

IEEE GROUP ON
MICROWAVE THEORY
AND TECHNIQUES

NEWSLETTER



EDITOR: J. B. Horton
1236 Mohawak Trail, Richardson, Texas 75080

Number 61, January 1971



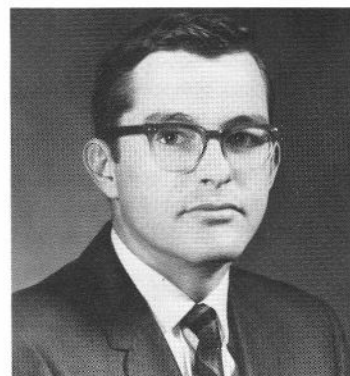
LEO YOUNG

LEO YOUNG ELECTED IEEE DIRECTORS

The IEEE Board of Directors has announced the election of Dr. Leo Young to the position of Division 4 Director. Dr. Young's election was for a two year term beginning January 1, 1971. Division 4 is one of the six new IEEE divisions formed of technical groups. Each division will have representation on the Board of Directors. Division 4 is composed of IEEE Groups on AP, ED, MTT, Sonics and Ultrasonics, PMP, Magnetics and QEC.

Dr. Young is Program Manager, Microwave Techniques, at Stanford Research Institute, Menlo Park, California. He is presently on leave at the Israel Institute of Technology, Technion City, Haifa. (See letter on p. 15.)

INSERT - 1971 COMMITTEE DIRECTORY



W. J. EVANS

W. J. EVANS AWARDED MICROWAVE PRIZES

The G-MTT Awards Committee has announced that W. J. Evans, Bell Telephone Laboratories, Murray Hill, N. J., is the recipient of the 1971 Microwave Prize. Dr. Evans was awarded the Microwave Prize for his paper "Circuits for High Efficiency Avalanche - Diode Oscillators," published in the December 1969 issue of the IEEE Transactions on Microwave Theory and Techniques.

Dr. Evans (S' 1964, M' 1967) was born in Windsor, Ontario, Canada, on July 5, 1938. He received the B.S. in Science Engineering, and the M.S. and Ph.D. degrees in Electrical Engineering from the University of Michigan, Ann Arbor, in 1960, 1964 and 1968 respectively.

From 1960 to 1963 he was with the U.S. Air Force, Eglin AFB, Florida, where he was involved with the engineering evaluation of electronic countermeasures systems. From 1964 to 1966 he was associated with the Optical Radio Systems Laboratory and from 1966 to 1968 with the Electron Physics Laboratory both of the University of Michigan. In 1968 he joined the staff at Bell Telephone Laboratories, Murray Hill, New Jersey, where he is currently working on avalanche diodes.

Dr. Evans is a member of Phi Kappa Phi, Sigma Xi, and Tau Beta Pi.



EDITORS NOTES

by J. B. HORTON

With the election of Al Clavin to Vice-Chairman of ADCOM, I have assumed the responsibilities of Editor of the NEWSLETTER. Al has done an excellent job as editor for the past three years and it is my intention that most of the policies and features in the NEWSLETTER will be continued for the present. No doubt there will be some changes in the future, but the basic function of the NEWSLETTER will always be to serve the membership by providing the mechanism for communicating with ADCOM, the IEEE, and other members of the engineering profession. We will continue to publish articles of special interest to the members, as well as the regular features such as the Chairman's Viewpoint, ADCOM Report, Chapter Activities, Letters to the Editor, etc. In particular, I would like to invite letters to the editor and news of special events in the chapters.

In reviewing the subjects discussed at the December 7 ADCOM meeting, the one item which affected most of the decisions was the reduction in allocated funds to the group. In line with the request from IEEE to cut funds where possible, we decided to publish the 1971 G-MTT Committee Directory with the January issue of the NEWSLETTER. The Directory can be removed intact from the center of the NEWSLETTER with the removal of one staple. Our thanks to George Oltman for assembling the information and editing the Directory.

New ADCOM Committee on Professional Action

Organization of the G-MTT ADCOM for 1971 will include a new Professional Action Committee under the chairmanship of R. A. Rivers. The committee will be charged with investigating in depth all of the social and economic problems that bear on the relationship of the professional engineer and scientist with our society. There are two general aspects of the problem that will be considered. One is the Professional Responsibilities of engineers and scientists to our society. Examples are: The responsibility to prevent deleterious environmental side effects of technical developments; the responsibility to prevent wasteful or duplicative activities; and the responsibility for making the public aware of the true technical aspects of problems on which political decisions may be made. The other aspect of professionalism is the professional benefits and privileges that the scientist or engineer should have in order to make him free and independent to act responsibly as a professional. The essence of this problem is one of improving economic security and well being of the individual.



PAST CHAIRMAN'S REVIEW

by JOHN H. BRYANT

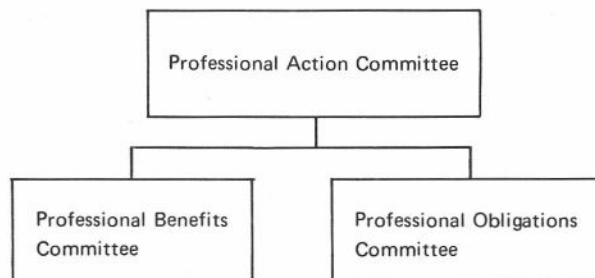
For several years it has been my privilege to serve on G-MTT ADCOM. The past year has been most rewarding to me personally. The success of any operation as complex as G-MTT necessarily depends on a lot of hard work by a large number of people. From the Chairman's view this becomes most evident.

In terms of viability, G-MTT must rate very high. I wish to sincerely thank everyone who has served individually on committees and specific assignments, and to thank all the individuals and organizations who have helped to make our programs succeed.

Organizations cannot stand still and G-MTT along with other similar organizations will be faced with difficult problems in the coming years; financial, organizational and procedural. The traditional role of dissemination and recording of information through meetings and publications must ever be continued. Technical Committees need to be given much more attention and brought to the forefront of our efforts on information gathering, presentation and archival recording. Along with this we're obliged to take on more responsibility for society and career related problems, as well as educational needs of our members.

The committee will investigate, report, promote discussion, formulate an acceptable plan of action, and implement its plan to the extent possible. Its philosophy will be to raise the level of professionalism.

The committee structure will be:





CHAIRMANS VIEWPOINT

by SY OKWIT

Over the years, the Group on Microwave Theory and Techniques has been recognized as being inventive, dynamic, and responsive to the needs of its members. The evaluation of the Group's performance and how well it serves its members has always been based on its engineering technical output.

In recent years, there have been growing comments from the membership questioning the established priorities of the Group and of IEEE itself. The formal output of technology through publications, symposia, and lectures is now being considered by many to be shortsighted and parochial. There appears to be an increasing membership demand that the Institute take on the added responsibilities of the engineers' social, economic, and political problems, such as professionalism, pension plans, employment, etc. It is commonly accepted that large organizations, such as the Institute, may be slow to change because of the inherent inertia associated with its mass. A more practical approach to instituting change logically falls into the more versatile, faster reacting Groups who could collectively become the necessary catalyst for the desired change.

The MTT ADCOM recognized the trend for change several years ago, as evidenced by the few highlights listed below:

1. Al Clavin, sensing the need for a broader scope of Group responsibility, had written several stimulating editorials in our Newsletter on the subject of benefits to engineering, professionalism, etc. These editorials clearly filled a hiatus as demonstrated by the responsive membership reactions that were documented in the "Letters to the Editor" section of current Newsletter issues.

2. Last year's Chairman, John Bryant, broke from tradition and organized a non-technical panel session ("The Engineer, Technology, and Society") at our 1970 International Symposium. This session generated a great deal of excitement, information exchange of many diverse points of view, and was added volatile fuel for a broadened ADCOM responsibility.

3. At each of the 1970 ADCOM meetings, the role of the Institute and the Group in the socio-economic arena dominated a significant portion of the meeting.

Although there is no unanimity within ADCOM (or the MTT membership!) concerning the direction that should be taken or the mechanisms to be used to achieve a given direction, it is unanimously agreed that the problems should be delineated and solutions energetically presented to the Institute.

To assure the Group's active involvement in this socio-economic arena, a panel session that is controversial, has a diverse panel member representation, and has broad coverage, is being organized for the 1971 Symposium to be held in Washington, D.C. It is hoped that we might be able to attract knowledgeable panelists from organizations such as the American Medical Association, National Education Association, National Society of Professional Engineers, our own Institute, as well as Government panelists having legislative responsibility and Cabinet responsibility. In addition, a new Standing Committee has been added to ADCOM this year. It is to be called "Professional Action Committee" and will be chaired by Bob Rivers. This committee will concern itself with both sides of the coin of professionalism:

Professional benefits - concerning itself with the socio-economic needs of the engineer.

Professional obligations - concerning itself with the engineers' obligation to society.

We are all concerned at ADCOM as to the ultimate direction these efforts will take us. There are many advantages and disadvantages of pursuing this line but with free exchanges of ideas, objectivity, and personal involvement of each MTT member, the result must be an overwhelming positive to all engineers.

I encourage all our members to let us know their feelings on this matter. John Bryant, Al Clavin, Bob Rivers, and myself, as well as any other ADCOM member, would welcome hearing from you. We look forward to an active and productive year to assure that we remain an aware and meaningful representative body.



EXCERPTS FROM ADCOM MEETING

by AL CLAVIN

The December 7 meeting of the G-MTT National ADCOM, under the chairmanship of John H. Bryant, was held at Hughes Aircraft Company, Los Angeles, California.

Chairman Bryant opened the meeting with announcements that Dr. Leo Young had been elected Division 4 Director; Don King was named to the ISRC subcommittee on Scientific and Cultural Exchange, and J. E. Rowe will be Editor of the IEEE Proceedings. Vice-Chairman, Sy Okwit, reported that the IEEE is on an austerity budget. The staff at Headquarters is being cut and allocations of funds to groups for 1971 will be reduced.

D. G. Killian, Chairman of the San Diego MTT/AP Chapter was present at the meeting and reported on successful luncheon meetings that were held at San Diego. John Horton commented that because of the budget squeeze, speakers are finding it difficult to obtain travel money. John will attempt to publish a speakers list in the near future.

Sy Okwit reported that Bob Beatty will be in Japan for several more months and that Phil H. Smith will be Chairman of the Standards Coordinating Committee for 1971. Sy also reported that G. I. Haddad will head the Publications Committee and that F. J. Rosenbaum will phase-in as Editor of the Transactions.

Warren Cooper reported on the 1971 Symposium to be held in Washington, D.C. It is on schedule with the next major event the Technical Program Committee meeting on January 18, 1971. An evening session is planned on the problems of the engineer in today's environment. Al Clavin and Sy Okwit are to act as ADCOM advisers for this session.

Al Clavin reported on Membership Services. He plans to prepare a list for the ADCOM, relating to those survey items which require ADCOM and IEEE Headquarters action. The names of MTT members who have volunteered to help in various activities have been passed on to the chairman of the proper activities. A report from Bob Rivers was read on membership standing. As of August 31, the membership of MTT was as follows:

Students: 928,	Regular Members: 5380,	Affiliates: 12
TOTAL: 6320		

John Horton reported on Chapter Activities. A report from Harold Sobol, 1970 National Lecturer, showed that he spoke at 16 chapters. Carl Blake was officially elected 1971 National Lecturer. George Oltman has agreed to prepare the MTT Directory for 1971. In order to save money, it will be included with the January issue of the Newsletter.

Al Clavin announced that he has volunteered to join the IEEE Committee on Applications of Electro-Technology to social problems (a new committee recently formed by TAB).

At the close of the meeting, Gene Torgow asked that the ADCOM recognize the following members for their service to MTT. These members will have new positions for 1971: Al Clavin, Newsletter; George Haddad, Transactions; John Bryant, Chairman.

The next ADCOM meeting will be held at 9:00 A.M. on Monday, March 22, at the New York Hilton, during the 1971 IEEE Convention.

IEEE AND NSPE ENTER AGREEMENT ON MEMBERSHIP AND SERVICES

In an action that leaders of the two organizations hailed as a most significant step toward cooperation within the engineering profession in decades, members of the 160,000-member Institute of Electrical and Electronics Engineers now will be able to avail themselves of certain services and publications offered by the National Society of Professional Engineers. The new services will be available at varying fees, and will include eligibility to participate in such activities as the NSPE Employment Referral service and retirement program, NSPE legislative programs, receipt of many NSPE publications, as well as some participation in state and local services. "In our broad discussions with leaders of IEEE during the past weeks, we learned that many of their members have expressed a desire for greater participation in the nontechnical problems facing our profession," said NSPE President Harry C. Simrall, P. E. "These activities parallel very closely the areas in which the NSPE has been involved for many years. The items in which these men are interested include government liaison, both in the legislative process and the administrative decisions, and at the Federal, state and local levels. They are concerned with broad employment problems, ranging from the current problems they have as individuals; and collectively in such things as portable pensions, patent right and registration. They are anxious for unified action in improving the image and status of the profession through public relations and such professional matters as guidance, ethics and cooperation and liaison with other professional groups. They desire to participate individually in the decision-making process and to be a part of an organizational pattern that is effective at Federal, state and local levels. They do not see the need for another organization."

Commenting on this agreement, Dr. James H. Mulligan, Jr., President of the IEEE, stated: "The leadership is well aware of the increasing interest of many of its members in matters of economic, social and political involvement. IEEE has traditionally limited its activities to the dissemination of technical information concerning electrical and electronic technology. In contrast, the NSPE has limited its activities to the nontechnical area and has developed programs and accumulated expertise in many areas in which IEEE members are presently expressing concern. In addition, NSPE appears to have the particular form of organization needed to be effective in these areas. Until 1970, the NSPE confined membership to registered engineers and this prevented many IEEE members from being a part of their activities. With the revised criteria permitting nonregistered membership in NSPE, a large number of IEEE members can now become NSPE members. It seemed apparent, however, that if some mechanism could be worked out whereby more IEEE members might take advantage of NSPE's activities, this would provide an immediate opportunity to fulfill their express desire for greater involvement in the nontechnical areas of the profession. The Boards of Directors of both organizations now have approved a course of action which should provide greater strength for effective programs in these areas."

The alternatives now open to IEEE members are:

Subscription to NSPE Services - Available at a fee of \$15 a year, these services available include: eligibility for the Professional Engineer Employment Referral Service (PEERS); eligibility for the NSPE retirement program; receipt of LEGISLATIVE BULLETIN, Legislative Action Report, Legislative Opinion Request and one practice section

newsletter (except PEPP newsletter); participation in the NSPE Salary Survey; subscription to the Professional Engineer magazine; and member rate on all NSPE publications. (See Fact Sheet below for additional details on these services.)

Services from State Society Organization - Available at a fee of \$30. -- \$15. to be service charge to National, \$15. to be service charge at state level. In addition to the above services, IEEE members would receive the state publication and such other state services and participation as might be available, but would have no vote in state society or National activities. Several states have programs of discussions with employers on desirable employment practices for engineers.

In addition, membership in NSPE is available to IEEE members, subject to eligibility provisions of NSPE which relate the grade of membership available to the specific professional qualifications of the individual engineer. Such membership may be had at fees ranging from \$35 to \$75, depending on state and chapter in which member functions. As a member, he would receive all services of the National, state and local societies and have voting privileges. Membership would enable participation in all activities of the local, state and National societies in such matters as improving the status of engineers, public relations, community involvements, ethics, career guidance, committee participation, holding office, voting on policy matters, and related activities.

Summary Fact Sheet on NSPE Publications and Services Available to Members

Legislative Bulletin - This publication is issued monthly, summarizing Federal legislation introduced into Congress and as it progresses through the legislative process. It is a four-page bulletin.

Legislative Opinion Request - This publication requests the opinion of those receiving it as to their position on various legislative proposals which may be introduced from time to time. It attempts to summarize with sufficient details to be understood the elements of proposed legislation. It may be limited to a particular bill, or if several bills have been introduced on the same subject, will attempt to summarize the thrust of the legislation and the variations in the proposals.

Legislative Action Report - This is issued as legislation progresses through the various stages of consideration. It suggests to those receiving it the desirability of contacting their legislators with the position of the Society and is the mechanism by which the profession can be most effective.

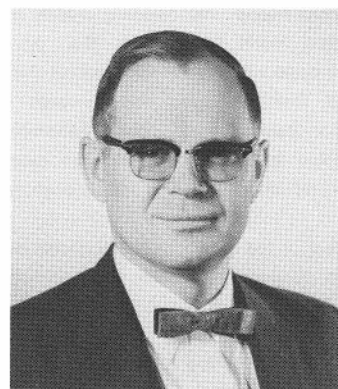
Practice Section Newsletters - NSPE has four newsletters, one each for engineers employed in government, industry, private practice and education. The newsletters primarily report significant developments in the area of employment for each group of engineers. Items reported range from significant statistical information, reporting on studies of value to that type of employment, employment practices, salary and economic considerations and similar concerns.

Professional Engineers Employment Referral Service (PEERS) - This service to which only members of NSPE are eligible permits an unemployed, or soon to be terminated, engineer to place his name and a short resume on his experience on file with NSPE. These are

summarized and sent without individual identification to over one thousand employers. If the employer is interested in the anonymous summary, a contact to NSPE will provide him with the name and address of the individual so that he may contact him to get a full resume together with any details concerning employment.

NSPE Retirement Program - This program is a combined annuity and mutual fund program to which NSPE members are eligible, providing for an investment program with guaranteed annuity through an insurance aspect and a variable annuity return via the mutual fund.

Salary Survey - The NSPE conducts a biennial survey of the income of its members and reports the results in a variety of breakdowns by age, field of employment, type of work assigned, and degree of responsibility.



CARL BLAKE

BLAKE ELECTED 1971 NATIONAL LECTURER

The Membership Services Committee of the G-MTT ADCOM recently announced that Carl Blake of the MIT Lincoln Laboratory has been elected 1971 G-MTT National Lecturer. Mr. Blake's lecture is entitled "Applications of Solid State Microwave Power Sources".

Carl Blake is the leader of the Phased Array Radars Group at the MIT Lincoln Laboratory. He joined Lincoln laboratory in 1957, prior to which he was Assistant Professor of electrical engineering at the University of Maine. Mr. Blake received his BS and MS degrees from MIT. He is a member of Eta Kappa Nu and is a past chairman of the Boston Chapter of G-MTT.

The summary of Mr. Blake's talk is as follows:

Applications of Solid State Microwave Power Sources.

The current state-of-the-art of microwave power transistors, avalanche diodes and transfer electron devices (TED) will be reviewed. Device characteristics and special features or limitations of each class of device will be presented. Examples of present-day commercial and industrial applications will be cited. An assessment of the future impact of these devices on the microwave industry will be postulated.

Scheduling of Mr. Blake's talk at G-MTT chapters can be arranged by contacting him at:

MIT Lincoln Laboratory, MS C371
Box 73
Lexington, Mass. 02173
Telephone (617) 862-5500 x 5312

**1971 IEEE INTERNATIONAL
MICROWAVE SYMPOSIUM**



Preparations for the 1971 IEEE International Microwave Symposium are in the final stages. The meeting will be held at the Marriott (Twin Bridges) Motor Hotel, Washington, D.C. on May 17-19, 1971. Seventy-Three (73) papers have been selected for the technical program including eight (8) invited papers and fourteen (14) from foreign countries. A special panel on the social-economic problems of the engineering profession is planned for Monday evening. The program also includes a banquet scheduled for Tuesday evening, May 18.

Topics included in the program cover microwave theory, components, devices and systems for UHF through millimeter wave frequencies.

Sessions are scheduled for the following topics:

Filters and Couplers
Microwave Integrated Circuits
Transmission Lines and Measurements
Microwave Systems (2)
Ferrite Devices (2)
Solid State Components (2)
Microwave Acoustics
Computer Oriented Microwave Practices

An additional feature to program will be Late-News-Items. Authors interested in presenting Late-News-Items should contact:

R. V. Garver
Technical Program Chairman
Harry Diamond Laboratory
Washington, D.C. 20438
Telephone (202) 896-9937

For general information about the Symposium contact:

L. R. Whicker
Code 5250
Naval Research Laboratory
Washington, D.C. 20390
Telephone (202) 767-3312

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IEEE 71

**IEEE CONVENTION SCHEDULES
8 MICROWAVE SESSIONS**

Sessions organized for the 1971 IEEE Convention in March include four Microwave Technical Applications sessions (sponsored by G-MTT) at the Coliseum (J. J. Taub, AIL) and four Technical Sessions at the New York Hilton (Frank A. Brand, USAECOM). In addition to these sessions a session on Biological Effects of Radiation has been organized by Professor S. Rosenthal of PIB

The sessions are identified as follows:

<u>Session No.</u>	<u>Title</u>	<u>Organizer/Chairmen</u>
Coliseum		
TA13	Impact of Modern Instrumentation on Microwave Circuit Design	Gunter W. Sorger Singer
TA14	Modern Microwave Ferrite Devices	C. Curtis Hartwig Raytheon
TA28	Applications of Solid State Microwave Devices	Arthur H. Solomon Sylvania
TA29	Industrial and Consumer Applications of Microwaves	William C. Brown Raytheon
New York Hilton		
1-V	Progress in Gunn and Impatt Devices	V. Higgins USAECOM
2-F	High Power, Broadband Microwave Solid State Amplifiers	F. A. Brand USAECOM
3-J	Integrated Microwave Systems	J. F. Bunker Microwave Associates
4-F	Microwave Solid State Modules for Phased Arrays	F. Sterzer RCA
---	Biological Effects of Non-ionizing Radiation	S. Rosenthal PIB



CHAPTER ACTIVITIES

by J.B. HORTON

Along with other changes in ADCOM committee appointments, the Chapter Activities subcommittee has several new members. Effective January 1, G. P. Rodrigue is chairman of Chapter Activities with B. R. Hallford handling Chapter Records, R. A. Sparks Membership chairman and Carl Blake National Lecturer. Special thanks go to Bob Rivers for his work as membership chairman for the last two years. Bob will be on a new assignment as chairman of the Professional Action Committee.

Hal Sobol completed his tour as 1970 National Lecturer with a west coast tour of San Francisco, Orange County, and San Diego, and a final talk at Schenectady. For record, a summary of Dr. Sobol's talk will be included in the December 1969 issue of the Transactions on MTT. Our thanks to Dr. Sobol for a fine job as National Lecturer.

Two chapters completed special seminars this fall. The Boston chapter held a seminar on Microwave Phase Shifters on October 22; attendance was 52. The Long Island chapter sponsored a seminar on Microwave Solid-State Power Generation on November 12; attendance was 65. A total of seven special seminars were held by the chapters in 1970; all were reported successful. Holding a special seminar adds much to the chapter activities. I would like to encourage each chapter to consider a seminar for 1971.

Plans for Chapter Activities this spring include a chapter chairman's meeting to be held at the 1971 International Microwave Symposium in Washington, D.C. I would like to encourage all chapter chairmen and vice chairmen to attend this meeting. I look forward to seeing the chapter representatives there.



CHAPTER NEWS

LETTER FROM THE TOKYO CHAPTER

According to the statistics of 1970, the G-MTT has 261 members in Japan, who are represented by Tokyo Chapter. As the chairman of the chapter I should like to report the recent activities of the Chapter.

There are two major activities that the chapter is being engaged in. One is the abstract reporting of papers published in Japan in the microwave field. The other is to hold meetings irregularly, where overseas microwave engineers visiting Japan are requested to give talks for Japanese microwave engineers.

Since there is a big association of Japanese electronics and communication engineers named IECEJ (Institute of Electronics and Communication Engineers of Japan), we intentionally restrict our activities to the "internal relations" to avoid confusion and overlapping.

Abstract Reporting

The abstract reporting system from the Tokyo Chapter to the Transactions on MTT was first established in 1964, when Dr. Tomiyasu of General Electric visited Japan to attend the ICMCI held in Tokyo. Upon his advice, late in this year, the G-MTT Abstract Committee (an

informal committee) was organized by nine Japanese volunteers under the chairmanship of Professor Iwakata, Waseda University, who was also the chairman of the Tokyo Chapter. The committee prepared lists of titles and abstracts of papers published in Japan and forwarded them to the Transaction editor for publication. However, this committee became gradually inactive in 1967, and no list was forwarded to the Transactions between December 1967 and January 1970.

In April 1969, the officers of the Chapter changed. Professor K. Suetake of TIT (Tokyo Institute of Technology) and Prof. T. Okoshi of University of Tokyo were nominated to be the vice-chairman and the secretary, respectively, and I was nominated to the chairmanship. We were much willing to resume the abstract reporting, and discussed this matter with the members and also with Dr. F. G. R. Warren of RCA Limited, Montreal, Associate Editor of the Transactions on MTT, IEEE. Our conclusion was that, to avoid unnecessary meetings and communications, the organization for the reporting business should be of the minimum size, practically one active member and a few advisory people. We also decided that for the first year (1970), Prof. Okoshi would do the business and Prof. Suetake and I would form a tiny advisory committee.

Three reports have been forwarded to Dr. Warren, and the first one was published in June issue of the Transactions. The reporting period is three months.

Meetings

Since September 1969, five meetings have been sponsored by the Tokyo Group Chapter. They are listed in the attached table. One was sponsored jointly with the Tokyo Section of the IECEJ, and one was with the Tokyo Section of the IEEE.

Sogo Okamura
Professor, Dept. of Electronic Engrg.
University of Tokyo
Chairman of Tokyo Chapter

CHAPTER MEETINGS

Tokyo Chapter

Date: September 3, 1969
 Speaker: Prof. R. H. Pantell (Stanford University)
 Title: Present State-of-the-Art of Gas Lasers
 Place: Gakushi-Kaikan, Kanda, Tokyo
 Attendance: 13

Date: February 23, 1970
 Speaker: Prof. R. Muller (Technische Hochschule Munchen) (Visiting professor to University of Tokyo)
 Title: Analog Computer Simulation of Gunn; LSA and IMPATT Oscillators
 Place: Kikai-Shinko Kaikan, Minato-ku, Tokyo
 Attendance: 50

Date: July 1, 1970
 Speaker: Dr. R. W. Beatty (NBS)
 Title: Microwave Standard Activities of PG-MTT and U.S. National Bureau of Standards, and other NBS recent topics
 Place: Gakushi-Kaikan, Hongo, Tokyo
 Attendance: 26

Date: August 19, 1970
 Speaker: (1) Prof. A. A. Oliner (Polytechnic Institute of Brooklyn)
 (2) Dr. H. L. Hartnagel (University of Sheffield)
 Title: (1) Acoustic Surface Waves in Microwave Technology
 (2) New Devices for Information Processing at Microwave Frequencies
 Place: Tokyo Institute of Technology
 Attendance: Approx 120

Date: September 11, 1970
 Speaker: Dr. K. Tomiyasu (General Electric Co.)
 Title: Recent Microwave Topics in the United States
 Place: Gakushi-Kaikan, Hongo, Tokyo
 Attendance: 11

Baltimore Chapter

Date: November 5, 1970
 Speaker: Dr. Leonard S. Taylor
 Affiliation: University of Maryland
 Title: Effects of Turbulence on Electromagnetic Propagation

Date: October 1, 1970
 Speaker: Roger Bailey
 Affiliation: Chesapeake and Potomac Telephone Company
 Title: Engineering Microwave Relay System for WMPB - Channel 67

Dallas Chapter

Date: October 20, 1970
 Speaker: John Maxwell
 Affiliation: Texas Instruments
 Title: Microwave Integrated Circuit Noise Sources

Date: December 2, 1970
 Speaker: William J. Thompson
 Affiliation: Collins Radio Co.
 Title: Line of Sight Microwave Communications Systems

Huntsville Chapter

Date: February, 1970
 Speaker: Prof. George Knittel
 Affiliation: Polytechnic Institute of Brooklyn
 Title: Wide-Angle, Wide-Band Antenna Matching Techniques

Date: April, 1970
 Speaker: Clay Hamilton
 Affiliation: NASA, Huntsville
 Title: Large Space Erectable Antennas

Date: May, 1970
 Speaker: R. F. Russell
 Affiliation: SRI, Huntsville
 Title: Antenna Damage Assessment by Mathematical Models

Date: November 23, 1970
 Speaker: Gerald Hickman
 Affiliation: Scientific Atlanta
 Title: Antenna Range Design

North Jersey Chapter

Date: October 15, 1969
 Speaker: Dr. Garry Bernard
 Affiliation: Yale University
 Title: What has "Antennas and Propagation" to do with Insect Eyes?

Date: November 19, 1969
 Speaker: Dr. Richard Damon
 Affiliation: Sperry Rand, Sudbury
 Title: Praetersonics-Springs, Magnets and Microwaves

Date: February 6, 1970
 Speaker: Dr. Harold Sobol
 Affiliation: RCA, Electronic Components
 Title: Microwave Integrated Circuits

Date: March 18, 1970
 Speaker: J. S. Cook
 Affiliation: Bell Telephone Laboratories
 Title: Communications From Deep Space Probes

Date: May 28, 1970
 Chapter Sponsored Seminar on Recent Highlights in Microwave Engineering

Date: October 15, 1970
 Speaker: Ralph Grabowski
 Affiliation: APPLICON Co.
 Title: Optimization Techniques for the Microwave Engineers

(Continued on page 16)





CALL FOR PAPERS

Joint Issue Sponsored by
IEEE Transactions on Microwave
Theory and Techniques

And

IEEE Transactions on
Instrumentation and Measurements

Special Issue on

AUTOMATED MICROWAVE MEASUREMENTS

This jointly sponsored special issue has been planned for publication in November 1971. The purpose is to publish the newest techniques employed in microwave measurements using the automatic and/or computer programmed test equipment.

Authors of papers and correspondence items reporting automated microwave measurements in any of the following areas are being invited to submit their papers for review.

- Area I Antenna Measurements
 - a. Gain patterns
 - b. Field intensity
 - c. Phase analysis of radiated energy

- Area II Component Measurements
 - a. Impedance (S parameters, etc.)
 - b. Attenuation
 - 1. Very low values
 - 2. Very high values
 - c. Transmission phase
 - 1. Phase distortion
 - 2. Group delay
 - 3. Velocity of propagation

- Area III Noise Measurements
 - a. Gas tube reference (argon, neon, etc.)
 - b. Hot and cold load methods
 - c. Diode method ($20^{\circ}\text{I}^{\circ}\text{R}$)
 - d. Solid state noise sources (GaAs)

- Area IV Frequency Measurements
 - a. Counting methods
 - b. Harmonic selection techniques
 - c. Stabilized or synthesized frequency sources
 - d. Cavity methods (wavemeters)
 - e. Harmonic content, side-band information in modulated (FM and AM) sources

The length and style for these papers should be in accordance with "Information for Authors" published in the Transactions. Four copies of each complete manuscript should be submitted for review not later than March 15, 1971, to the Guest Editor, Mr. H. E. Stinehelfer, Microwave Associates, Inc., Burlington, Mass. 01803. Inquiries may also be sent to Professor G. I. Haddad, Editor, Transactions on Microwave Theory and Techniques, The University of Michigan, Department of Electrical Engineering, Ann Arbor, Michigan 48104 or to Professor George B. Hoadley, Editor, Transactions on Instrumentation and Measurements, North Carolina State University, P.O. Box 5275, Raleigh, North Carolina 26707.

IEEE 71

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March 22-25, 1971

12 Exhibit Categories
(New York Coliseum)

**50 Technical
Program Sessions**
(New York Hilton)

**30 Technical
Application Sessions**
(New York Coliseum)

**IEEE 71 INTERNATIONAL
CONVENTION AND EXPOSITION**
Write IEEE Convention Department for
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The Institute of Electrical and
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CALL FOR PAPERS

CORNELL CONFERENCE ON
**HIGH FREQUENCY GENERATION
AND
AMPLIFICATION - DEVICES AND
APPLICATIONS**
CORNELL UNIVERSITY
Ithaca, New York

AUGUST 17, 18, 19, 1971

SPONSORS: SCHOOL OF ELECTRICAL
ENGINEERING, CORNELL
UNIVERSITY
The OFFICE of
NAVAL RESEARCH

In cooperation with: **IEEE
CIRCUIT THEORY GROUP**

**ELECTRON DEVICES
GROUP**

**MICROWAVE THEORY
AND
TECHNIQUES GROUP**

The Third Biennial Cornell Electrical
Engineering Conference scheduled for
August 17, 18, and 19, 1971, at Cornell will

present the topic, "High Frequency Generation and Amplification - Devices and Applications".* Since the first biennial conference in 1967, there has been an extensive growth of the field and, in particular, new areas of application for solid state and quantum electronic devices are now being exploited. Of special interest is the use of these new devices in the public sector, for example, as applied to marine and vehicular navigational equipment including radars and transponders, intrusion alarms, the monitoring of pollutants, and bio-electronics. A proceedings will be published.

There will be a number of review and tutorial papers on important subjects in the field, including chemical laser principles and technology, microwave semiconductor devices, and device/circuit interaction. Papers already scheduled include contributions by C. Hilsom of Royal Radar Establishment, M. Uenohara of Nippon Electric, F. Brand of USAEC, R. Engelbrecht of BTL, S. H. Bauer of Cornell, and B. D. Josephson of Cambridge.

Authors are invited to submit original papers describing new and significant advances in the field. Suggested topics include sub-millimeter and infrared quantum electronic components, Bloch and superlattice oscillations, tunable lasers, chemical lasers, microwave semiconductor amplification and generation devices (Gunn, LSA, IMPATT, TRAPATT), and microwave transistors. Contributions relevant to systems in the public sector, as well as specific techniques of achieving high power and efficiency, electronic tuning, low noise, phase locking, amplification, dynamic range, and measurement applications will be welcomed.

Instructions for Authors

Three copies of a single page typed abstract should be submitted to the following address by 1 May 1971.

Professor Lester F. Eastman, Program
Chairman
School of Electrical Engineering
Cornell University
Phillips Hall
Ithaca, New York 14850

CALL FOR PAPERS

1971 EUROPEAN MICROWAVE CONFERENCE TO BE HELD AUGUST 23-28, 1971 - - - STOCKHOLM, SWEDEN

The 1971 European Microwave Conference will be held in Stockholm, Sweden, at the Royal Institute of Technology on August 23-28, 1971.

This international conference is the second of its kind, succeeding the conference in London, September 1969, to deal comprehensively with the subject of microwaves. It is organized by the Royal Swedish Academy of Engineering Sciences in cooperation with IEE Electronics Division, IEEE Region 8 and the Group on Microwave Theory and Techniques, and the Swedish National Committee of URSI.

In addition to short contributed papers, all of which will be orally presented, there will also be invited review papers covering important subjects.

Original papers in the following fields are invited:

Microwave solid state devices
Microwave components, and computer analysis
Microwave integrated techniques
Microwave antennas
Microwave acoustics
Microwave applications

Submission of short papers

The time for presentation and discussion will be 15 minutes. Authors are requested to submit 3 copies of a typed summary, 300-500 words in length. The author's name, affiliation and complete return address should be clearly stated.

Since papers are selected on the basis of the summary, it must include a concise statement of which new results have been obtained, supported by illustrations where appropriate.

The summary should be forwarded to reach

1971 European Microwave Conference
Fack 23, 104 50
Stockholm 80, Sweden

on or before March 1, 1971.

The authors will be notified of the acceptance of the papers by March 30, 1971.

The submission and presentation of the papers should be in English. There will be no simultaneous translation planned for the conference.

A tentative conference program and other relevant information will be mailed in April 1971 to those who are sending a request to the address given above.

CALL FOR PAPERS

1971 IEEE INTERNATIONAL CONFERENCE ON ENGINEERING IN THE OCEAN ENVIRONMENT

TO BE HELD SEPTEMBER 14-16, 1971 - - - SAN DIEGO, CALIFORNIA

The 1971 IEEE International Conference on Engineering in the Ocean Environment, sponsored by the Oceanographic Coordinating Committee, representing 16 IEEE Groups, will be held September 14-16, 1971, at the Town and Country Hotel in San Diego, California. The general chairman for the Conference is George K. Tajima of The Bissett-Berman Corporation.

The Conference is to briefly review the past and assess in detail the present, and display as best we can the tasks of the future. There has been much exploration in the ocean and much has been discovered. The future will continue some that has been done, but will contain much that is necessary for man to assert dominion over the ocean and its contents. Electronics and electrical engineering will be of increasing importance as the ocean changes from a wilderness to an environment that will

*A three-day short course given on the Cornell campus treating "Fundamentals of Microwave Semiconductor Devices", will immediately precede the Conference.

become of increasing use of man. This Conference includes an exploration of what will have to be done to accomplish this transition.

The program will include invited and contributed papers, and panel discussions. Topics will include communications systems; environment prediction systems, including data collections and manipulation; transport systems; defense systems; energy systems; and subjects related to the ocean-land interface, ocean-air interface, and ocean-made interface. Of interest will be tutorial and perspective papers and papers dealing with user requirements, techniques and devices, research results, systems, technology, and field operations. Subjects of special interest will be those related to developing and preserving the coastal environment, global ocean-air monitoring, ocean exploration, undersea habitation and engineering.

The deadline for receiving 200-word abstracts is March 30, 1971. The abstract should be sent to Dr. Maurice Nelles, Chairman of the Program Committee, in care of The Bissett-Berman Corporation, 3939 Ruffin Road, San Diego, California 92123. Drafts of the complete papers are to be received by June 15, 1971. Those submitting abstracts will be furnished complete Instructions to Authors.

CHARTERED FLIGHT TO 1972 INTERMAG IN JAPAN

Because of the lead time needed to make arrangements for chartered air flights, we would like to sample, at this time, the interest in a chartered flight(s) to the 1972 INTERMAG in Kyoto, Japan. Please fill in the information below and send to:

F. J. Friedlaender
School of Engineering
Purdue University
Lafayette, Indiana 47907

I am interested in the following chartered flight:

1. West Coast to Japan
(Current rates are approximately \$350 per person round trip)
☐ Yes ☐ No

2. East Coast to Japan
(Best guess estimate is \$450+ per person round trip)
☐ Yes ☐ No
3. Europe to Japan
(Best guess estimate is \$500+ per person round trip)
☐ Yes ☐ No
4. If there is insufficient interest to warrant flights (2) and (3) above, would you be interested in traveling in a group at reduced rates to the West Coast and boarding a chartered flight there?
☐ Yes ☐ No
5. Please check the most desirable arrangement
☐ Two week trip with INTERMAG the first week
☐ Two week trip with INTERMAG the second week
☐ Three week trip with INTERMAG the middle week
☐ Other. Please specify _____

LASER APPLICATIONS CONFERENCE

The latest developments in the rapidly changing field of laser technology will be presented at a Washington University short course, "Laser Applications," March 8-12, 1971.

The five-day course will cover essential principles of lasers and their diverse applications, including communications and tracking, computers, metrology, holography, and environmental monitoring. The future of laser systems will also be explored in a special panel discussion.

Prominent experts from the academic and industrial worlds will lead the lectures, discussions and panel presentations. Director of the course will be Monte Ross, manager, Laser Technology, McDonnell Douglas Astronautics Co., Eastern Division.

Sponsoring this timely course are Washington University's Division of Continuing Professional Education in cooperation with the University's Dept. of Electrical Engineering and McDonnell Douglas Corp. The course is designed for engineers and

scientists with some professional experience in a related technology.

For more information or to register, write Washington University, Box 1048, St. Louis, Mo. 63130, or call 314-863-0100, ext. 4530.

1972 G-MTT SYMPOSIUM

At the September 17, 1970 meeting of the G-MTT ADCOM, the proposal of the Chicago Chapter to host the 1972 G-MTT Symposium was accepted. The meeting will be held at the Arlington Park Towers Hotel, May 22-24, 1972. Committee Chairmen for the 1972 Symposium are as follows:

Steering Committee Co-Chairmen

Robert M. Knox
IIT Research Institute

Larry H. Hansen
Andrew Corporation

Technical Program Committee Co-Chairmen

Peter P. Toullos
IIT Research Institute

Robert J. Wenzel
Wavecom, Inc.

Technical Digest Committee Co-Chairmen

Eric G. Book
Andrew Corporation

Prof. R. F. H. Yang
Illinois Institute of Technology

Local Arrangements Chairman

J. S. Brown
Andrew Corporation

Publicity Committee Chairman

James D. Huber
IIT Research Institute

Finance Committee Chairman

Robert N. Hargis
Motorola, Inc.

For general information contact

J. D. Huber or
R. M. Knox
IIT Research Institute
10 West 35 Street
Chicago, Ill 60616



PERSONALITIES

IEEE ANNOUNCES FELLOW AWARDS

A recent IEEE news release listed the following MTT members among the IEEE members elected to the Grade of Fellow as of January 1, 1971:

D. J. Angelakos
Univ. of Cal. - Cory Hall
Electronics Res. Lab.
Berkeley, CA 94720

A. Fong
Yokogawa-Hewlett-Packard Ltd.
9-1 Takakuracho Hachioji-Shi
192 Tokyo, Japan

C. L. Frederick, Sr.
9701 Hillridge Drive
Kensington, MD 20795

M. A. Johnson
RD 2 Wright Road
Cazenovia, NY 13035

D. C. Kalbfell
PO Box 10764
San Diego, CA 92110

Z. A. Kaprielian
University of Southern California
University Park
Los Angeles, CA 90007

E. Labin
Soc. D. Etudes Et Conseils Aero
3 Avenue De Lopera
Paris 1 France

R. Mitra
University of Illinois
Dept. of Elec. Engrg.
Urbana, IL 61801

Tatsuji Nomura
3 3 Sakurada
Nerima Ku
Tokyo, Japan

John E. Pippin
Electromagnetic Sciences, Inc.
3643 Northeast Expressway
Atlanta, GA 30340

Hans Severin
132 Buschestr Geb In
Institut F Hf Technik
463 Bochum, F R Germany

L Stark
Hughes Aircraft
Box 3310
Fullerton, CA 92634

Michiyuki Uenohara
743 Yukigaya Cho Ota Ku
145 Tokyo, Japan

J. Vollmer
804 Larkspur
Philadelphia, PA 19116

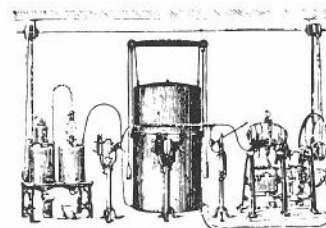
C. H. Walter
3824 Hillview Drive
Columbus, OH 43220

CONGRATULATIONS TO OUR NEW FELLOWS

MICROWAVE PAPER WINS NEC AWARD

Each year the National Electronics Conference (NEC) honors authors of outstanding papers who participated in the Program of the preceding year. Each Award consists of a \$500 check and a Certificate. The Award for the best original paper appearing in the 1969 NEC Proceedings was presented to A. N. Broers and M. Hatzakis for their paper "High Resolution Electron Beam Fabrication." The Award for the best tutorial paper appearing in the 1969 NEC Proceedings was presented to G. R. Harrison and K. E. Gsteiger for their paper Microwave Integrated Circuits (Fabrication, Design, Performance, and Application).

CONGRATULATIONS



TECHNICAL NOTES

BOOK REVIEW

PRECISION MEASUREMENT AND CALIBRATION

Electricity-Radio Frequency

U. S. Department of Commerce

National Bureau of Standards

This publication is edited by Arthur J. Estlin, the National Bureau of Standards, and is a compilation of previously published material by NBS authors on precision measurement and calibration. This volume does not repeat any of the contents of Volume I (Electricity and Electronics) but consists entirely of papers published since 1961. The new material is so extensive that a fair number of papers are referred by abstracts or simple references. The volume has been divided into 10 sections, the first three (Power, Voltage and Current, Electromagnetic Fields and Antennas) are fundamental and active in a generalized Thevenin sense. Sections 4 and 5 (Radar and Bandpass Pulses, Noise) are also active and non-sinusoidal and somewhat fundamental. The next two (Attenuation and Phase, Impedance) are sinusoidal but are derived quantities and are Thevenin passive. The last three sections (Radio Frequency Materials, Quasi-Optics and Millimeter Waves, Components and Subsystems) take us from the conceptually simple idea of a quantity to physical and technological utilization of more than one quantity in the application.

This volume should be a useful reference for all those concerned with measurement and calibration in the microwave area and ties together in a useful way a number of the best papers in the field. The volume

(Continued of page 16)



LETTERS TO THE EDITOR

Editor, G-MTT Newsletter (10-9-70)

As part of my current work on the IEEE Standards Committee, I get to scan, if not read, all of the Group Newsletters. The G-MTT newsletter is of particular interest to me because it frequently contains suggestions from your members on possible new standards projects.

For example, your issues of October 1969 and January 1970 carried a series of comments by R. W. Beatty, M. M. Brady, and Tore N. Anderson on the question of standardizing waveguide type designations. I will not attempt to summarize the lengthy correspondence here, beyond pointing out that Beatty took the position that G-MTT should encourage industry representatives in the United States to agree on a simple alphabetical system, whereas both Brady and Anderson recommended that IEEE push for adoption of the IEC recommended reference designations.

Perhaps a few comments regarding IEEE Standards policy would be in order. The IEEE does not standardize dimensions and tolerances, specific test values, etc., except under very unusual circumstances. On the other hand, we definitely do standardize all sorts of things that are intended to improve technical communication. A standard on type designations for waveguides is definitely within our scope, and if such a standard would be a service to the IEEE

membership and to the electronics community in general, we should certainly initiate such a project.

Because of the relevant IEC work in this area, I would also like to point out that we have for some time operated under the principle that we will depart from IEC recommendations only when there is a justifiable reason for doing so. Furthermore, at the last meeting of the IEEE Standards Committee, we voted to refer all IEC recommendations that fall within our scope of activity to our technical committees for review with the following questions in mind:

Does this IEC Recommendation conflict with existing IEEE standards publications?

If so, what (if anything) should be done to resolve the conflict?

If not, what portions of the IEC Recommendation are suitable in their present form for adoption by the IEEE?

Since it is now also our practice to submit all new IEEE Standards to the American National Standards Institute for consideration, we believe that the IEEE will be performing a very significant liaison service in carrying out this review.

A second interesting suggestion that appeared in your pages is the proposal by R. E. Larson (Oct. 1969) for adopting preferred frequencies for measurement and test work. Larson's suggestion seems to me to have a good deal of merit. Such a standardization project is definitely within the scope of IEEE, and I would expect G-MTT to be interested. I am asking Phillip H. Smith, your Group Liaison Representative to the Standards Committee, to consider initiating work in both of the above areas. I am sure that he would be interested in suggestions (and offers of help) from G-MTT members.

Very Truly Yours,
Bruce B. Barrow, Chairman
IEEE Standards Committee

Editor, G-MTT Newsletter (12-3-70)

First, congratulations on your courageous survey and thank you for publishing all these comments. (Perhaps you should send Dr. Granger a copy.) I immediately joined PG MTT.

I would appreciate your comments on the enclosed missile. Don't we have to DO SOMETHING?

OPEN LETTER

To the Board of Directors,
Institute of Electrical and Electronics Engineers

November 25, 1970

Gentlemen:

The November issue of IEEE Spectrum contained, on pp 32-33, an article "The employment problem. Can IEEE help?". Although bylined "John V. N. Granger, President, IEEE", it speaks for the whole IEEE Board of Directors:

"The IEEE Board of Directors has examined each of these problem areas from the standpoint of IEEE's ability to serve its members better . . .

"The IEEE to go further - to seek to increase Federal spending on electronics, for example - would have the immediate effect of placing the Institute's tax-exempt status in jeopardy. Even more, it would put the IEEE in the role of a "pressure group", a position that, in the opinion of the Board of Directors - would be morally repugnant to most, if not all, of our membership."

The following excerpts will show that the opinion of the IEEE Board of Directors conflicts with the opinion of electrical and electronics engineers:

EDN May 15, 1970, p 67:

Are you a member of the IEEE?

40% yes

Would you like EDN to probe how to change the IEEE so that it meets our needs?

28% yes

EDN October 1, 1970, pp 57-58

Should a professional organization provide the following benefits and services for members:

	Yes (%)	No (%)
Fight exploitation	84	4
Portable pension plan	81	5
Support lobbies	76	12
Negotiate termination	66	22
Collective bargaining	60	28
Set grades and salary ranges	58	30

INDUSTRIAL RESEARCH October 1970,
p 77

Do you think that technical societies should take a more active role in improving economic and working conditions for their members?

Yes: 80% No: 20%

Would you be in favor of a portable pension plan administered by technical societies?

Yes: 81% No: 19%

PGMTT Newsletter October 1970, p 6

Would you like to see the IEEE undertake action to help the engineer in non-technical areas, such as professionalism, pension plans, employment etc?

Yes: 74.2% No: 18.0%

If the IEEE were to lobby before Congress, each member could lose the tax deduction of his dues. Would this loss to you be worth the gains hopefully achieved?

Yes: 57.0% No: 28.0%

This sampling of opinion polls was excerpted from the normal mail of one engineer during 1970 alone. Many more published indicators of the engineering community's feelings and wishes are available.

If the introductory quote from Spectrum honestly reflects the opinion of the Board of Directors of the IEEE, only two conclusions are possible:

(1) The IEEE Board of Directors does not read, or monitor, either the trade press or the Institute's own publications.

(2) The IEEE Board of Directors chooses to disregard the opinion of the membership.

Both conclusions would be morally repugnant to most, if not all, of the IEEE membership. Under the circumstances only one morally and ethically justifiable course of action remains for the IEEE Board of Directors: To determine what the financial consequences would be if the IEEE, or one of its arms, lost tax-exempt status; to present the findings to the membership, and then poll the members directly on this question of "pressure group", or "political", involvement of the Institute.

Very truly yours,
Max J. Schindler, DTS
Rockaway Drive, R.D. 2
Boonton, N.J. 07005

Response by A. Clavin (12-4-70)

Dr. Mr. Schindler:

There is no doubt that the statistics show the membership desirous of a change in the IEEE. It is also true that no change can be expected from the present Board of Directors. However, next year the groups will have representation on the board through the new divisions. I suggest that you contact Dr. Leo Young who is the director for the Electro-sciences division (of which MTT is a member) who is presently on leave in Israel. His address is: Antwerpen Street, 24, Daria, Haifa, Israel.

Outside of continued pressure through the board of directors, the other alternative that members have is through petition to have a resolution put to ballot. I believe that this may ultimately be the course to take if action is not forthcoming in a reasonable length of time.

As in all things, there are the radicals who want to change everything, and the reactionaries who want to keep the status quo. The center of gravity of this system changes with the times. In good times when jobs are looking for engineers, they want the IEEE to pump out volumes of technical material so that we can become more expert. When times are bad, as now, we think they should pay more attention to our professional activities. I believe that the statistics you quoted from EDN show that most engineers do not want to go so far as to unionize but are willing for the institute to lobby and I believe that is the change we should be heading for.

I am sending a copy of your letter to John Horton of Texas Instruments, who is the new editor of the newsletter, for possible comment.

Very truly yours,
A. Clavin

Editor, G-MTT Newsletter (10-27-70)
(A. Clavin)

I am sorry to read that you are giving up the editorship of the G/MTT Newsletter. It was refreshing to read some output on the unemployment problem in an official IEEE publication.

I agree 100% with your remarks in the October issue of the G/MTT. However, your

ideas for coping with these problems, which I have read in previous issues, do not go far enough.

For one thing, I believe we should abolish the IEEE and replace it with a union with teeth. The contents of the IEEE publications are at least 5 years behind the times in most cases, and as far as the symposia are concerned, they often just serve a privileged few with an excuse for a relaxing junket. If someone really has something important to contribute, they can publish it in a textbook. I for one am through supporting a vanity and power base for those super engineers and managers who choose to ignore the fact that nearly 100,000 engineers and scientists are unemployed across the country.

As for the union, I believe that the Airline Pilot's Assoc. would serve as a more effective model than either the AMA or ABA. Both the AMA and ABA have spent generations of time and vast sums of money in forming the esteemed images which they now enjoy in the public mind. I think it is about time that engineers wake up to the fact that they are employees. I also believe it would be worthwhile for currently unemployed engineers to join together in a common effort and to also join with the American Institute of Physics, which is much more interested in the unemployment problem than the IEEE.

My interest in the unemployment situation comes from 5 months of experience in that status. Previously I was employed for over 12 years in industry as a Senior Development Engineer. For the past 6 months I have been employed as a cut rate consulting engineer, 2000 miles from home, where I net about 1/2 my former salary at a research institute which itself is on the verge of bankruptcy, due to being 90% dependent on Uncle Sam for funding.

With a few exceptions, engineering today is a young man's game. That means, if you do not have it made by the time you are 35, you should start training for a different job. Bully for those who recognized this fact previous to the current depression (like 2 lawyers and one realtor I know of). Those of us who were not as perceptive (I am 41) and are now in the red over our heads can lick our wounds and hobble off as best we can.

Allow me to wish you the best of luck.

Sincerely,

John R. Colbert
452 Bowling Green Drive
Claremont, Calif. 91711

Response by A. Clavin (11-5-70)

Dear Mr. Colbert:

Thank you for your letter of October 24. With your permission, I will forward it to John Horton for publication in the Newsletter. You, of course, have my sympathy in your present predicament. Being of a similar age, I can easily identify with your situation.

However, I do not believe that the type of organization that you are thinking of has a chance of forming a solid base until things get considerably worse than they are now. The reason is that few engineers would join who are presently employed - out of fear of losing their jobs. Your organization would be more activist. This would upset management and, perhaps, be an excuse to let go some of the people who are agitating. This is why I have been recommending the IEEE as the vehicle for these activities: since they exist, are recognized by industry and management, and could get the things done at a faster rate once they start to move. This latter aspect is, of course, the problem.

Very truly yours,
A. Clavin.

Editor, G-MTT Newsletter (10-21-70)

Dear Al:

I received the GMTT Newsletter and note that you are turning over the job to John H. Congratulations on an outstanding job. You stimulated a lot of discussion and communicated it to the Group members. And you did it while smiling. I don't envy John following you. But the job does give the editor more freedom than being editor of a Transactions. I imagine that John will enjoy that freedom of expression that you have enjoyed. An so- best wishes for the future.

Bob Beatty
Box 4064
APO San Francisco, California 96525

Editor, G-MTT Newsletter (10-26-70)

17 October 1970

Dear Al,

I promised to write to you and tell you of our experiences. We've now been in Israel almost eight weeks. We spent a few days in England on the way, and managed to get here just before the rash of hijackings. You were probably better informed about them and the dramatic events in Jordan than we were. They might as well have been a thousand miles from here, as far as our daily lives were concerned.

We have a 3-bedroom house on the outskirts of Haifa for the year, while I am visiting professor at the Technion ("Israel Institute of Technology"). Like many houses in this hilly city, it has a magnificent view. The city is dominated by the Carmel mountain range, and the house we are renting is "over the top", so to speak, so that we look not over the city and the bay, but rather due West, out to sea. We often watch the sun set, as it sinks like a red ball into the water. (This has kind of replaced watching TV with the children.) The house came with a piano, but no washing machine, sort of indicative of local priorities.

We've made a number of trips from here. We visited the Weizmann Institute which is devoted to Science research and also teaching graduate students. We spent a day in Jerusalem, a beautiful city of pink, yellow and cream stone buildings, and rich in historical associations. On the temple mount, where now stand the mosques of Omar and of El Aqsa, we were not permitted to enter as Moslem funeral services were being held for President Nasser, who had died two days before.

One day we went looking for ancient coins on the beach near Ashkelon. We didn't find any and the children were disappointed. (They thought the beach would be littered with Roman coins.) We did find an abundance of ancient broken pottery, mosaic stones, Roman glass and marble, as well as an old Crusador fort.

Nearly everyone in Israel speaks English, so that I get little chance to practice my broken Hebrew. I attended two staff meetings at the Technion that were

carried on in Hebrew, and felt quite illiterate! The Technion has nearly 5000 undergraduate students and 2000 graduate students. There is much competition to get in, owing to limited facilities and funds, and the most difficult to get in is Electrical Engineering!

The cost of living is quite high, approximating that in the U.S. The greatest bargain is a haircut (about 60 cents). On the other hand, gasoline costs 63 agorot/liter. (Work that out if you can. The correct answer is about 80 cents/gallon.)

I've received several interesting letters from friends in G-MTT, and I'm glad to have the opportunity to keep in touch. I'll be back again in the summer and am looking forward to continuing active in G-MTT and IEEE. By the way, I'm hoping to attend the IEEE Convention in Tel Aviv next April. It's not yet certain if I'll make the IEEE Convention in New York in March.

Best regards,

Leo Young

Letters to the Editor should be mailed to:

John B. Horton
1236 Mohawk Trail
Richardson, Texas 75080

TECHNICAL NOTES

(Continued from page 12)

can be ordered prepaid from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price: \$5.50; 456 pages; issued June 1970

Reviewer:

A. Clavin
Hughes Aircraft Company
Canoga Park, California

CHAPTER NEWS

(Continued from page 8)

Phoenix Chapter

Date: November 16, 1970
Speaker: Cecil E. Land
Affiliation: Sandia Corporation
Title: Ferroelectric Ceramics for Information Storage and Display

Date: December 14, 1970
Speaker: Jerry E. Boyns
Affiliation: Naval Electronics Laboratory, San Diego
Title: Recent Developments in Navy Phased Array Antennas

San Diego Chapter

Date: January 12, 1971 (noon)
Speaker: Dr. L. J. Cutrona
Affiliation: KMS Technology Center
Title: Some Aspects of Synthetic Aperture Radar

Date: January 19, 1971 (noon)
Speaker: Dr. Lawrence Brennan
Affiliation: Technology Service Corp.
Title: Adaptive Array Antennas

Future meeting:

Date: February 17, 1971
Speaker: Dr. M. I. Skolnik
Affiliation: Naval Research Laboratory
Abstract: Dr. Skolnik will review the history of RADAR

Newly elected officers for 1971 are:

Chairman: D. G. Killion
Teledyne Ryan

Vice Chairman: J. H. Provencher
Naval Electronics
Laboratory Center

Secretary: J. E. Boyns
Naval Electronics
Laboratory Center

S. E. Michigan Chapter

Date: October 20, 1970
Speaker: W. P. Harokopus
Affiliation: Bendix Research Laboratories
Title: Applications of Microwave Sensors to Traffic Safety

Date: January 19, 1971
Speaker: Dr. Roger Edwards
Affiliation: Bell Telephone Laboratories
Title: Recent Advances in Millimeter-Wave IMPATT Diodes

St. Louis Chapter

Date: October 20, 1970
Speaker: Dr. Martin Grace
Affiliation: Sperry Research Laboratories
Abstract: Dr. Grace discussed the design principles for realizing TRAPATT-Mode oscillators and amplifiers having DC to RF efficiency of 25% in the one to ten GHz frequency range. Design data on an X-band amplifier with 20-watts output power were discussed.

Third Class



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