, for example, you have an artifact with a special story, please include the story with the item. As we collect these artifacts, they will be carefully catalogued. The name of the donor will be included as part of the permanent record and will be included in the display.

Presently, our plan is to have the Historical Exhibit only at the annual Symposium. However, as we build up the exhibit and as interest increases, we anticipate that there will be additional opportunities to display the collection.

Between Symposia and until such time as we can arrange for a permanent relationship, either with IEEE Headquarters or some organization such as the Smithsonian Institute, the collection will be stored in a safe place.

So, please, if you have an old slotted line, an old waveguide clamp, an old microwave tube, old beyond-cutoff coaxial attenuator, an old book, either ship it to the address listed below, or, if you prefer, write to me or call me and let me know what it is.

Keep in mind that as the Symposium moves around the country, the Historical Exhibit will move along with it. Therefore, there will be an opportunity for all of our members around the country to come in and see what went on in microwave technology from the very beginning. Some of us will even be there to give you a first hand account.

Theodore S. Saad  
Sage Laboratories, Inc.  
3 Huron Drive  
Natick, MA 01760  
Tel. (617) 653-0844  
TWX: (710) 346-0390

## SPECIAL TRANSACTIONS ISSUE ON MILLIMETER WAVES

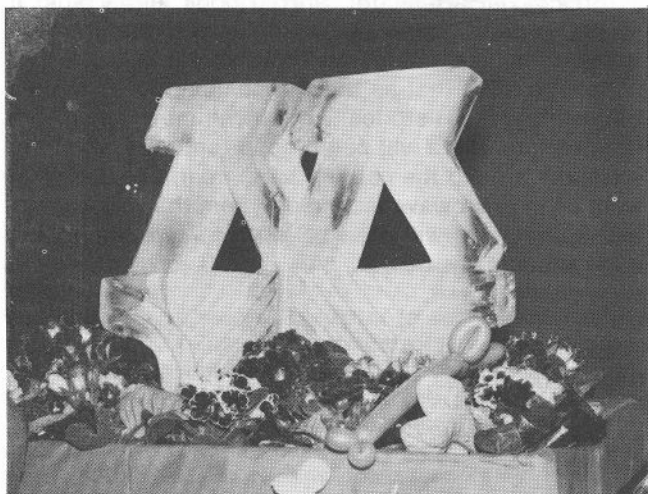
The IEEE Transactions on Microwave Theory and Techniques is planning a Special Issue on Millimeter Waves (55 GHz to 300 GHz) for February 1983 publication.

Papers are solicited from workers in industrial, government and university applied research and development organizations. Subjects to be covered will highlight the entire technical area. These will include power generation and amplification, for example, IMPATTs, Gunn and Tunnnett devices, injection locking, noise related materials, 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 January 1982 to:

V.G. Gelnovatch or Harold Jacobs  
US Army Electronics Technology & Devices Laboratory  
ATTN: DELET-M  
Fort Monmouth, NJ 07703

## SCENES FROM THE SYMPOSIUM



An icy Society logo on a 104° day.



Chuck Swift and his angels.



Kiyo Tomiyasu receiving the Microwave Career Award from MTT-S President Rosenbaum.



Dr. Fukui being awarded the Microwave Prize by MTT-S President Rosenbaum.



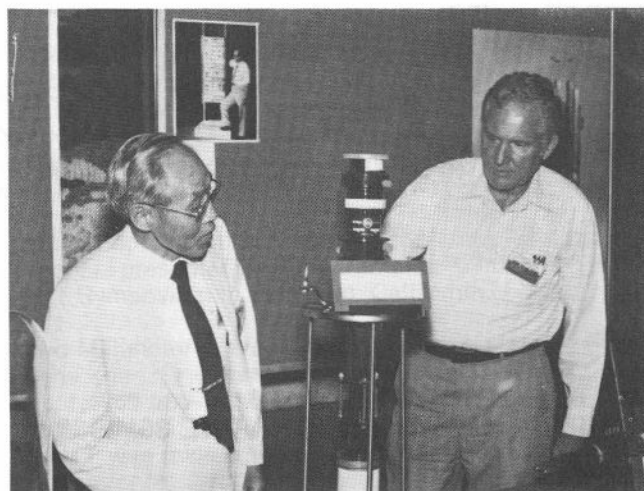
Julius Lange receiving the Microwave Application Award from MTT-S President Rosenbaum.



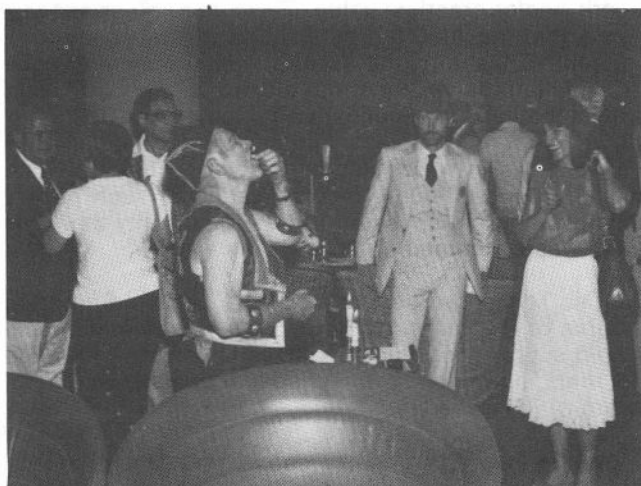
Steve Adam receiving his Fellow Award from Division Director Allan Schell.



Seymour Cohn receiving an appropriate license plate from Chuck Swift.



Kiyo Tomiyasu and John Horton preparing the Historical Exhibit.



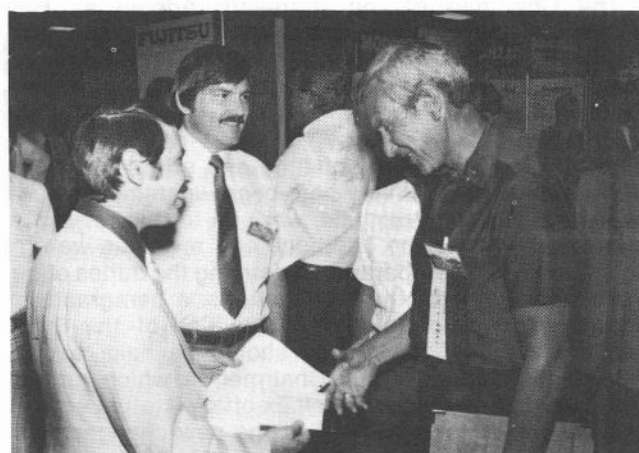
Entertainment during the Exhibitors' cocktail party.



Dr. Bengelsdorf preparing to address the banquet attendees.



Crowded aisles in the Exhibition Area.



What's going on here?





# History of MTT

by Ted Saad

## ADCOM XIII JULY 1, 1964 THROUGH JUNE 30, 1965

### ADMINISTRATIVE COMMITTEE:

H.M. Barlow  
A.C. Beck  
R.C. Hansen  
I. Kaufman  
G.L. Matthaei  
T. Moreno  
A.A. Oliner  
J. Pippin

H.M. Altschuler, Chairman  
E.N. Torgow, Vice Chairman  
M. Cohn, Secretary-Treasurer

R.A. Rivers  
S.W. Rosenthal

T.S. Saad  
G.E. Schafer  
G. Shapiro  
K. Tomiyasu  
P.G.R. Warren

### HONORARY LIFE MEMBERS:

A.G. Clavier  
W.W. Mumford  
G.C. Southworth

### EX OFFICIO MEMBERS:

T.N. Anderson  
R.W. Beatty  
S.B. Cohn  
D.D. King

The Chairman of the thirteenth Adcom as Hal Altschuler, the Vice Chairman was Gene Torgow and the Secretary-Treasurer was Marv Cohn. The Editor of the Transactions was Bob Beatty. Gus Shapiro was Editor of the Newsletter.

Although a great deal of time and effort had been spent on by-laws which had been unanimously accepted on March 23rd, 1964, work on further revisions continued. Among the additions and revisions we are such items as a new paragraph defining the duties of an Associate Editor of the Transactions, a paragraph on finances further defining the activities of the Symposium and how the money should be held, and a paragraph relative to past Chairmen in which further clarification was made on their ex-officio status. A summary of the by-laws with all of the new changes was prepared and published in the Newsletter for comments by the members.

There were continued restrictions on Transaction and Newsletter publication due to the economic situation of the IEEE and of the Administrative Committee. Although 1964 was a good year for the Transactions, it

would have been a record year had the restrictions been removed.

An IEEE Headquarters proposal that all Transactions would have new covers was objected to by the Adcom, since they had not been consulted. However, the new, attractive cover, which appeared in January 1965, stilled the objections quickly. As a matter of fact, that style cover, with minor modifications, is still in use today.

A matter of concern had to do with the growing number of very lengthy, very detailed, filter papers. One paper that had been submitted to the Transactions and that had been recommended for publication would require 50 Transaction pages at a cost of about \$2,500. Seymour Cohn was asked to look into the matter. He recommended that such papers be carefully reviewed and that they be selected on the basis of the theoretical merit and/or practical value. There were other suggestions that included the publication of low cost photo-offset 7th issue of the Transactions containing such lengthy papers. In any event, a Special Issue on Filters was scheduled for publication in September, 1965.

Walter Kahn was appointed Associate Editor for laser papers, and, although the solicitation of such papers continued, there appeared to be little activity as far as MTT was concerned.

Kiyo Tomiyasu spent a good deal of time during the course of the year soliciting potential candidates who could supply abstracts of articles appearing in foreign journals. Ultimately, the first abstracts appeared in the March 1965 issue.

Another issue of ongoing concern was the matter of the tardiness of publication of the Transactions. It was pointed out that the lead time in the IEEE was much greater than that of the American Physical Society and, as a result, new and important papers might not be submitted to the IEEE. This matter was discussed at each Adcom meeting. Eventually, a resolution was passed in which the MTT Adcom stated that there was a need for prompt publication of the Transactions and that it would support all efforts towards that end.

To help relieve the economic problems of the Adcom, Bob Rivers was appointed Advertising Editor. It was his function to solicit institutional listings for the Transactions. After writing approximately 400 letters soliciting such listings, he received approximately 14.

During the Adcom year, it was proposed that the Joint Council on Quantum Electronics, JCQE, be sponsored jointly by the American Institute of Physics, the American Optical Society, and the IEEE. IEEE sponsorship was to be divided between GMTT and GED. The purpose of the JCQE was to promote cooperation among scientific and technical organizations in the United States and to organize national conferences and possibly to publish their proceedings in the field of Quantum Electronics. In September, GMTT voted to co-sponsor the JCQE. Each of the sponsoring societies had two representatives on the JCQE. In addition, IEEE had two representatives at large. After some discussion

in the JCQE, it was decided that a Quantum Electronics Conference would be held in April of 1966. MTT agreed to advance \$250 to the conference.

The IEEE Journal of Quantum Electronics was scheduled to commence monthly publication in April 1965 under the sponsorship of the Group on Electron Devices, GED. The April, May and June issues were to be sent free to all members and subscribers of the Electron Devices and MTT groups. Starting July 1st, members of ED could select from either their ED Transactions or the Quantum Electronics Journal at their \$5 fee, or they could receive both for \$10. An MTT member, however, could only receive the new journal by paying \$5 in addition to his dues, which in effect, would make him a member of the Group on Electron Devices as well. This caused considerable consternation in the MTT Adcom, with the result that Art Oliner moved that MTT adopt a strong position with respect to the new journal and convey that position to IEEE Headquarters. He pointed out that MTT had consistently expressed and pursued its interest in certain portions of the field of lasers and quantum electronics. He further stated that although IEEE was aware of MTT interest in the field, they went ahead with publication without either requesting our advice of informing us and without follow

ing the normally adopted administrative procedures. The resolution resulted in equal representation and responsibility for MTT with GED. The joint sponsorship of the Journal of Quantum Electronics was finalized on June 8th, 1965.

Because of budget restrictions, only one copy of the Newsletter was published during the Adcom year. That appeared in April 1965. However, at the September 1964 meeting of the Adcom, an adhoc committee was formed to discuss Newsletter content and to determine an appropriate budget. Saul Rosenthal was appointed Chairman of the committee. In February of 1965, a report of the committee was presented to the Adcom with a number of recommendations covering content, format, the aims of the Newsletter, publication policy, and budget. To make the Newsletter more readable and more attractive, it was suggested that graphics could be improved, that some of the reports could be written in a more interesting fashion, and that more useful information could be included in each issue. A budget of \$2,000 per year was recommended and it was also suggested that 4 issues a year would be published. Most significant was the fact that the infamous Gus Shapiro quips separating items in the Newsletter were to remain.

The matter of Symposia was beginning to take up more and more Adcom time. The 1964 Symposium finally reported a surplus of approximately \$1,400, with possible additional income from future sales of Symposium digests.

The 1965 G-MTT Symposium was held in Clearwater, Fla. under the strong chairmanship of Rudy Henning. Attendance at the Symposium was 468. There were a number of highlights to the 1965 Symposium, not the least of which was the Keynote speech given by Don King on a subject entitled "Space for Microwaves." Another highlight was the awarding of the 1964 Microwave Prize to Seymour Cohn for his paper entitled "Re-entrant and Wide Band Hybrid Couplers," which

had appeared in the MTT Transactions of July, 1963.

For change of pace, the banquet attendees were entertained by a group of young dancers and singers from the nearby Greek community performing some of the old world Greek songs and dances. Interestingly enough, of the 468 attendees at the Symposium, only 16 were foreign registrants, 9 of whom were from Canada.

At the September 1964 meeting, the Adcom approved a proposal presented by John Damonte to hold the 1966 G-MTT Symposium in Palo Alto, California.

Two Millimeter Wave conferences were planned during the year. One was to be held in Boulder, CO. in August 1965 and was to be an open meeting with announcements appearing in Spectrum, Physics Today, etc. MTT was invited to cooperate, but not to support the conference. Another meeting on Millimeter Waves was held at the Electronics Research Center of NASA in Boston in May 1965. That meeting, however, was limited to attendance by invitation only.

Wescon made two proposals to the Adcom. One proposal wanted MTT to sponsor Symposia at Wescon. This was rejected by Adcom because of concern that it could weaken future MTT Symposia by duplication. However, MTT agreed to cooperate in organizing and sponsoring sessions of a tutorial or review nature. A second proposal asked MTT to consider holding a future National Symposium or meeting simultaneously with Wescon. This suggestion was also rejected.

The concern for the loss of MTT members, which was discussed in the XIIth Adcom at great length, was carried on into the XIIIth Adcom. The survey which began during the prior Adcom was completed and a report was issued discussing the results in details. Perhaps the major problem was the difficulty encountered when certain changes were made at Headquarters, in particular the merger of the IRE with the AIEE and the introduction of a new computer. However, one very interesting element came out of the survey report. Almost all of the comments, whether for or against continuation of membership in MTT, related only to the Transactions and made no reference to any other activities of the group. For example, a number of people who had dropped their membership in MTT did so because they found that they could obtain the Transactions from their company or local library. Others dropped from the group because they found that the Transactions were no longer relevant to their field of interest. Still others discontinued MTT membership because they felt that the Transactions were too expensive. In any event, as the situation at Headquarters stabilized, it appeared that the membership count was increasing to a satisfactory level.

MTT participated in the IEEE International Convention of 1965 with two microwave sessions. Of 13 papers that had been submitted, 7 were accepted. Two of the papers were on the subject of precision connectors. As a consequence, additional connector papers were solicited and a 5 man panel was organized. Since the subject of precision connectors was an important topic of great interest at the time, the Adcom was curious as to how the attendance would be affected and whether the membership of MTT would increase as a result of the session. However, the net result was that the atten-

dance at the session was not outstanding and there was very little change in the membership of MTT. This experience helped underline the fact that microwave sessions at the IEEE Convention were of relatively minor importance in the total MTT scheme of things.

At the November Adcom meeting, George Shafer, the Chairman of the Meetings Committee, presented a report on Chapter activities for the year ending June 30, 1964. Of the 29 Chapters, 5 of which reported no meetings at all, there was a total of 96 meetings held. Thirty-three of these were devoted to microwave theory, techniques, and applications, 29 were devoted to microwave components, devices, and circuits, 26 were devoted to the generation, amplification, transmission, and detection of microwaves, and 8 were devoted to such items as planned tours, etc.

At the February Adcom meeting, in a discussion relative to a meeting to be held in Region 6, the matter of MTT participation in regional meetings was discussed at some length. The consensus of the Adcom was that: (1) GMTT should support microwave sessions at regional meetings, provided that they don't detract from the MTT Symposium, (2) that the Adcom should channel such requests of support to the concerned Chapters via the Chapter Chairmen, and (3) that control and permission rests with the Chapters and their Sections with the Adcom providing information to the Chapters.

There was growing concern on the part of Adcom having to do with MTT's representation on TAB and also having Group-oriented people on the IEEE Board of Directors. Although no decisions were made, the Adcom did go on record favoring representation on TAB. The TAB representative would be elected by the Adcom for a length of time to be specified by the Adcom. With regard to having Group-oriented people on the Board of Directors, it was felt that such representation was desirable and a committee was appointed to study means by which this could be achieved.

Although the Group financial situation was deteriorating on a steady basis, it still had sufficient funds to operate. Starting, for example, with an opening balance on January 1, 1964 of \$35,000, the projection for the balance as of December 31, 1965 was \$27,000. The possible need to raise membership fees was discussed. Although it was agreed that a continuation of the current practice in which expenses were exceeding income would eventually lead to a weakened situation, it was agreed that a momentary negative balance was not necessarily bad. As a consequence, Adcom decided that there would be no increase in membership dues for at least two years.

Membership, despite the confusion at IEEE Headquarters, as of March 31, 1965, included 5,116 regular members, 381 student members, and 5 affiliates.

At the annual Adcom meeting, during the 1965 IEEE convention, six new members were elected for 3 year terms. They included Saul Rosenthal, Kiyo Tomiyasu, Marvin Cohn, Rudy Henning, Bob Hansen and Leo Young. In addition, John Bryant was elected for a one year term. At the same meeting, the election of officers was held. Gene Torgow and Saul Rosenthal were elected Chairman for Adcom XIV and Vice Chairman, respectively.

## ED-S PLANS SPECIAL ISSUE

The May 1982 IEEE Transactions on Electron Devices will be comprised of 10 to 15 papers of special caliber and technical interest as selected from those submitted to and presented at the 1981 GaAs IC Conference to be held in San Diego, California, last week of October 1981. The general areas of interest will be:

- Linear Monolithic Low Noise, Small-Signal or Power Circuits
- Digital Monolithic Integrated Circuits
- Device Physics, Modeling and Simulation
- Materials Advances
- Processing Technology
- Radiation and Reliability
- Packaging and Testing

Selection of papers will be made by the Technical Program Committee of the GaAs IC Conference. *Deadline for final manuscripts will be January 15, 1982.* All manuscripts should conform to standard format as indicated in the "Information to IEEE Authors" found in any Transaction. Papers submitted for this special issue are subject to the normal review procedures and must clearly describe what new and significant results have been obtained.

Please address all questions or correspondence to the guest editors:

Dr. John E. Davey  
Technical Program Chairman  
1981 GaAs IC Symposium  
Naval Research Laboratory  
Code 6810  
Washington, DC 20375  
(202) 767-2524

Dr. James G. Oakes  
Symposium Chairman  
1981 GaAs IC Symposium  
Westinghouse R&D Center  
1310 Beulah Road  
Pittsburgh, PA 15235  
(412) 256-7665

*Reprinted from Electron Devices Society Newsletter  
Issue No. 64, March 1981*





# 1982 IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM

DALLAS, TEXAS

JUNE 15 — 17, 1982

## STEERING COMMITTEE

D.N. McQuiddy, Jr., Chairman  
Texas Instruments, Inc.  
Mail Stop 255  
P. O. Box 226015  
Dallas, Texas 75266  
(214) 995-2808

## TECHNICAL PROGRAM

S.L. March, Co-Chairman  
Compact Engineering Division  
Comsat General Corporation  
1106 Bobbie Lane  
Garland, Texas 75042  
(214) 276-8103

J.K. Butler, Co-Chairman  
Southern Methodist University  
Electrical Engineering Dept.  
Dallas, Texas 75275  
(214) 692-3573

## FINANCE

T.B. Cannon, Chairman  
UTL Corp.  
4500 W. Mockingbird Lane  
Dallas, Texas 75209  
(214) 350-7601

## PUBLICATIONS

H.E. Welch, Chairman  
Rockwell International  
Mail Stop 402-121  
P.O. Box 10462  
Dallas, Texas 75207  
(214) 996-5654

## PUBLICITY

K.R. Varian, Chairman  
Rockwell International  
Mail Stop 402-121  
P.O. Box 10462  
Dallas, Texas 75207  
(214) 996-6477

## LOCAL ARRANGEMENTS

J.M. Owens, Chairman  
University of Texas  
Electrical Engineering Dept.  
Arlington, Texas 76019  
(817) 273-2671

## REGISTRATION

J.R. Griffin, Chairman  
Texas Instruments, Inc.  
Mail Stop 3432  
P.O. Box 405  
Lewisville, Texas 75067  
(214) 462-5693

## EXHIBITS

H.E. Cobb, Chairman  
Vector Sales Co.  
725 S. Central Expressway  
Richardson, Texas 75080  
(214) 234-4291

## EXHIBITS LIAISON

H.J. Ellowitz  
Horizon House, Inc.  
610 Washington Street  
Dedham, Mass. 02026  
(617) 326-8220

## FIRST CALL FOR PAPERS

The 1982 IEEE MTT-S International Microwave Symposium will be held in Dallas, Texas at the Hyatt Regency Hotel. The symposium theme, "Thirty Years of Microwaves" will feature a review of the past, an assessment of today's state-of-the-art, and a glimpse into the future.

Papers are solicited describing original work in the field of microwaves. Material submitted should not have been previously published or presented. 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
- Radiometry and Remote Sensing
- GaAs Monolithic Circuits
- Microwave Acoustics
- Phased Array and Active Array Techniques
- Microwave and Millimeter-Wave Solid-State Devices
- Sub-Millimeter-Wave Techniques and Devices
- Microwave Field and Network Theory
- High Power Amplifiers, Circuits and Systems
- Integrated Optics, Fiber Optics and Optical Techniques
- Low Noise Techniques
- Microwave Ferrite Devices
- Microwave Passive Components and Networks
- Microwave and Millimeter-Wave Integrated Circuits
- Satellite Communications/ Microwave Systems
- Microwave Biological Effects
- Technology Breakthroughs

Tutorial papers which review the maturation of the listed fields during the past thirty years are also requested.

Authors are requested to submit both a 35 word abstract and a 500-1000 word summary (up to six illustrations) clearly explaining their contribution, originality, and relative importance. Five (5) copies of the abstract and summary must be received on or before January 8, 1982 by:

Steven L. March  
TPC 1982 MTT-S Symposium  
COMPACT Engineering Div., CGIS  
P. O. Box 401144  
Garland, Texas 75040

Notice of acceptance or rejection will be mailed to authors by February 12, 1982. Authors of accepted papers will receive material and instructions for preparing photo ready copies of papers to be printed in the Symposium Digest, copyright release forms, and presentation guidelines.



"THIRTY YEARS OF MICROWAVES"



## MTT-S BY-LAWS

Since the majority of the members of the Microwave Theory and Techniques Society are unfamiliar with the by-laws of their Society, the by-laws will be published in three or four installments in the MTT-S Newsletter. Section I, Nominations, Elections and Appointments and Section II, Administrative Committee Membership are reproduced below.

### BY-LAWS OF THE IEEE MICROWAVE THEORY AND TECHNIQUES SOCIETY

#### SECTION I NOMINATIONS, ELECTIONS AND APPOINTMENTS

##### A. NOMINATIONS

###### 1. NOMINATION SUBCOMMITTEE

On or before February 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 by-laws, which shall consist of a Chairman and four other members of the Society not more than half of whom may be members of the Administrative Committee.

###### 2. MEMBERSHIP NOMINATIONS

###### (a) Procedure

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. Additional nominations may be made by members of the Administrative Committee or by petitions signed by 25 members of the Society. Informal Chapter recommendations are also in order. Such recommendations must be relayed to the Administrative Committee for discussion and possible nomination. In each case, the nominees or potential nominees must be contacted prior to the annual meeting to ascertain that they will accept the nomination.

The Nominations Subcommittee, in its nominations, and the Administrative Committee, in its elections, shall be guided in their selections by the principles of efficiency, geographical, and organizational distribution. Administrative Committee members who will have served three consecutive terms by the following January 1 shall not be considered eligible for renomination by the Nominations Subcommittee.

###### (b.) Call for Nominations

The Chairman of the Nominations Subcommittee shall cause to be published and distributed to the entire Society membership a call for nominations. This call for nominations shall include publication in the Winter Newsletter. In addition, the Membership Services Committee shall inform all chapters, in writing, of upcoming elections and nominations due date.

##### 3. DIVISIONAL DIRECTOR

Every two years, for purposes of election to office commencing on even years, the President shall determine a consensus of the Administrative Committee to select a slate of at least two Senior Members of Fellows from the Society as candidates for Divisional Director and shall ascertain their desire to serve. Candidates names will be forwarded by March 1 to the Division Director or his nominations committee.

##### 4. OTHER IEEE NOMINATIONS

The Nominations Subcommittee shall recommend to the President of the Administrative Committee candidates for certain Institute or TAB positions.

##### 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 that these holdover members present constitute a quorum. The Administrative Committee may take 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 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.

## 2. PRESIDENT AND VICE PRESIDENT

At its annual meeting, the Administrative Committee shall elect as its President one of the Elected Members of the following year's Administrative Committee for the year beginning on the succeeding January 1; and shall elect as its Vice President one of the Elected Members of the following year's Administrative Committee for the year beginning on the succeeding January 1.

The President and Vice President shall each be elected by a majority vote of members eligible to vote as prescribed in Section II. The Presiding Officer shall not vote except in the event of a tie.

## 3. HONORARY LIFE MEMBER

Nomination for Honorary Life Member of the Society may be made by any member of the Administrative Committee, or by at least 50 members of the Society. A two-thirds affirmative vote by all of the Elected Members of the Administrative Committee will be required to elect an Honorary Life Member. In the absence of a sufficient number of Elected Members of the Administrative Committee at a regular meeting, election of Honorary Life Member may be conducted by mail ballot.

### (a) Eligibility

The position of Honorary Life Member may be bestowed upon an outstanding member of the profession who fulfills the following minimum requirements:

- (1) The candidate shall have made significant technical contributions in the field of interest of the Society.
- (2) The candidate shall have performed outstanding service to the profession and to the IEEE.
- (3) The candidate shall have been a member of the Society for at least five years.
- (4) The candidate shall have been an elected member of the Administrative Committee.

### (b) Payment of Fees

Society fees for Honorary Life Members shall

be paid from the Society Treasury. The Secretary shall arrange for this with IEEE Headquarters.

## C. APPOINTMENTS

### 1. SECRETARY

The President Elect, upon receiving notice of election as President, shall submit to the Administrative Committee the name of a proposed Secretary, who shall be a member of the Society, but need not be a member of the Administrative Committee for appointment. If a majority of the members of said Administrative Committee do not object within 30 days of oral or written announcement to the Administrative Committee, the appointment shall become final. If a majority of the members of said Administrative Committee object, a new name(s) must be submitted. The incumbent Secretary shall remain in office until a successor is appointed and arranges to take over the office.

## SECTION II ADMINISTRATIVE COMMITTEE MEMBERSHIP

### A. ELECTED MEMBER

An elected member of the Administrative Committee is a member of the Society in accordance with Article VI, sections 1 and 2, and Article VII, Sections 1 and 2, of the Constitution. An elected member has full rights and voting privileges on all matters before the Administrative Committee, as defined in the Constitution and these by-laws.

### B. EX-OFFICIO MEMBER

An Ex-Officio Member shall serve on the Administrative Committee as provided for by these by-laws. An Ex-Officio Member of the Administrative Committee has all discussion and voting privileges on all matters before the Administrative Committee, except that no vote may be cast to elect members to the Administrative Committee nor to elect the President nor Vice-President of the Administrative Committee. An Ex-Officio Member is not included in a quorum count. An Ex-Officio Member may serve on standing Ad Hoc committees.

### C. HONORARY LIFE MEMBER

An Honorary Life Member of the Society has all of the rights of an Ex-Officio Member of the Administrative Committee.

### D. PAST PRESIDENT

Past Presidents shall be Ex-Officio Holdover Members and have the full rights and privileges of Elected Members of the Administrative Committee for three years following their term of office as President of the Administrative Committee, provided that membership in good standing is maintained with the Society. Any remaining years of a Past President's elective



term on the Administrative Committee will be vacated, and a Past President will be ineligible for re-election to the Administrative Committee for this three year period. The Past President's vacated Elected Member seat will be filled in accordance with Article VII, Section 3, of the Constitution. Election of a member to fill this forthcoming vacancy shall take place during that meeting of the Administrative Committee at which the annual election of members for the coming year is held.

#### E. TRANSACTIONS EDITOR

The Transactions Editor, if not an Elected Member of the Administrative Committee, shall be an Ex-Officio Member of the Administrative Committee during the tenure of that office and for a period to terminate on a December 31st ranging from at least one to less than two years thereafter. The Transactions Editor shall be a member of the Society.

#### F. NON-VOTING MEMBER

A Non-Voting Member of the Administrative Committee may participate in discussions of all matters before the Administrative Committee but does not have a vote on any Administrative Committee business. Non-Voting members shall receive notification of meetings and copies of the minutes of meetings. Non-Voting members may serve on standing Ad Hoc committees.

#### G. SECRETARY

The Secretary, if not an elected member or Ex-Officio member of the Administrative Committee, shall be a Non-Voting Member of the Administrative Committee during the tenure of that office. The Secretary shall be a member of the Society.

#### H. CHAIRMAN OF A STANDING COMMITTEE

The Chairman of a Standing Committee shall be a Non-Voting Member of the Administrative Committee unless such Chairman is an Elected or Ex-Officio Member of the Administrative Committee.

#### I. CHAPTER CHAIRMAN

The Chairman of a Chapter of the Society shall be a Non-Voting Member of the Administrative Committee, unless such Chairman is an Elected Member or Ex-Officio Member of the Administrative Committee.

#### J. CHAIRMAN OF AN AD HOC COMMITTEE

The Chairman of an Ad Hoc Committee shall be a Non-Voting Member of the Administrative Committee for the duration of the Ad Hoc Committee, unless such Chairman is an Elected Member or Ex-Officio Member of the Administrative Committee.

#### K. CHAIRMAN OF QUANTUM ELECTRONICS COUNCIL

The Chairman of the IEEE Quantum Electronics Council, if he is not a member of the Administrative Committee, shall be a Non-Voting Member of the Administrative Committee during his tenure of that office.

#### L. CHAIRMAN OF THE SOLID-STATE CIRCUITS COUNCIL

The Chairman of the IEEE Solid-State Circuits Council, if he is not a member of the Administrative Committee, shall be a Non-Voting Member of the Administrative Committee during the tenure of that office.

#### M. REPRESENTATIVE TO IEEE HEADQUARTERS, TAB

The Representative(s) to IEEE Headquarters, TAB and/or Division 4, if not a Member of the Administrative Committee, shall be a Non-Voting Member of the Administrative Committee during the tenure of that office.

#### N. ADVISORY COMMITTEE

A member of the Advisory Committee, if not an Ex-Officio Member, shall be a Non-Voting Member of the Administrative Committee.



## SALARY AND FRINGE BENEFIT SURVEY PUBLISHED

The IEEE 1981 U.S. Membership Salary and Fringe Benefit Survey has recently been published by the Institute of Electrical and Electronics Engineers (IEEE), through the sponsorship of the United States Activities Board (USAB).

Survey results are based on a questionnaire mailed in early January 1981 to a scientific sampling of IEEE Members, Senior Members and Fellows in the U.S.

The survey reports on EE salaries as they relate to numerous variables, such as job function, supervisory responsibility, type of employer, company size and geographic location, years of experience and level of education.

The survey also contains extensive tables showing income based on numerous pairs of variables simultaneously, such as income vs. geographic region by industry or service of employer, and income vs. years with present employer by organization job function.

Additional sections will include survey statistics on pensions and supplementary retirement plans, life, health, accident and major medical insurance coverage, employer contributions to professional society activities and vacations.

The IEEE U.S. Membership Salary and Fringe Benefit Survey (UHO1453) may be ordered from the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854, priced at \$45.00 for members and \$60.00 for non-members.

## BOOK REVIEW

The book reviewed in this issue is by Professor Kamilo Fehner of the University of Ottawa, author of a number of papers and books in the field of microwave, cable and satellite transmission methods. The comprehensive review, abstracted below, was submitted by Richard B. Schulz of IIT Research Institute, Annapolis, MD and originally appeared in the IEEE Electromagnetic Compatibility Society Newsletter, Issue Number 110, Summer 1981.

Digital Communications: Microwave Applications

by Kamilo Feher

Published by Prentice Hall, Inc.  
Englewood Cliffs, NJ, 07632, January 1981  
Price, clothbound, \$28

According to the preface, this book is intended both for engineers and for managers associated in some respect with microwave communications systems or equipment. It should serve its intended purpose quite well, and even more. Any EMC engineer concerned with the interaction of such communication systems or equipment with the electromagnetic environment will find much material pertinent to his effort.

The value of this book lies in the excellent selection of technical material (including many figures, as well as tables and equations), which is well organized and explained with unusual clarity. Such clarity is enhanced for the reader by the use of well selected problems distributed throughout to illustrate specific points. All are intended to be worked by the reader, some without, and some with, printed solutions. The book is well balanced for subject content and exhibits uniform style, even for two of the twelve chapters not written by the author, but by other experts in those areas. An excellent glossary is included, as well as references at the end of each chapter and a detailed subject index.

Chapter subjects and/or titles are as follows:

- Chapter 1: "Transmission System Environment"
- Chapter 2: "Statistical Methods in Digital Transmission System Analysis"
- Chapter 3: "Digital Modulation Methods"
- Chapter 4: Microwave Amplifiers, written by Dr. Wolfgang J.R. Hoefer
- Chapter 5: "System Gain: The Concept and Its Applications"
- Chapter 6: M-ary PSK and QAM Microwave Systems
- Chapter 7: "Correlative (Partial Response) Techniques and Applications to Digital Radio Systems", written by Dr. Adam Lender
- Chapter 8: Digital and Hybrid Potpourri
- Chapter 9: "Digital Microwave Systems Design"
- Chapter 10: Diversity and Protection Switching Techniques
- Chapter 11: Measurement Techniques
- Chapter 12: Research and Development Trends and Unresolved Problems

In summary, this is an excellent book for its intended readership and should prove quite useful to EMC engineers concerned with microwave digital communication systems.

## CONTINUING EDUCATION COURSES CATALOG

A catalog describing 212 continuing education courses for engineers has been published by the Educational Activities Board of the Institute of Electrical and Electronics Engineers, Inc. All courses have originated with, or have been contracted by, the IEEE as a service to its members.

Featuring descriptions of 177 "live" short courses of one, two, and three days' duration, the catalog also describes 18 individualized home-study programs — both interactive and self-study — and 17 video-taped courses for group instruction.

All courses are applications-oriented and cover the state-of-the art in a broad range of topical electrical/electronics technologies, as well as business and management subjects.

Titled IEEE CONTINUING EDUCATION COURSES -1981/82, the catalog outlines the many options available for short course sponsorship by such entities as IEEE technical and geographical units, universities and conferences, and by corporations for in-house training. The Institute's program for awarding Continuing Education Achievement Units (CEAU's) is also described.

To obtain a copy of the new catalog, contact: Continuing Education Department, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. Telephone: (201) 981-0060, Extensions 175/177.

## PATENT GUIDE PUBLISHED

The IEEE's U.S. Activities Board has published the *PAC Guide to Patents*, which explains a number of preemployment patent assignment agreements and what they mean to the employed inventor.

The guide, subtitled "Employed Engineers: Who Owns Their Invention," contains detailed information about assignments of rights, confidentiality of employer information, and disclosure of prior inventions, as well as a sample agreement.

The guide is sent free of charge to USAB leaders and to Professional Activities Committee chairmen for inclusion in their source books, where it can be referred to by local Professional Activities Committee members.

Others can order the guide from the IEEE's Service Center, 445 Hoes Lane, Piscataway, N.J. 08854, at \$2 for members and \$2.75 for nonmembers; specify IEEE Catalog number UH0147-9.

## CALL FOR PAPERS

### National Radio Science Meeting

Place: University of Colorado, Boulder, CO

Date: January 13-15, 1982

Deadline: October 1, 1981

Submission: 4 copies of the abstract

Submit to: T.E. Mode

Radio Science Program Committee  
Dept. of Electrical Engineering  
University of Colorado  
Boulder, CO 80309

### 1982 IEEE International Symposium on Circuits and Systems

Place: University of Rome, Rome, Italy

Date: May 10-12, 1982

Deadline: October 1, 1981

Submission: 4 copies of full text of the paper

Submit to: Prof. Valerio Cimagalli

Ist. di Comunicazioni Elettriche  
Universita di Roma  
Via Eudossiana 18  
00184 Roma, Italia

### Fifth Topical Meeting on Optical Fiber Communications OFC '82

Place: Phoenix Civic Plaza, Phoenix, AZ

Date: April 13-15, 1982

Deadline: November 16, 1981

Submission: 2 copies of both a 35-word abstract and a 200-500 word summary.

Submit to: OFC '82

c/o Optical Society of America  
1816 Jefferson Place, N-W  
Washington, D.C. 20036

(202) 223-8130

### Second Conference on Lasers and Electro-Optics CLEO '82

Place: Phoenix Civic Plaza, Phoenix, AZ

Date: April 14-16, 1982

Deadline: November 16, 1981 - USA

November 2, 1981 Asia and Japan

Submission: 2 copies of both a 35-word abstract and a 200-500 word summary.

Submit to: CLEO '82

c/o Optical Society of America  
1816 Jefferson Place, N-W.  
Washington, D.C. 20036  
(202) 223-8130

### 1982 Joint International IEEE/AP-S Symposium, National Radio Science Meeting and Nuclear Electromagnetic Pulse Meeting.

Place: Albuquerque, New Mexico

Date: May 24-28, 1982

Deadline: January 4, 1982

For more information contact:

Dr. Kendall F. Casey  
The Dirkwood Corporation  
1613 University Blvd., N.E.  
Albuquerque, N.M. 87102

### First Annual Military Communications Conference, MILCOM '82

Place: Boston, MA

Date: October 17-20, 1982

Deadline: March 1, 1982

Submission: 5 double-spaced copies of the manuscript plus a one-page abstract.

Submit to: Dr. Fred W. Ellersick

Communications Division  
MITRE Corporation  
Bedford, MA 01730  
(617) 271-3343

## ADDITIONAL DIRECTORY ERRATA

The following additional corrections to the 1981 MTT-S Committee Directory, which formed a part of the Winter 1981 MTT-S Newsletter, should be added to those previously noted in the last MTT-S Newsletter:

- page 1: Change DIRECTOR, DIVISION IV to Allan C. Schell
- page 2: The Abstracts Editor-Asia should be changed from T. Okoshi to E. Yamashita.

The Associate Editor—Patents, N.R. Dietrich, should be added under the heading, MTT Transactions.

- Chicago Chapter. The Chapter Chairman should be Dr. Ernest Ekelman, Andrew Corp., 10500 West 153rd Street, Orland Park, IL 60462, (312) 349-3300, Ext. 2389

Dallas Chapter. The Chapter Chairman is Karl Varian, Rockwell International, Mail Stop 402-121, P.O. Box 10462, Dallas TX 75207, (214) 996-6477

- page 12: Delete the listing for L.K. Anderson.
- page 13: Add N.R. Dietrich, Bell Telephone Laboratories, Allentown, PA 18103 (215) 439-6797.
- page 15: Delete the T. Okoshi listing at the top of the page.
- page 16: Add the listing for E. Yamashita as University of Electrocommunications, Chofu-Shi, Tokyo, Japan 182.
- page 16: Add Allan C. Schell, Electromagnetic Sciences Division, RADC/EE, Hanscom A.F.B., MA 01731, (617) 861-3700.



# CALL FOR PAPERS

## XII International Quantum Electronics Conference June 22- 25, 1982 Munich, Federal Republic of Germany

Co-sponsored by: European Physical Society,  
Optical Society of America,  
Institute of Electrical and Electronics Engineers  
American Physical Society

The XII International Quantum Electronics Conference (IQEC) solicits contributed papers emphasizing the physics of Quantum Electronics.

The conference will provide a forum for presentation and discussion of new phenomenon and new materials, physics of basic devices, advances in theoretical understanding and new scientific applications in the broad field of Quantum Electronics. The conference will include invited overview papers which review areas of current interest as well as invited and contributed papers on the following topics:

- New lasers and schemes
- Novel quantum electronics phenomena and devices
- Free electron laser devices
- Semiconductor laser physics
- Nonlinear optical processes and materials
- Nonlinear laser spectroscopy and applications
- Dynamical nonlinear optics and bistability
- Picosecond methods and applications
- Optical coherent transient phenomena and applications
- Surface enhanced optical effects
- Guided wave effects
- Laser-plasma interactions
- Laser chemical physics
- Laser biophysics
- Quantum optics

### ABSTRACT AND SUMMARY

Authors are requested to submit two copies of a 35 word abstract and 500 word summary. The 35 word abstract should be on a separate page and should include the author(s) name, telephone number and address. The summary should be no more than 3 pages in length, including figures. Figures should be suitable for journal publication. The author(s) name and affiliation should appear on the top of each summary page.

**DEADLINE:** Abstracts and summary must be received before December 31, 1981 and should be sent to:

(outside North - America)  
K. Hohla  
Max Planck Institut für  
Quantenoptik  
P.O. 1513  
8046 GARCHING  
Federal Republic of Germany

(within North - America)  
Optical Society of America  
12th IQEC  
1816 Jefferson Pl., N.W.  
Washington, D.C. 20036

**EXHIBITS:** The conference will include exhibits of the latest in laser technology. Exhibit information is available from:

Mr. H. Hock  
Münchner Messe und Ausstellungsgesellschaft m.b.h.  
P.O. 121009  
8 München 12  
Federal Republic of Germany  
Messegelände

## MEETINGS OF INTEREST

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

- **The 1981 International Symposium on Gallium Arsenide and Related Compounds** is slated for the Oiso Prince Hotel, Oiso, Kanagawa, Japan, September 20-23, 1981. Details are available from Prof. T. Ikoma, Institute of Industrial Science, University of Tokyo, Roppongi 7-22-1, Minato-Ku, Tokyo 106, Japan.
- Herzlia-on-Sea, Israel is the site of the **Fifth International Thin Films Congress**, September 21-25, 1981. Information can be obtained from Mr. Y. Shapira, School of Engineering, Tel Aviv University, Ramat Aviv, Tel Aviv, 69978, Israel. Tel (03) 22-2217.
- **The Seventh European Solid State and Circuits Conference** is scheduled for September 22-24, 1981 at the University of Freiburg, Freiburg, West Germany. Additional information can be obtained from Bernd Hoefflinger, University of Dortmund, Postfach 500500, D-4600 Dortmund 50, West Germany.
- October 4-7, 1981 are the dates for the **Electronic and Aerospace Systems Convention** to be held in Washington, D.C. For further details, contact H. Oman, Boeing Aerospace Corp., P.O. Box 3999, Seattle, WA. 98124.
- **The International Electrical and Electronics Conference** will be held in Toronto, Ontario, Canada, October 5-7, 1981. Contact IEEE Canada Office, 7061 Yonge Street, Thornhill, Ontario, Canada for further information.
- The Hyatt Regency Hotel, Chicago, Illinois will be the site of the October 5-8, 1981 **Electronic Test and Measurement Conference**. Contact Elaine L. Bull, Promotion Coordinator, Electronic Test and Measurement Conference, 1050 Commonwealth Avenue, Boston, MA. 02215 (617) 232-5470 for more information.
- **The Silicon on Sapphire Technology Workshop** is scheduled to be held October 6-8, 1981 at the Sun River Resort, Sun River, Oregon. Additional information can be obtained from Quent Cassen, Rockwell International, 3370 Miraloma Avenue, Mail Stop BD24, Anaheim, CA. 92803 at (714) 632-4954.
- **The 1981 IEEE Ultrasonics Symposium** will be held October 14-16, 1981 at the McCormick Inn, Chicago, Illinois. More details can be obtained from W.D. O'Brien, Jr., University of Illinois, Dept. of Electrical Engineering, 1406 West Green Street, Urbana, IL. 61801 (217) 333-2407.
- October 25-28, 1981 are the dates for the **1981 International Conference on Cybernetics and Society** which will be held at the Sheraton-Atlanta Hotel, Atlanta, GA. Contact Harry L. Vann, Georgia Tech Engineering Experimental Station, Electronics Research Building, Atlanta, GA. 30332.
- **The 1981 Gallium Arsenide Integrated Circuit Symposium** will be held in San Diego, California at the Town and Country Hotel on October 27-29, 1981. For more information, contact Dr. James G. Oakes, Westinghouse R&D Center, 1310 Beulah Road, Pittsburgh, PA. 15235 at (412) 256-7665.
- **The 15th Asilomar Conference on Circuits, Systems and Computers** will be held at the Asilomar Conference Center, Pacific Grove, California from November 9-11, 1981. Contact Harry Hayman, P.O. Box 639, Silver Springs, MD 20901 at (301) 589-3386 for more details.
- **MIDCON 1981** is scheduled to be held at the O'Hare Exposition Center and the Hyatt Regency O'Hare in Chicago, Illinois, November 10-12, 1981. Contact D. Litherland, Electronic Conventions, Inc., 999 North Sepulveda Blvd., Suite 410, El Segundo, CA. 90245 at (213) 772-2965 for more details.
- **The International Conference on Communication Circuits and Systems** will be held November 14-16, 1981 at Jadavpur University, Calcutta, India. More information is available from Prof. M.N. Roy, Dept. of Electronics and Telecommunications Engineering, Jadavpur University, Calcutta 700 032, India.
- **The Integrated Optics and Millimeter and Microwave Integrated Circuits Conference** will be held at the Von Braun Civic Center, November 16-19, 1981, in Huntsville, Alabama. Contact SPIE Technical Programs Committee, P.O. Box 10, Bellingham, WA. 98227 at (206) 676-3290 for further details.
- **Eascon '81, the Electronics and Aerospace Systems Conference**, will be held at the Washington Hilton Hotel in Washington, D.C. on November 16-19, 1981. Dr. Delbert D. Smith, General Chairman, Comsat Corporation, 950 L'Enfant Plaza, S.W., Washington, D.C. 20024, (202) 554-6111 can provide further information.
- **The Magnetism and Magnetic Materials Conference** is slated for November 16-20, 1981 at the Sheraton Ambassador Hotel in Atlanta, Georgia. Contact Prof. D. Landau, Physics Department, University of Georgia, Athens, GA (405) 542-1777 for more information.
- **The 1981 National Telecommunications Conference** will be held November 29 — December 3, 1981 at the Marriott Hotel in New Orleans, Louisiana. More details can be obtained from J.W. Joyner, South Central Bell Telephone Co., 518 Baronne Street, Room 1035, New Orleans, LA. 70140, (504) 528-7990.
- **The IEEE International Electron Devices Meetings (IEDM)** is scheduled for December 7-9, 1981 at the Washington Hilton Hotel in Washington, D.C. Further information can be obtained from Ms. Melissa M. Widerkehr, Courtesy Associates, 1629 K. Street NW, Suite 700, Washington, D.C. 20006 at (202) 296-8100.

- **The Sixth International Conference on Infrared and Millimeter Waves** will convene December 7-12, 1981 in Miami Beach, Florida at the Carillon Hotel. More details are available from Ken J. Button, Massachusetts Institute of Technology, National Magnet Laboratory, Building NW, Cambridge, MA 02139 at (617) 253-5561.
- Kharagpur, India is the site of the **International Symposium on Microwaves and Communication**, which will be held December 29-30, 1981. For further information, contact Prof. B. Chatterjee, Dept. of Electronics and Electrical Communication Engineering, Indian Institute of Technology, Kharagpur-721302, India.
- **The Sixth Topical Meeting on Integrated and Guided-Wave Optics** will be held at the Asilomar Conference Center, Pacific Grove, California on January 6-8, 1982. More details are available from Dr. Jarus W. Quinn, Optical Society of America, Integrated Optics Meeting, 1816 Jefferson Place, N.W., Washington, D.C. 20036 at (202) 223-8130.
- The University of Colorado, Boulder, Colorado is the site of the January 13-15, 1982 **National Radio Science Meeting**. Further details are available from S.W. Maley, Dept. of Electrical Engineering, University of Colorado, Boulder, CO. 80309.
- **The 1982 IEEE International Solid State Circuits Conference** will be held February 10-12, 1982 at the Hilton Hotel in San Francisco, California. Contact Lewis Winner, 301 Almeria Avenue, P.O. Box 343788, Coral Gables, FL. 33134 at (305) 446-8193 for more information.
- April 12-14, 1982 are the dates for **The Fifth Topical Meeting on Optical Fiber Communication**, which will be held at the Phoenix Civic Plaza Convention Center, Phoenix, Arizona. Further details can be obtained from Dr. Jarus W. Quinn, Optical Society of America, 1816 Jefferson Plaza, NW, Washington, D.C. 20036 (202) 223-8130.
- **The second Conference on Lasers and Electro-Optics (CLEO'82)** will also be held at the Phoenix Civic Plaza Convention Center, Phoenix, Arizona. Contact Dr. Jarus W. Quinn, Optical Society of America, 1816 Jefferson Plaza, N.W., Washington, D.C. 20036 at (202) 223-8130 for more details on the April 14-16, 1982 meeting.
- The Four Seasons Motor Inn, Colorado Springs, Colorado is the site of the **1982 IEEE Region 5 Conference and Exposition**. More information is available on the May 3-7, 1982 meeting from Dr. Clayton V. Stewart, Dept. of Electrical Engineering, U.S. Air Force Academy, Colorado Springs, CO. 80840 (303) 472-3190.
- **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 Elettiche, 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 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.
- **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 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 15-17, 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.
- **The XII International Quantum Electronics Conference** will take place June 21-25, 1982 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, Crawford Corner Road, Holmdel, NJ 07733, (201) 949-3000.
- July 20-23, 1982 are the dates for the **Joint Inter-mag and Magnetism and Magnetic Materials Conference**, which will be held in Montreal, Quebec, Canada. Prof. Arthur Yelon, Ecole Polytechnique, University of Montreal, Montreal, Quebec, Canada H 3C 3A7 can supply more information.





## RETIREMENT PLAN TO BE OFFERED

The IEEE will soon be adding a program for Individual Retirement Account (IRA) and Keogh pension plans to its list of member benefits.

The Board of Directors has approved the IRA/Keogh program, subject to legal review. The IEEE will be the sponsor, with funds invested through the Dreyfus Corp. and T. Rowe Price Associates.

Information about the plan will be sent to members in the Fall, and the program is expected to be operating by the end of the year, according to a spokesman for Smith-Sternau Organization Inc., the New York program consultant.

The funds invested and interest on those funds are tax-deferred. They are taxed when the money is withdrawn, presumably when the investor is in a lower tax bracket.

Additional information about the IEEE IRA/Keogh plan will come from Smith-Sternau as soon as the plan is available. Information about IRAs and Keogh in general and Government legislation concerning pensions can be obtained from W. Thomas Suttle, IEEE Washington Office, 1111 19th St. N.W., Washington D.C. 20036; 202-785-0017.



## IEEE MEMBERSHIP DIRECTORY

IEEE Publishing Services has announced the publication of the IEEE 1981 Membership Directory.

The 1,323-page Directory contains the names, addresses, and (when authorized) telephone numbers of over 185,000 higher grade (non-student) members. The publication can be consulted when checking titles, looking up friends and associates, and also serves as a constant reminder of key people with specific expertise members may need to contact.

In addition to the roster, the Directory includes: a description of IEEE Awards and recipients since the inception of the awards program, members of the board (1963-1981), biographies of IEEE Fellows, a list of honorary members, and the purposes, organization and history of the IEEE.

The price of the Directory is \$22 for IEEE members and \$50 for non-members. Payment may be made by check or credit card (MasterCard, Visa, or American Express only). Orders should be sent to IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854.

## MODERN ACTIVE FILTER DESIGN

The publication of **Modern Active Filter Design**, a Book of Selected Reprints, has been announced by the IEEE PRESS. This volume, sponsored by the IEEE Circuits and Systems Society, was edited by Rolf Schaumann of the University of Minnesota, Michael A. Soderstrand of the University of California, and Kenneth R. Laker of Bell Laboratories.

Active filters have taken on an important role in diverse applications, and it is becoming increasingly necessary for workers to in a variety of fields to understand their design and use. The purpose of this volume is to facilitate gaining that understanding.

The contents follow a natural development from general considerations through the design of second and higher-order filters, integrated analog filters and, the most recent type, switched-capacitor filters. The 42 reprinted papers, all published in the last decade, are arranged by subject into the following six parts: Design Considerations, Second-Order Filter Sections, Design of High-Order Filters, Fabrication, Techniques for Monolithic Continuous Analog Active Filters, Techniques for Monolithic Switched-Capacitor Filters. Introductory comments by the editors for each part relate the papers to each other and to the rest of the literature. An ordered bibliography of over a thousand publications is included to help the reader gain access to recent research.

**Modern Active Filter Design** is priced at \$15.45 for the paperbound member edition. A clothbound edition is available to nonmembers for \$30.95 (discounted to \$23.20 for IEEE members). This 436-page volume can be ordered postpaid from the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. Payment should accompany orders.



## MICROWAVES IN ELECTRONIC WARFARE COURSE

Advance Program Announcement  
Organized by the  
IEEE Microwave Theory and Techniques Society  
Washington, D.C. Chapter  
Registration Open to All Interested Persons

This course will be part of the IEEE/MTT 1981-82 lecture series. The lectures will begin at 7:30 PM on the second Tuesday of each month at the Center of Adult Education, Univ. of Maryland, Adelphi, MD. Each lecture will be preceded by a social hour and dinner with the speaker. The following tentative list of course topics has been established.

DATE	TOPIC
Oct. 13, 1981 (7:45 PM due to registration)	Introduction to Electronic Warfare
Nov. 10	Active Detection/Location Concepts and Subsystems (transmitters, receivers, etc.)
Dec. 8	EW Jamming and Deception
Jan. 12, 1982	Passive Detection/Location Concepts and Subsystems (receivers)
Feb. 9	Antennas, Radomes and Platforms in EW Systems
Mar. 9	EW Processors
Apr. 13	Summary of EW Techniques and Future Developments

"Applied ECM" by L. VanBrunt will be the course text. The text will be distributed on October 13 beginning at 7PM. Registration (including text) is \$50. Registration and all dinners is \$120. For further information call John Jacobi, MTT Chairman, 576-3616; Jim Douglas, Vice Chm., 734-4100; Mel Zisserson, Program Chm., 864-5600, x2308.

-----Cut Along Line-----

## MICROWAVES IN ELECTRONIC WARFARE COURSE

Name \_\_\_\_\_ Title \_\_\_\_\_

Organization \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Work Phone(     ) \_\_\_\_\_

\$50 Enclosed \_\_\_\_\_ \$120 Enclosed \_\_\_\_\_ Pay at Registration \_\_\_\_\_  
(includes dinners)

Bill Office \_\_\_\_\_ Pay Via Purchase Order \_\_\_\_\_

Make Checks Payable to: Washington G-MTT Chapter, IEEE

Mail to: Mr. M. Zisserson, Litton Amecom, 5115 Calvert Rd., College Park, MD 20740

Check No. \_\_\_\_\_ Recv'd By \_\_\_\_\_ Date \_\_\_\_\_



THE INSTITUTE OF  
ELECTRICAL AND  
ELECTRONICS  
ENGINEERS, INC.

Non-Profit Organization

U.S. Postage

**PAID**

PERMIT NO. 20683

LOS ANGELES, CALIF.

Third Class