

IEEE GROUP ON
MICROWAVE THEORY
AND TECHNIQUES

NEWSLETTER



EDITOR. Alvin Clavin,

ASSISTANT EDITOR. R. D. Randall

Hughes Aircraft Company, Canoga Park, California, 91304

Number 60, October 1970



EDITORS NOTES

AEROSPACE DEPRESSION - IS THIS TIME DIFFERENT?

Most of us, who have been in engineering for the last 15 to 20 years, have remembered a number of other DOD/Aerospace depressions. We remember the lay-offs of the mid-50's and early 60's pretty vividly. It was true that after those depressions there was recovery to essentially new and expanded activity. During these depressions, the "dead wood" was removed from the organization and most of us felt that this was a healthy thing to do.

What about today? Will there be an imminent recovery as in the past? I personally do not believe so. I don't wish to be a purveyor of doom and gloom, but I would be foolish if I did not analyze items as they seem to be today. Why is it different this time? For the following reasons:

- 1) We have long since passed cutting out the dead wood, we are now cutting out qualified and capable people who have been real contributors to our profession. Among these are numerous senior engineers who are now searching for employment at some sort of a reasonable level compatible with their abilities. The loss of these people will hinder our recovery.

- 2) The Military is extremely unpopular with the public and, therefore, curtailment of military activities will be helpful to politicians. This will occur regardless of external threats.
- 3) Technology is unpopular; it is associated with the Military and with pollution of the environment.
- 4) Inflation and the desire of the Administration to control it through reduced Government expenditures will probably negatively affect the ability of the Government to finance activities in the socio-economic sphere.

It is my opinion that while things are bad, they are likely to be worse before better.

In previous editorials I have tried to express ideas for coping with these problems. There are many ways, perhaps we can learn from past experience. In this regard I refer the reader to the letter of Page 23 from M. Michael Brady of Norway. I believe that this type of professional society could be established and workable within the United States.

IT'S BEEN FUN

I have been Editor of the Newsletter for the past three years and it has become an important part of my life. I am very grateful for the opportunity of being your editor and hope that the membership has benefited because of its publication. It is with mixed emotions, then, that I turn over the editorship of the Newsletter to John Horton of Texas Instruments.

I believe that three years is a sufficient length of time for a newsletter editor - it gives one the opportunity to become familiar with the mechanics and still long enough for the individual editor to flavor the newsletter; much longer, and things become stale. John Horton and I have had many discussions on this subject and, as you will see, his ideas do not necessarily coincide with mine. I believe this is good, since we need a diversity of opinion and purpose. This is one of the reasons I have asked John to assume this responsibility. Perhaps I can persuade him to publish a few of my opinions from time to time in the future.



CHAIRMAN'S VIEWPOINT

by John H. Bryant

"Judged by the flow of literature, IEEE on all fronts is doing its share of talking about engineers' sociotechnical obligations, and demonstrating at least awareness of IEEE members' socioeconomic interests." (Electrical Engineering, No. 30, August, 1970. Published bi-monthly by IEEE.)

The National Society of Professional Engineers (NSPE) has recently opened its membership to non-registered engineers (Spectrum, July 1970, pp 16, 17). This 66,000-member organization, as I understand it, does not have a tax-exempt status. It does lobby for legislation, and concerns itself with the economic condition of engineers. The annual dues, national and state combined, are approximately twice that of IEEE dues.

As one who has had some involvement in trying to find out what our members are thinking, doing, and would like to see done, I am impressed with the difficulty of obtaining meaningful data, or getting a response from a majority of members.

Elsewhere in this issue of the Newsletter is an analysis of results of a questionnaire used at a session of our 1970 G-MTT Symposium (Spectrum, July 1970, pp 110, 111). Although the session attendees were given adequate time to fill out and return the questionnaire, only 66% did so.

Also in this issue is a report on the G-MTT Survey, a 4-page broad-range questionnaire mailed to all G-MTT members, with postage-free return. The return? Approximately 25%. Mere numbers do not tell the story, of course. From among those who took the time to fill out this questionnaire came many useful comments and suggestions.

The results show there is no unanimity of opinion as to what the role of IEEE should be. A majority would like to see IEEE undertake programs aimed at helping solve some of the sociotechnical areas, such as, professionalism, pension plans and employment. Typical of majority opinion in the written comments are such statements as: "Technical coverage is excellent, but IEEE needs to look at 'bread and butter' issues, i.e., pensions, job placement, continuing education, outside technical journals, etc.," and "I very much feel that IEEE and its Groups must become more a 'professional society' in the sense that AMA provides MD's." Portable pensions and the employment picture are often mentioned.

Representative of the minority opinions is the following: "I feel very strongly that politics, economics, etc. do not belong in a technical society. Should the IEEE enter into these activities I would reluctantly terminate my membership. There are sufficient political, economic and social societies for anyone to voice his opinions. Let the IEEE remain technical."

There was strong support for a greater advisory voice or role concerning scientific and technological issues; comments that more is needed in services to members residing in geographical locations not served by a Chapter (both in and outside the U.S.A.), and that IEEE needs to do more tutorially and educationally — especially for the individual who is application, as opposed to research, oriented.

The comments, along with a tally of answers to questions, have been categorized and furnished to individuals and committee chairmen concerned.

EXCERPTS FROM ADCOM MEETING

During the Annual Meeting of G-MTT ADCOM in September, elections were held for ADCOM officers and members. Nominating Committee Chairman Kiyo Tomiyasu presented a list of sixteen nominees for the nine open positions. Those elected are:

Chairman:	Sy Okwit	A.I.L.
Vice-Chairman:	Alvin Clavin	Hughes Aircraft
ADCOM Members:		
Three-year terms:	F.R. Arams R.J. Garver G.I. Haddad R.A. Rivers F.J. Rosenbaum S.W. Rosenthal	A.I.L. Harry Diamond Lab. Univ. of Michigan Aircor Washington Univ. P.I.B.
Two-year terms:	A. Wexler	Univ. of Manitoba

The Newsletter congratulates these new members and officers, and thanks them for consenting to help guide the G-MTT activities during these next few years.

Two proposals were submitted to ADCOM by MTT chapters requesting selection as host for the 1972 G-MTT International Symposium (ref. article in April 1970 Newsletter, p 3). Chicago was selected as the host for the 1972 Symposium while Boulder, Colorado, was urged to resubmit their proposal next year for the 1973 Symposium.



LEO YOUNG NOMINATED FOR IEEE DIVISION 4 DIRECTOR

The IEEE Board of Directors has announced the nomination of Dr. Leo Young for the position of Division 4 Director. Other nominees for this post are Joseph E. Rowe and Herbert F. Storm.

Dr. Young holds degrees in physics and mathematics from Cambridge University, England, and in electrical engineering from the Johns Hopkins University, Baltimore, Maryland. Before joining Stanford Research Institute in 1960, he had been head of the antenna laboratory at Decca Radar and advisory engineer at Westinghouse Electric Corporation. He has published extensively in the area of microwave filters and couplers; he has also directed research in antennas, phased arrays, ferrimagnetic devices, solid-state circuits, and more recently, microwave integrated circuits and acoustic surface waves. He has taught at Stanford University and was visiting professor at Leeds University in 1966, where he was one of two American lecturers at the first IEEE summer school. He has been consultant to the Stanford Linear Accelerator Center and various industrial, educational and government organizations.

He has served IEEE well in many capacities, having been a member or chairman of numerous IEEE committees, on the local, national and international level. He was secretary of the Baltimore chapter of G-AP/G-MTT, chairman of the San Francisco chapter of G-MTT, and (national) chairman of the G-MTT Administrative Committee in 1969. He has served on the Technical Program Committees of the following International Conferences: IEEE International Convention and Exhibition, International Solid State Circuits Conference, International Microwave Symposium (eight times, once as chairman), First European Microwave Conference (London) and Second European Microwave Conference (Stockholm). He has also served as member or chairman of several IEEE Technical and Standards Committees.

He is particularly interested in the dissemination of technical information, and has edited several books, including six volumes in the Advances in Microwaves (Academic Press, 1966-1970), and two volumes on microwave filters and couplers (Artech House, to be published). He has himself authored or co-authored more than one hundred papers and technical contributions, and two books (Microwave Filters, Impedance-Matching Networks, and Coupling Structures, McGraw-Hill, New York, 1964; and Systems of Units in Electricity and Magnetism, Oliver and Boyd, Edinburgh, 1969). At least eighteen patents have been granted to him.

He has made many innovations in the technical activities of G-MTT, which have become permanent features. These include the Special Microwave Sessions at the IEEE International Convention and Exhibition (with their emphasis on current practice in industry), the present Technical Committees of G-MTT, some features of the Microwave Symposium, and the setting up of new Standards Committees.

G-MTT members are urged to mail in their IEEE ballots before the end of October deadline.

G-MTT SURVEY RESULTS

by George Oltman

On the basis of returns, the survey of our membership is highly successful. There were 1509 questionnaires returned in time to be analyzed on September 22. This is 24.8% of the total membership. For those who are surprised at "only" 24.8%, let me say that 5 to 10% is normal for surveys.

On the basis of informative content, which can serve as a basis for action by AdCom officers, the survey was even more successful. There were a few surprises (at least to me). There were also many confirmations of present policy, some urging to expand in some areas (e.g., increase overseas activity and participation by overseas members), and some urging to stay out of other areas (e.g., politics). The results with percentage follow.

Of particular interest are the cross-correlations. A number of these were run comparing age, work, position, industry, education and layoffs. These are computed but many of them are not yet analyzed. These results will be presented at a later date. However, the most interesting of these cross-correlations is presented below — the correlation of layoffs with age, work position, education and industry. Some of these results are surprises, others are what a thoughtful man would expect.

The survey had a second part — a write-in page to indicate any members' interest in becoming active in Chapter, AdCom, Transactions, etc., plus space for suggestions on Symposia, service or standards, and (of most interest to me) a space for general comments. The comments varied from a sentence to four typewritten pages. There is a lot of substance to these comments and I'm sure we will be hearing more about these. Al Clavin talks about the most numerous comments in the opinion column of this issue.

The comments also have been given to our chairman, John Bryant. The other write-in statements have been given to the members of AdCom who are responsible for each particular activity. You will be hearing from these men if you expressed a personal interest in further G-MTT activity. The table below shows the large response of members expressing interest

in becoming more involved in G-MTT, offering suggestions or offering comments. It helps resolve a perennial problem of our G-MTT governing and operating bodies, that of finding members who are interested in working in G-MTT activities. It also is obvious that not all members will find jobs in these various activities — at least soon. In some cases we have more than a year's supply of members.

I wish to thank Hughes Aircraft Co. for their support in preparing the survey for print and in computing the results of the survey. I also wish to thank the Los Angeles Council Office of the IEEE and Ray Banks for their advice and for their support in receiving the returned questionnaire.

COMMENT SHEET RESPONSES

Number of members wanting to become active in:

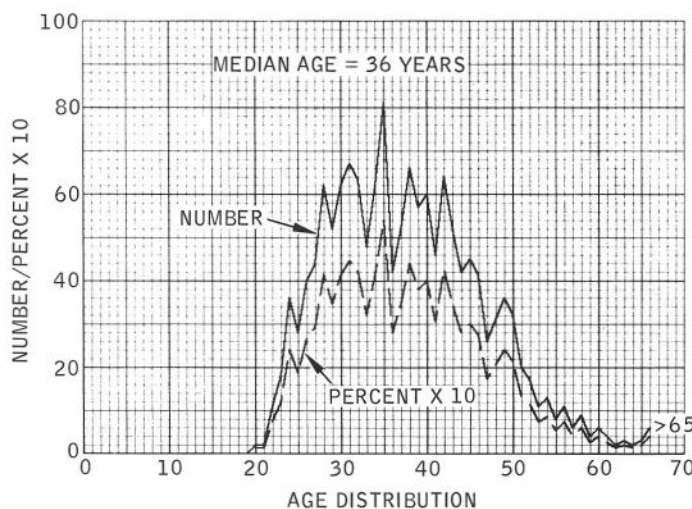
Chapter Activities	35
Technical Committee	61
AdCom	24
Newsletter	10
Transactions	38

Suggestions for:

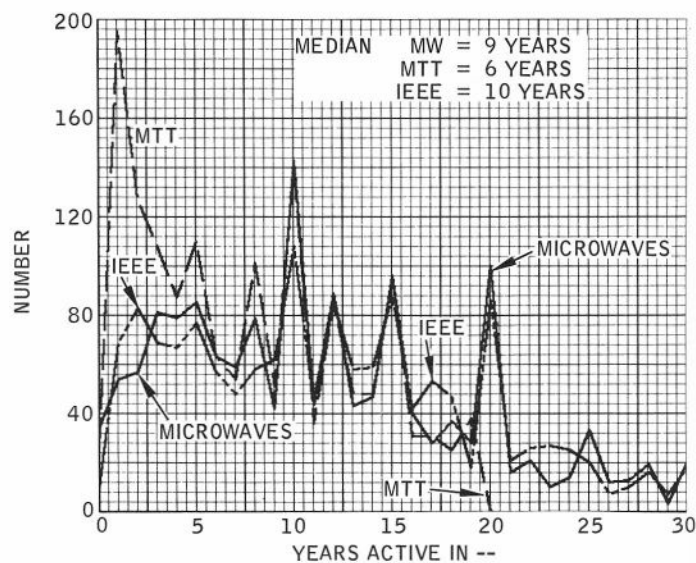
1 Day Symposia Topics	69
Newsletter Topics	37
Microwave Standards	62

Comments 152
TOTAL 488

The comments which follow are mine and bring out some of the interesting points I observed. The management neither agrees or disagrees. The percentage in most cases do not add up to 100%. This is because I deleted the zero responses — those that did not answer the question.



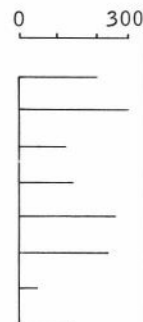
This should be a bar graph, but the computer doesn't conveniently plot bar graphs. Half of the numbers are less than 36 years of age.



This year (and I'm sure next year, and the next year) we have peaks of activity at 5, 10, 15 and 20 years.

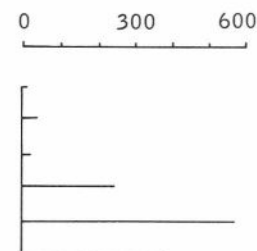
EMPLOYER'S BUSINESS

%	
14.2	Education
19.7	Aerospace
9.2	Government
8.9	R&D Institute
17.4	MW Component dev. or mfg.
15.9	Commun. equip. dev. mfg. or user
3.4	Instrument mfg.
7.4	Other

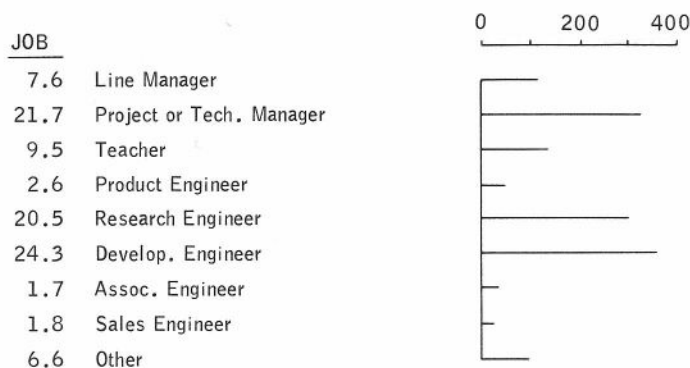


HIGHEST LEVEL OF EDUCATION

%	
0.3	High School (or less)
2.9	Some college
1.0	Assoc. of Arts
29.2	BA/BS
38.7	MA/MS
25.4	PhD

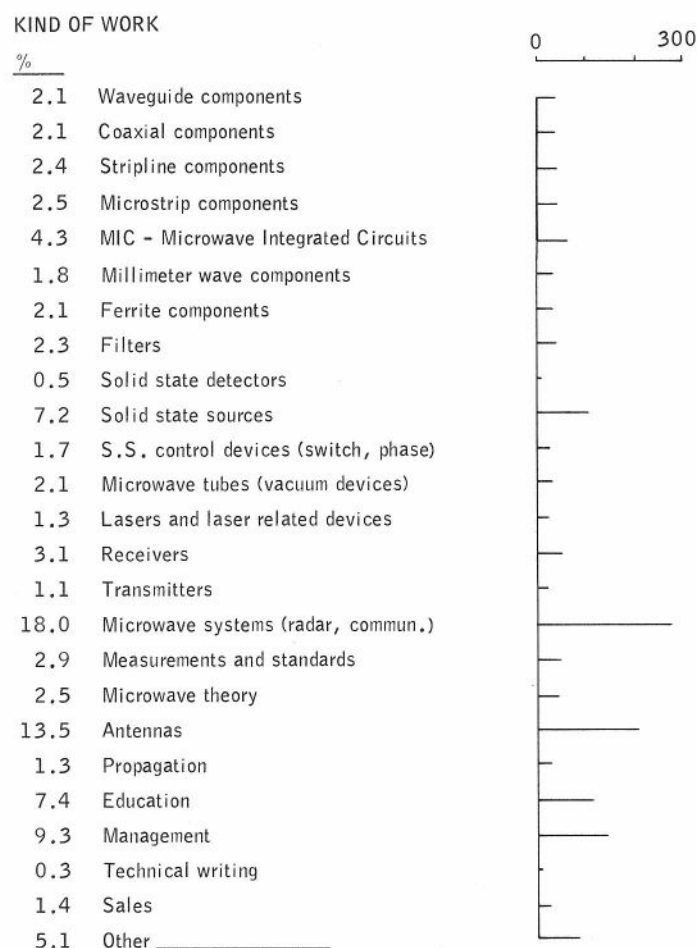


G-MTT members predominantly have MA/MS degrees.



Should GMTT have exhibits at its annual symposia?	<u>48.5</u>	30.6	20.0
Should GMTT have exhibits only at a second annual symposium?	6.4	<u>48.9</u>	41.9
Are you interested in buying a copy of the international symposium digest when you do not attend the symposium?	<u>73.8</u>	16.4	9.0
Should GMTT organize and make available 1/2 or 1 day seminars on current microwave topics for use in local chapter meetings?	<u>78.3</u>	6.6	13.8

One international meeting a year (with exhibits) is enough, but let's have more local one-day symposia.



Would you like to see the MTT transactions carry advertising of microwave products (using the format of the proceedings)?	26.7	<u>55.5</u>	17.1
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Percentage

	Yes	No	No opinion
Should GMTT hold a second international meeting each year?	11.5	<u>57.0</u>	30.7
GMTT membership includes voting rights, receipt of the transactions, and receipt of the newsletter plus meeting notices. Would you be interested in a type of membership which, besides voting rights, included:			
Only the newsletter and meeting notices		1.6	
Only the transactions		10.5	
I like present membership arrangement - Leave as is		81.5	
No opinion		5.3	

This result and others indicate that predominantly the members like the present G-MTT operation.

To how many other IEEE groups besides GMTT do you belong? Please list up to three in order of their importance to you.

	First	Second	Third	Fourth
No other group	28.3	69.1	86.6	
Communication technology	3.6	2.0	0.5	
Electron devices	16.6	3.4	1.1	
Antennas and prop.	30.9	3.6	1.3	
Broadcasting	0.1	0.2	0.3	
Aero. & elect. systems	2.3	3.6	1.1	
Circuit theory	5.5	3.6	1.2	
Magnetics	1.1	0.9	0.5	
Automatic control	0.1	0.3	0.1	
Other Groups	11.5	13.3	7.3	

There are a surprising number of members involved in the development of solid-state sources.

Would you like to see the transactions on MTT carry:

	More	Same	Less	No opinion
More applications papers	<u>66.6</u>	26.5	2.5	3.6
More theoretical papers	10.3	<u>56.6</u>	26.2	4.8
More tutorial papers	<u>63.1</u>	21.8	5.0	8.3

One must interpret this result as wanting less theoretical papers.

Which technical periodicals do you use in your work? Please list up to four in order of use by you. (Include MTT transactions only if in first four.)

Microwave Theory & Tech.	34.1	18.8	14.8	7.2
Electron Devices/Quantum Electronics	5.1	6.2	3.3	3.2
Antennas and Prop	13.2	7.3	3.6	2.6
Proceedings of IEEE	8.8	8.9	8.4	7.4
Microwave Journ./Microwaves	14.1	26.8	26.6	15.8
Circuit Theory/S.S. Circuits	1.3	2.7	1.9	2.4
Other IEEE Journ.	4.0	4.0	4.4	4.6
Other Professional Journ.	5.0	7.7	9.3	11.3
Other Trade Pubs.	6.8	7.1	9.7	10.5

The newsletter is published quarterly.

Would you like to see it published: %

More often	13.2
Less often	10.6
Unchanged	57.2
No opinion	19.0

Newsletter Features	Expand	Continue	Dis-continue	Reduce	No Opinion
Editor's Notes	4.3	<u>55.5</u>	6.7	5.1	25.0
Chairman's Viewpoint	2.5	<u>51.7</u>	9.4	6.5	26.8
ADCOM Report	2.5	<u>41.5</u>	15.7	6.0	30.5
Chapter Activities	7.5	<u>42.0</u>	16.7	9.5	20.9
Chapter News	7.2	<u>40.4</u>	17.4	9.7	21.9
Announcements	11.9	<u>54.5</u>	5.3	3.7	20.8
Microwave Theses	22.5	<u>35.8</u>	4.5	7.2	26.2
Technical Notes	32.4	<u>34.4</u>	2.9	6.4	20.3
Book Reviews	27.6	<u>39.4</u>	4.5	8.0	17.2
Letters to the Editor	17.1	<u>46.6</u>	6.7	4.6	21.4
Opinion	14.4	<u>37.9</u>	6.5	6.2	29.7

Would you prefer a more professional publication, including advertising? (e.g., Computer, Group News)

Yes	19.0
No	<u>53.8</u> ←
No opinion	25.2

SERVICE - MTT FUNCTIONS

What services and functions sponsored by GMTT do you consider most valuable? What do you feel GMTT could do that it doesn't do now. Please assign your value rating to the following:

Value Rating	High	Medium	Low	No opinion
Transactions on MTT	<u>83.9</u>	11.3	1.7	1.7
Microwave Abstracts (in trans.)	<u>38.1</u>	33.6	13.4	12.3
Journal of Quantum Electronics	12.4	15.8	29.8	<u>39.0</u>
Newsletter	11.5	<u>39.7</u>	34.6	12.0
GMTT International Symposium	<u>46.0</u>	29.7	8.7	13.8
Microwave Meetings at Other IEEE Conferences	18.5	<u>38.5</u>	19.5	21.1
GMTT Chapter Meetings	21.7	<u>36.6</u>	22.1	17.5
National Lecturer	15.6	27.2	24.9	<u>29.7</u>
Microwave Prize	15.5	23.8	28.4	<u>29.9</u>
Technical Committees	18.0	34.0	16.0	<u>29.4</u>
Other Services GMTT should provide:	- 125 suggestions			

The GMTT fulfills certain "needs" of the microwave industry. Using your opinion of these needs, rate the GMTT as to the degree with which it meets the needs:

	Excellent	Above average	Average	Fair	Poor	No opinion
Of its members?	10.7	<u>38.3</u>	27.0	9.2	4.7	7.7
Of the microwave profession?	12.0	<u>37.0</u>	25.3	9.9	4.8	8.7
Of the microwave industry?	6.2	23.8	<u>29.7</u>	15.7	7.3	14.9
Of you?	9.0	30.0	<u>31.5</u>	16.8	7.2	3.1

The microwave prize is \$100. Should the amount be increased?

More	25.5
Same	26.8
Less	4.5
No opinion	43.2

SOCIAL, POLITICAL, ECONOMIC ACTIVITIES

	Percentage	Yes	No	No opinion
Would you like to see the IEEE undertake:				
A. A program aimed at helping solve some of the sociotechnical problems of our society? (e.g., organizing ways for you and me to "get involved").	<u>59.0</u>	30.1	10.1	
B. Action to help the engineer in non-technical areas such as professionalism, pension plans, employment, etc.?	<u>74.2</u>	18.0	6.7	

Let's help society, but let's put an extra measure onto our own problems.

Would you like to see ADCOM organize an aperiodic poll to determine the opinion of the membership, and voice the results in the news media?

C. On social subjects?	<u>53.7</u>	36.0	9.5
D. On political subjects?	40.7	<u>48.3</u>	10.1

This and question H below suggest we (IEEE) stay out of politics, but do say something about which we are qualified (question E).

E. On national scientific subjects (including those to be voted in the U.S. Congress)? 79.7 14.5 5.0

F. 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? 57.0 28.6 12.9

Should either the Spectrum, the Transactions on MTT, or the MTT Newsletter be used as a forum to voice opinions:

	Spectrum	Newsletter	Both Spectrum and Newsletter	Transactions	None of the above	No opinion
G. On social subjects?	<u>36.2</u>	8.5	24.3	1.4	26.6	3.1
H. On political subjects?	26.8	8.1	20.5	1.2	<u>39.5</u>	4.0
I. On national scientific subjects?	<u>45.2</u>	3.8	39.9	4.8	4.2	2.1

ENGINEERING RECESSION

These results are possibly the most interesting in light of the microwave recession that is affecting the United States. As of July 1, 11.4% of the members had found it necessary to seek new employment. Not all of these have been "laid off," but that term will be used as a convenience.

Have you found it necessary to seek employment with a new employer because of the present recession which has hit the microwave industry?	Yes	%
	11.4	
	No	87.8

If yes, indicate what period (if any) you were unemployed:	% of those seeking	% of total respondents
No loss of time	9.8	1.1
Less than one month	44.2	5.0
One to three months	18.0	2.1
Three to six months	15.7	1.8
Six months to a year	7.0	0.8
Over one year	5.2	0.6

Type of work in which members have been laid off. Number laid off in each category and percentage of total working in each category.

No.	% of Total	In Each Category
4	12.9	Waveguide components

4	12.5	Coaxial components
4	11.1	Stripline components
4	10.8	Microstrip components
6	9.2	MIC - Microwave Integrated Circuits
2	7.1	Millimeter wave components
2	6.3	Ferrite components
3	8.6	Filters
1	14.3	Solid state detectors
13	11.9	Solid state sources
3	11.1	S.S. control devices (switch, phase)
4	12.5	Microwave tubes (vacuum devices)
3	15.8	Lasers and laser related devices
3	6.4	Receivers
3	17.7	Transmitters
40	14.8	Microwave systems (radar, commun.)
5	11.6	Measurements and standards
5	13.2	Microwave theory
17	8.4	Antennas
2	9.5	Propagation
6	5.4	Education
11	7.9	Management
0	0	Technical writing
4	18.2	Sales
17	21.8	Other

There are too few samples in most categories to say this is reliable data. However, the percentages are close whether there are 4 or 40 samples.

Type of industry in which members have been laid off.

No.	% of Total	In Each Industry
43	14.5	Aerospace
7	5.2	R&D Institute
14	6.5	Educational
9	6.5	Government
35	13.4	Microwave component dev. or mftg.
27	11.3	Communication equip. dev., mftg. or user
4	7.7	Instrument manufacturer
21	18.9	Other

R&D, Education and Government appear to be the more steady industries.

Education of members who have been laid off.

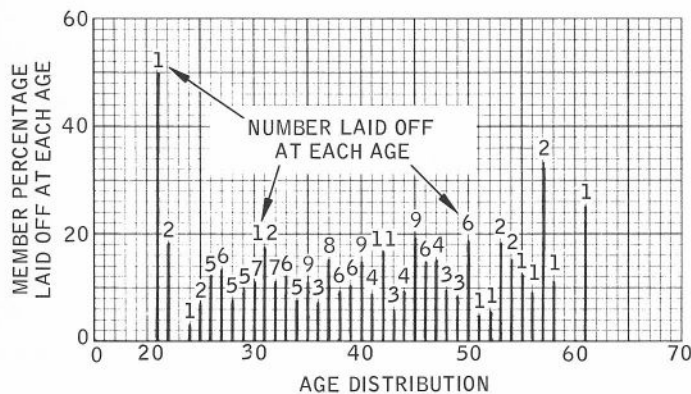
No.	% of Total	In Each Level
0	0	High School (or less)
4	9.3	Some college
1	6.7	Associate of Arts
56	12.7	BA/BS
72	12.3	MA/MS
33	8.6	PhD

A PhD has an extra measure of job security.

Position of members who have been laid off.

No.	% of Total in Each Position	
11	9.7	Line Manager
25	7.6	Project or Tech. Manager
5	3.5	Teacher
6	15.4	Product Engineer
35	11.3	Research Engineer
50	13.6	Develop. Engineer
4	16.0	Assoc. Engineer
6	22.2	Sales Engineer
20	20.2	Other

The lower one is on the totem pole, the less secure is his position.



The layoffs appear to be substantially "across the board." No significant variation with age shows up.

MEMBERS, MEMBERSHIP AND MEMBERSHIP DRIVE



G-MTT MEMBERSHIP DRIVE

by

Robert A. Rivers
Membership Drive Chairman

The Membership Drive Committee has set up a committee in each of the Chapters that chose to cooperate with the objective of promoting MTT

and IEEE membership. These were supplied with a strip list of chapter membership, a package of membership kits for promoting membership, and instructions on how to go about setting up and using their chapter committee to obtain new members. Twenty-one Chapter Chairmen appointed Membership Committee Chairmen. Some have extensive coverage in geographical areas and in company facilities.

Chapter Chairmen were encouraged to use this committee as another method of communicating with members for the purpose of promoting attendance at Chapter meetings. A preliminary reading from the Chapter Chairmen last Spring indicated that while we could not expect too much in the way of results from such an activity, that it was useful and should be continued.

Institution of a Chapter Chairman's meeting at the time of the MTT Symposium has resulted in improved communications between the Membership Services Committee and the Chapter Chairmen. While Chapter Chairmen are normally invited to ADCOM meetings, much of the discussions at those meetings were not of immediate interest to them. Pressures of time generally restricted extensive discussions of Chapter problems. The Chapter Chairman's meeting permits discussion of their problems.

SOCIOTECHNOLOGY

Reprinted from Electrical Engineering

JUDGED BY THE FLOW of literature, IEEE on all fronts is doing its share of talking about engineers' sociotechnical obligations, and demonstrating at least awareness of IEEE members' socioeconomic interests.

The subject has been uppermost in the thoughts of speakers at banquets and at highlight sessions of our March Conventions since 1968. . . The Geoscience Electronics Group's symposium in April devoted entire sessions to it. . . The topic will be a dominant one at Wescon, Los Angeles, later this month. . . At the Conference on Engineering in the Ocean Environment, in September, the Keynote address will be on engineering responsibilities in protecting the environment while developing ocean resources. . . Eascon, coming October, is using the theme "Technology and the Course of Mankind." . . The theme selected for our 1971 March Convention is "Technology for a Better World;" sociotechnical issues will be allotted time for full treatment. . . So it goes.

OTHER SOCIETIES ACTIVE, TOO. As a matter of fact, IEEE as a mouthpiece for engineers, has had to concede leadership to sister societies for taking public positions. The American Chemical Society initiated in 1965 and published in 1969 a report "Cleaning Our Environment - The Chemical Basis for Action," in which the society took a position on a lively matter of public concern.

The American Society of Mechanical Engineers (ASME) took a more general approach. In the April 1970 issue of its magazine it published goals to direct its total activity, of which three are quoted here:

"To move vigorously from what is now essentially a technical society to a truly professional society sensitive to the engineer's responsibility to the public, and dedicated to a leadership role in making technology a true servant of man.

"To develop procedures for establishing an ASME position on public issues to which engineering views are relevant, and for expressing such views by the Society's officers or other duly authorized spokesmen.

"To provide government at all levels with technical advice in the public interest and to develop a climate of understanding and credibility that will foster a continuing dialogue."

IEEE OFFICERS and the Board of Directors (BoFD) have been fully aware of the sociotechnical groundswell, and have been far from inactive. Readers of "Electrical Engineering" (E.E.) and Spectrum will recall the ferment which followed publication, in June '69, of the Wald article; and the steps taken by BoFD culminating in the Statement of Policy on Presentation of Sociotechnical Material (E.E. Feb. '70, pp. 2, 4A), applying to meetings and the printed page. . . President Willenbrock in his "State of the IEEE" message (E.E. Apr. '69, p. 4H) noted that other societies were doing a much better job than IEEE in supplying the press with significant news; and that we should project an appropriate, favorable image to the public. . . President Granger, in this issue of E.E., p. 4A, finds IEEE lacking in concern with the public interest and in contributions to "the identification and solution" of social problems in our field.

Corrective steps are being taken in several directions. . . BoFD will look to the Long Range Planning Committee (LRPC) for recommendations 1) as to what IEEE's policies should be, regarding its involvement in governmental and public issues; 2) a defining of what the present issues are, with a view to producing IEEE position papers on each—seriatim, not en bloc. . . BoFD's Executive Committee (ExecCom) has asked General Manager Fink and the IEEE staff to make a study of IEEE participation in socioeconomic programs. Spectrum for July '70, p. 106, carried news of this assignment. He will report to ExecCom by early fall. The article pointed out that our presently defined objectives explicitly preclude attempts to influence legislation, whether for the benefit of engineers or of society at large. If IEEE is to enlarge its programs to deal at first hand with the social and economic factors which influence, or are influenced by engineers, IEEE must prudently consider the consequences, both institutional and financial. The study may go so far as to examine the ramifications of IEEE's changing its U.S. Internal Revenue Service tax status from present 501(c)(3) to 501(c)(6).

Additionally, ExecCom has received from the ad hoc Public Relations Advisory Committee (PRAC) a preliminary draft of a new document "IEEE Public Relations Objectives," which includes the publicizing of socio-technical objectives, as determined. Coordinator Tanner of PRAC, Don Fink, the LRPC, and members of ExecCom will meet in California this month to exchange views on all these matters.

(from August 1970 issue of "Electrical Engineering," IEEE)



K. Tomiyasu, Chairman

IEEE QUANTUM ELECTRONICS COUNCIL

The activities in the quantum electronics area within the IEEE are sponsored by the IEEE Quantum Electronics Council (QEC) on behalf of the Group on Electron Devices (G-ED) and Group on Microwave Theory and Techniques (G-MTT). The principal functions of the QEC are to: a) publish the IEEE JOURNAL OF QUANTUM ELECTRONICS (J.Q.E.) and b) sponsor laser conferences. The JOURNAL, highly regarded in its field and now in its sixth year, is published monthly, and in 1969, 629 pages were printed. With respect to the conferences, the QEC jointly sponsors two, namely, the Conference on Laser Engineering and Applications (CLEA) and the International Quantum Electronics Conference (IQEC). The former is sponsored jointly with the Optical Society of America (OSA). The latter is sponsored jointly with the American Institute of Physics (AIP); this is discussed in the next paragraph. Each of these conferences is held biennially, and they are held in alternate years. The 1971 CLEA will be held in Washington in June, and the 1972 IQEC will be held in Montreal in May.

The International Quantum Electronics Conference (IQEC) is sponsored by the Joint Council on Quantum Electronics, and this council comprises members from two principal societies, namely, the IEEE through its QEC and the American Institute of Physics (AIP) in cooperation with the American Physical Society (APS) and the Optical Society of America (OSA).

The members of the IEEE Quantum Electronics Council are listed below. The Council members are appointed for 3-year terms.

Council Members

Term Expiration Date	G-MTT	G-ED
December 31, 1970	K. Tomiyasu Chairman General Electric	D. R. Whitehouse Vice-Chairman & Secretary Raytheon
December 31, 1971	W. K. Kahn G. Washington University	S. E. Harris Stanford University
December 31, 1972	F. R. Arams AIL	L. K. Anderson Bell Telephone Labs.

The QEC, as well as G-ED and G-MTT, are within TAB Division 4 recently named Electrosiences Division. With regard to size, on June 30, 1970, there were 1936 and 617 members of ED (G-15A) and MTT (G-17A) Groups respectively who received the IEEE JOURNAL OF QUANTUM ELECTRONICS.

We endeavor to serve your needs and interests in the laser field, and if there is any way to enhance the activities we encourage you to communicate with any member of the Quantum Electronics Council.

THE IEEE STANDARDS COMMITTEE

by Bruce B. Barrow

The IEEE Standards Committee has the responsibility of encouraging and coordinating IEEE standards activity. It carries out its work principally through the production of IEEE standards publications and it also supports standards work carried on in other organizations by appointing IEEE representatives and by providing technical inputs. It is one of the very few committees that represents the IEEE; in matters concerned with standardization it develops the IEEE technical position. This responsibility of developing a position through achieving a consensus within the large and complex IEEE organization accounts in significant measure for the sometimes slow and cumbersome process of developing an IEEE Standard.

As a result of the membership attitude survey carried out in 1968, in which 39% of the members polled indicated that they believed that issuing standards was a principal way in which the IEEE served its members, the Technical Activities Board appointed a special committee under I.G. Easton. This committee was charged with recommending how the Standards Committee should act to carry out the total responsibility of the IEEE in standards.

In 1969 the Easton committee made several key recommendations that are now being implemented:

1. Increase the Standards staff.
2. Publish IEEE Standards in the Transactions.
3. Review IEEE Standards periodically, on a 5-year basis.
4. Submit IEEE Standards to the American National Standards Institute.
5. Most important of all, stimulate Group activity in the Standards field, so that activities are carried out in all areas of IEEE technical competence.

We are beginning to show progress in all of these recommended areas. A new Manager of IEEE Standards Operations, Mr. S.I. Sherr, has been added to the IEEE staff. The first of the recent IEEE Standards will be published in the Transactions before these words appear in print. In addition, we have begun a systematic review of the nearly 150 Standards that are more than five years old and we are submitting most of our younger documents to the American National Standards Institute.

The technical work of generating IEEE Standards is for the most part carried on within the Groups. Most of the Groups that carry on extensive

standardization work have a number of technical committees that work in their particular areas of specialization. Normally a draft standard is proposed by a fairly small working committee. If things are being carried on in an entirely proper manner, the project is approved by the Standards Committee at a very early stage. The principal reason for this procedural step is to ensure that the proper resources of the IEEE are brought to bear on the problem. If this necessary function of coordinating IEEE resources is performed at the very beginning, it is usually possible to avoid the pain and delay that often result when a new Group interest is brought to bear on a draft standard at a late stage in its development.

After the drafting committee and the responsible Group Technical Committee approve the submission of a draft, it is sent to the IEEE Standards Committee. In the case of a new document, the draft may be approved as a "Proposed Standard," and issued for trial use. Under the new operating procedures, the trial-use standard will be published in the Transactions just as a full-status standard. However, after it has had a year of exposure to the public, the originating committee will be asked to take into account the comments received and the experience gained, and to prepare a new draft to be balloted for publication as a full-status standard.

NEW IEEE FIELD AWARD FOR OUTSTANDING WORK IN MICROWAVES

The Ad Com at its meeting on September 17, 1970 approved a proposal to establish an IEEE Field Award. The Award shall be made to an individual who is judged to have made a most significant contribution, by publication in official IEEE Technical Journals in the field of interest of the Group; by lectures in the field of interest of the Group; by outstanding contributions to the technology; by outstanding service to G-MTT/IEEE in both local and national functions; by outstanding contributions to the microwave industry; or other contributions to be considered in conjunction with any or all of the areas of contributions mentioned above.

Presentation of the Award, consisting of a certificate and \$1000, will be made at the Annual Microwave Symposium at intervals of one or two years.

The Ad Com has recommended that the Award be named the W. W. Hansen Award. At the suggestion of the IEEE Awards Board, membership of G/MTT are asked to indicate their preference below for the naming of this significant award:

☐

W. W. Hansen Award

☐

_____ Award

Comments:

Please return to the Chairman of the Awards Committee:

D. D. King
Philips Laboratories
345 Scarborough Road
Briarcliff Manor, N. Y. 10510



The following opinions were received as a result of the GMIT Survey. Specifically, they were in response to the question "Do you have any general comments on GMIT, IEEE, Engineers, Society, etc.?" The predominate opinion was that GMIT and IEEE should become involved in social and economic problems. There was strong support for lobbying and pension plans. I have selected a few of these replies and am publishing them anonymously, although many of those responding did sign their names. I have tried to take out most of the redundancies of opinion. (The Symposium topics were submitted to the Technical Program Committee for the 1971 National Symposium.) :EDITOR

IEEE is a company dominated society that does little to foster the professional status of its members aside from publishing journals. What about patent rights and the yellow dog contract engineers are required to sign? What about loss of pensions? What about time cards? Why don't we become like the A.M.A.? Oh yes down with the IEEE's precious tax exemption!!!

P.S. Please abolish the proceedings.

I do feel very strongly about the involvement of the IEEE as a unionizing force for the engineer. I do not mean this in the same sense as the incentive billing labor union, but it must be recognized that only by a total union of the engineering community will the IEEE have the strength to act effectively in our behalf.

Engineers and scientists should not apologize for the messes made by sick politicians and greedy financial interests. They should fight the bastards effectively - - overtly or covertly as the situation permits.

If engineers need a professional society (like A.M.A.) then let one be created. The IEEE cannot be successfully reconstituted to do this job and still maintain its present functions. A dual role will not work. I think a professional society could prove to be useful, but it must be independent of IEEE. Engineers will join a second organization if it serves their needs.

IEEE should not only engage in lobbying and in other communication with Government agencies, but should raise its (no longer tax-deductible) dues to levels comparable with those of other professional non-engineering societies. The extra money should be used to finance development of pension plans and other benefits to engineers. I would gladly

double or triple my dues contribution to IEEE if I knew that it would help to put some "teeth" into the organization.

IEEE should actively engage in betterments of salaries, job security and fringe benefits (pension, major medical, employment, etc. plans) for engineers. Also, should actively seek to publicize the roll of engineers in the present world (tell the "silent majority" that engineers, not politicians or astronauts build the rockets and space capsules!) and pressure government into stabilizing the fund availability to electronics industry.

I would like to see more representation on behalf of all engineers up to a national level. More protection of professional standard, who is engineer and who is not.

The IEEE has for reasons too numerous to mention just begun to awake to the possibility it may be an effective social-professional organ to express the desires of its members and convey this to interested parties. I wish to get in the loop right now and perhaps influence the manner in which employers force EE's to be wandering nomads. This means influencing Government as well!!!

We need to arrange programs that promote an interaction between engineers and social scientists in order to come to grips with criticisms leveled at technology and to help determine new directions for engineering. Why not have non-engineers speak at our banquets and participate in our panel discussions?

IEEE should be able to set up a pension plan for "professional engineers" i.e. members of IEEE, which is supported by the engineer's company. When the engineer changes his employer, the new employer continues the pen-

sion plan (and also vacation plan). Thus IEEE members would not lose seniority or pension benefits when job changes are needed. This is analogous to a professional union and is needed by today's engineer.

The IEEE in order to save the engineer is going to have to change attitudes. It's own and those who teach our future engineers. Our present university and college programs are training men and women to be doers with their minds - when it comes to making a project work much money and effort is wasted. They are not practical. What is needed is training in Applied Research. If not industry will train and use their own people.

What about safety? Why isn't the IEEE stressing training in safe lab practices in school? How can a person be expected to know this when his school and professors neither stress nor follow safe procedures.

Why doesn't the IEEE provide a series of home study courses (not all of us can obtain the funds or time to attend distant courses) on update and refreshing us EE engineers. How about some courses in cost engineering, How to Handle and Deal with People, etc.

Why doesn't the IEEE have the Spectrum in a cover like plastic so that I do not have to read a cut up dirty 7-dollar plus magazine each month.

Why must most published IEEE articles be written in nearly hard to follow English. Most problems engineers face today do not entail Spherical Coordinate Bessel Solutions.

Why can't the proceedings to the IEEE be designed so that I can remove the advertising. Why must it be an integral part of the proceed-

ings. Why can't it be an insert that I can look at and save or not save. The advertising can be designed around the EEM system so that I file it by product number if desired for future reference. My proceedings shelf space will be less.

Why can't all transactions and proceedings be sent in plastic envelopes so that it will arrive dry and not torn.

It is becoming increasingly obvious that we cannot call our job a profession, if we have no control over its continuity, rewards, social standing, and accumulation of equity.

I suggest strong efforts towards implementing such controls, perhaps even (if necessary) by means of university enrollment limitations, GMTY representation at company personnel departments, and congressional lobbying.

Whatever the purists prefer to think, we cannot ignore our own technological involvement in society, especially as industrial and consumer applications of microwaves become more widespread. I presume we think this is good business. If so, we had better look at some possible future consequences.

Something has to be done to protect and compensate the engineer for his forced nomadic existence. As a first step his vacation, pension, and insurance privileges should continue to accrue even when he changes jobs. At the last symposium I attended the one comment that almost all the engineers made was that "they wished they had gone into another profession or business." Their morale was very low. Something has to be done to improve the morale of the engineer.

I feel that the IEEE should become a lobby seeking to advise and force the Government in its scientific and technical policies so as to provide security to engineers, better usage of engineering and scientific talent, and more competent choice of those programs which are to be funded. In contrast to an engineering union to deal with companies which are often powerless, we need an organization like the AMA to deal directly with the Government - our employer.

Do you have any general comments on

GMTT, IEEE, Engineers, Society, etc.?

Permit the discussion of IEEE internal affairs at meetings, instead of limiting discussion only to technical topics. I found that IEEE section meetings do not allow or even have provision for a member to bring up for discussion any topic concerning the actual running of the IEEE such as complaints about headquarter's computer SNAFU's resulting in loss of mailings, inability to get headquarters personnel to perform their tasks, etc.

Congratulations for conducting this survey. Why doesn't the "spectrum" make one too? All IEEE members should be questioned. We need action.

- 1) We need lobbying.
- 2) The IEEE should become involved
- 3) To hell with tax exceptions, it's worth it!
- 4) The IEEE decision-makers should include working engineers, not just professors and managers from industry and Government. After all, the membership majority is entitled to have a voice, not just to pay dues and thus subsidize the publications which mostly it doesn't read!

Dues and publications are too expensive. The IEEE appears to be operated in a luxurious and wasteful manner. I receive a great deal of "junk mail" with IEEE return address. I also object to the "voluntary \$50 page charge" for publication in an IEEE journal. I think the membership should receive an accounting of the millions of dollars taken in each year.

Its about time something be done to remove the engineer from the migratory labor class and give some professional status to engineers. First, the engineer should be removed from the employee class and be contracted as consultants. The number of college students should be limited to prevent the present over supply of engineers from reoccurring. Lastly, the influx of foreign engineers should be eliminated. These engineers should be required to return to their native country after completing their education. I would not recommend this "profession" to anyone.

I have come to the conclusion that engineers need portable pensions and the IEEE is a probable vehicle for this.

If the IEEE doesn't lobby our views and everyone else lobbies theirs, as they do, all that happens is that our views aren't heard, while the AMA's, the organized poor, the NMA, etc. are heard.

The IEEE, GMTT, etc. isn't worth a damn to someone out of work for six months or longer.

Engineers will be treated worse than migrant farm workers until they learn to organize. In the meantime I'll advise my son to study Dentistry or Optometry.

Higher level positions in the IEEE, GMTT, etc. are dominated by the people that can devote a substantial portion of their time. These are the various academic professors, directors of research in industry, etc. As a result the leadership serves industry and the academic world, creating such myths as the engineering shortage of a few years ago (maybe there is even one today according to these people!) and ignoring the needs and wants of the working engineer, and low level supervisors. The total lack of job security, pensions, etc. must be corrected before a union like AFL-CIO comes in and corrects it for the people with their heads in the sand.

Professional engineers are taking a beating in general on retirement benefits, pension plans etc. which are portable for trade unions.

The present Government policies are cutting back drastically on defense R&D which supplied technical advances as a "fall-out" to industry. This has served to keep the US competitive in foreign markets. Our technical talents should be employed directly in programs to keep the US competitive in the world markets.

I would like IEEE to carry on the functions of a union (in addition to its present functions) to protect engineers from the whims of the Defense Dept. - - to act as a stabilizing force in this very unstable business. EE's should not be making \$18K one year and be unemployed the next year. Why not limit the enrollment of engineering students as the AMA limits the enrollment of medical students? Thank you.

GMTT works well. It communicates clearly. However, I am horrified at the things I hear about IEEE head office. Does belonging to

IEEE help or hinder MTT? Perhaps the time has come for GMTT to leave the IEEE.

"Spectrum" does not heed the times; perhaps that is our fault. But can't anyone kick the IEEE out of its rut? The IEEE must be made to lobby Congress etc. To hell with tax deductions. We are trained to tackle the most serious problems facing man.

Stop saying how bad unions are and publish useful information to the engineer on "how to" negotiate salary and fringe benefits, get tax information sources and other AMA types of information. Approach a major financial institution to formulate a portable pension plan and then offer it to IEEE members for their consideration, like the insurance. Our employers use vested pension status with the company as a weapon to make us stay and a reason for laying us off. In short on pensions: stop the crap about "should we do it"? and offer specifics, including methods of renegotiating salary without pension contributions from the employer. I dare you!

IEEE should belong to Engineers Joint Council! IEEE should provide a crisis lobby for reasonable treatment of Defense Industry (& other) Engineers vis-a-vis: stepped phasing out of jobs and doing this when industry is expanding (higher interest rates allowed again) and can thereby absorb the manpower!

IEEE standards need updating (to my knowledge) as to Microwave Drafting Symbols for all possible components (e.g. - tuners, adapters, xtal detectors, etc.) and these should be separately issued in PGMTT!

IEEE should, if not join EJC, have its own magazine on general topics, such as politics, social, etc.

IEEE officers tend to be management "level" (consultant, "staff" engineer, etc.) type people - not representative of the general working engineer. This is similar to the problems of the universities and should be cured, by asking for other engineers to run for offices set up specifically for people without elaborate biographies. (The present ones are much too formidable!)

IEEE should avoid political activity because the members are not in agreement.

IEEE (but not MTT) should consider only social problems of our technology.

The greatest problem in the U.S. is the present "super-government" by labor unions and the resulting unbridled inflation and unpendability of essential services.

To begin, kindly stop the nonsense about "the computer insists..." which appears on the first page of the questionnaire. Computers don't insist on anything; what you evidently mean is "we don't see fit to tell the humans who encode the questionnaire to punch (2) and (2) as (02) ..."

As you can see by looking at the questionnaire, my main area of interest is not micro-waves; however, I find the Transactions on MTT a valuable part of my reading each month. I own a microfiche reader, and subscribe to both the Proceedings and Transactions on MTT on microfiche. I think that publication on microfiche is a good idea, but there are two ways it could be improved - eliminate the delay between the arrival of the printed edition and the arrival of the microfiche edition, and please mark the envelopes used for the microfiches "Photographs-Do Not Bend." Although the present envelopes survive the post office well enough, they have on several occasions, been bent by being forced into the mailbox, resulting in kinks in the microfiche.

In the part of your survey on social, political, and economic activities, you have compiled quite a list of things which the IEEE has no business doing. For me, the only use of the IEEE is as a means of technical communication among engineers. This is done, and done well, by the Proceedings and Transactions, and also by the Spectrum, although the main purpose of that magazine seems to be to compete with the throw-aways and thus provide some revenue for the rest of the IEEE.

In question A, you suggest that the IEEE undertake a program "aimed at helping solve some of the socio-technical problems of our society? (e.g., organizing ways for you and me to "get involved")." The wording of the question betrays an altogether excessive belief

in the value of organizing; such a belief was rightly taken to task by R.A. Frosch in an article in the September 1969 issue of the Spectrum. In any case, an engineer is always free to involve himself in any problem to which he feels his expertise is applicable, and he should need no special IEEE program to help him do so.

Moreover, the question seems to make a dangerous distinction between "society" and the individuals who are supposed to compose it. Thus, the proposed program is not to solve the problems of a particular person, when asked to do so, but rather the problems of "our society." The first is what an engineer does every day in the course of his ordinary work, unless he is fortunate enough to be an independent inventor, and the second boils down to meddling in other peoples business without being asked.

It is clear from questions C through F just what the program of question A would be. Taken at face value, the proposed polls and lobbying are useless, for any engineer who cares to do so is free to write to his local newspaper or congressman, and even a few such letters would be more informative than any poll. Moreover, polls of the kind proposed tend to be nothing more than a vehicle for the opinions of the person who writes the question. Thus, Mr. N. G. Neer may get along very well with his wife, but the news media will get a press release with the headline "Engineers Beat Their Wives," and, sometimes, the body of the release will explain that out of the small fraction of engineers answering the poll, most answered the question "When did you stop beating your wife?" with "I have not."

Question B mentions "professionalism." To judge by the correspondence which has appeared on that subject recently, I take the question to mean: should the IEEE become another American Medical Association? It is certainly lucky that there wasn't any such professionalistic engineer's organization a few decades ago, or Pupin's autobiography might have read:

"When I got off the boat, I bought a slice of fruit pie, and it was full of pits. When I

tried to become an engineer, the IEEE prevented it. I spent the rest of my life as a greengrocer. The IEEE is a wonderful organization which controls the supply of engineers, so that its members can live like kings, without competition. Perhaps some day, one of them will figure out how to build a loading coil for a telephone line."

As I said above, the purpose of the IEEE should be to encourage technical communication among engineers. I would consider any actions by the IEEE along the lines suggested by the questions not only useless, but repugnant, and I would not want to be associated with such an organization.

Questions G through I propose using some of the IEEE publications as a forum to voice opinions on social and political subjects. I see no reason for wasting the space of these magazines in that way; there are already dozens of magazines whose only purpose is to be such a forum, and if engineers would write to them more often the level of ignorance of engineering among their readers might be reduced. Unfortunately, there seems to be a segment of the IEEE which can not comprehend that even if every magazine in the country, whatever its original purpose, were made into a forum for their social and political ideas, those ideas would still not be instantly adopted. Such people suffer from a belief in the power of the printed word which matches their belief in the value of organizing, and this has blinded them to the fact that, however good it may be to have discussion of political and social issues, there are many places where such discussion is simply not appropriate. The pages of the IEEE publications are one such place.

I find it very disturbing that the ideas referred to in the questions should have ever been considered by the officers of GMTT, and I hope that the results of this survey will put them to rest permanently.

One comment about IEEE international symposia: for these to be truly international, they should be held more often outside the U.S. to give a reasonable balance. I would also recommend more encouragement of papers from outside the U.S.

A greater utilization of microwave expertise is industry other than military oriented Aerospace and Defense.

IEEE should standardize packages of microwave semiconductor devices and the equivalent circuit representation of the packages.

MTT transactions should expand their interest to vigorously include time-domain approaches. The picosecond pulse techniques people are microwave specialists. I am NOT saying that MTT has ignored time-domain papers when such have been submitted. I AM saying that MTT should vigorously solicit such papers. For example, the CPEM Boulder, Colo., 1968, 1970 conferences had pulse techniques papers in which the spectral content was in the μ wave region.

What microwave areas need the establishment of standards?

1. Single crystal line width test method (Ferrite).
2. (Ferrite) line width test methods.
3. Ferrite ($\mu = \mu^1 - j\mu''$) and dielectric test methods ($\epsilon = \epsilon^1 - j\epsilon''$).
4. In millimeter waveguide (mode) and different propagation and dielectric and dielectric test method.
5. Radar range problem, RCS definition, sea clutter problems.
6. Disaccommodation of Ferrite (μ decreases with time).
7. Definition of characteristic impedance of striplines and fringing capacity of striplines.
8. In antennas and propagation direction problems.
9. Exact standard form of all microwave components for scientific and industrial purposes.

What ever happened to the "IRE Standards" that were listed in every issue of the proceedings?

GMTT is too mathematical!

In general an excellent job is being done. Maximum care must be taken to assure a very high level of quality for MTT-Trans. Publications.

I would like to see a more efficient means of approving and editing technical papers for publication in the transactions. I have per-

sonally experienced more than 6 months delay in just waiting for acceptance and another 6 months for publication. With a system like this, in an industry where information exchange is our backbone, I'm frustrated in my attempt to release current data!!

GMTT should put more effort on recruiting and educating graduate and undergraduate students who are interested in Microwaves. Put more effort in promoting interest among students in Microwave Theory and Techniques. Therefore, at least, as a first step, should release or disclose the student membership list of MTT to the universities upon request so that the graduate student recruiting information can be sent effectively and directly to the students who are interested in microwaves already.

None except that I am generally satisfied with GMTT and that I feel that its activity should be limited to technical subjects; there is no reason to expect any social or political coherence of the group.

IEEE membership should be separated from receiving Spectrum and Proceedings. IEEE membership and subscriber to a group should be possible and cheaper.

A new grade of membership is needed to recognize technical achievement only. The majority of fellows today seem to have been honored for other reasons, and the grade of fellow is not as prestigious as it has been.

I have so many that I would be happy to present them to a panel if invited. I feel the IEEE is necessary but does not meet its responsibilities. The IEEE is chartered as an educational institution yet it does not attempt to influence the training of engineers. Many people will disagree with my statement but I find a noticeable lack of regard for fundamentals in technical papers. Many papers would not be published if fundamentals were insisted upon. It would be nice if the author tried to sell the reader on reading the article by telling why and where it is valuable. Another thing which burns me up are these special extension courses which universities have. The IEEE sells them the labels for this purpose. Selling the labels does not annoy me because it is related to the purpose of the IEEE; but it is the tacit agreement by the Institute that it has not met the

technical needs of its members. I consider special \$300.00 extension courses a big fraud which the IEEE should do its best to eliminate. I do not feel that one has learned a subject if he has not had time to study, do homework, and discussed reconsiderations. I would like IEEE to establish a climate so that engineers can really continue their education and accomplish academic goals. In Los Angeles, only at Cal State College in L.A. can an EE continue with his education without quitting his job. Without a real opportunity to advance his education, most engineers find the journals to be too much.

The IEEE has failed to establish exactly what an engineer is. Industry misuses engineers so badly that the engineering societies should have done something long ago. I do not advocate unionism, but IEEE through its educational function can do a lot. By establishing in the minds of industry about what engineers are trained to do, IEEE could cause more training programs for technicians and other non-professionals to exist. The big tip-off on this problem is or was the recruitment ads whose lure was the lack of challenge in the engineer's current position. The problem was widespread and also indicated a surplus of engineers which has now been universally acknowledged. The IEEE should discontinue future engineers' exhibits until a real need for engineers exists. For an engineering society to paint a rosy picture when it knows it is not a most unethical thing to do. The problem has existed for almost a decade and it has influenced my career. I am employed as an engineer but I am still trying to break into real engineering.

One thing IEEE could do is maintain a list of companies and government agencies and rate them on their use of engineers. This should not conflict with the educational aspect of IEEE since an engineer can always go to work, for any firm. However, the list would upgrade personnel practices of many firms.

IEEE is the only organization I know where a 10% turn out at a meeting is outstanding. I do not believe that it is necessarily the subjects of the meeting which do not bring in people, but it is a factor. A big factor is that the attendees do not really talk to each other. Quite often it is the speaker's fellow employees who are

present. Everyone is a stranger except the officers. To be interested in the Chapter is tantamount to becoming an officer in a short time. The meetings of the IEEE serve so few people that perhaps they should be discontinued. Only the officers have social benefits. One of the purposes of a society is to allow professionals to share their interests. It all reminds me of a bunch of polite junior high school students who have no idea what they want.

The typical technical talk is much too dry and says very little. If all talks were the opposite and debates could arise more easily, interest would increase. Audience participation at all activities should be mandatory. Many of the questions on the questionnaire should be thoroughly discussed at a meeting for the purpose.

I have covered only those areas under the IEEE direct control. The other areas can wait.

We need some sort of an aid for engineers in making a transition from Defense Industry to more peacetime types of endeavor. Perhaps a portion of Spectrum could be devoted to this specifically or a special periodical set up. We need answers to "How does the engineer adapt to and get involved in more sociological problems of society and utilize his technical/analytical problem-solving abilities optimally"?

Engineering, as a branch of Science, is a pure form of TRUTH, because:

1. Contributions are judged on bases of their value and not by the race, sex, etc. of the contributor and
 2. Because it leads itself to objective and periodic checks against facts of life as opposed to political or religious doctrines. Therefore, the weight of Science in schools should be increased and of humanities decreased.
-

I would like to clarify what may seem to be a negative attitude under section 6 of the questionnaire. I joined IEEE primarily to learn about and keep abreast in a few technical areas. I would not want to have to quit because the IEEE which I support wished to take a stand on some issue either in the form of a statement or as a lobby which I did not support. Therefore with regard to question 6F, the loss would be the loss of the purpose of the IEEE (at least for

me) rather than merely a tax deduction. If a sufficient number of members still wish to express themselves on social and political subjects while retaining their identity with other engineers there are at least two possible alternatives. They could become members of a professional engineers group devoted at least partially to this cause, or a separate IEEE group might be formed dealing specifically with these topics. I am not familiar with the legal aspects of this and its implications to the tax status of the IEEE, but it should be made clear that the views expressed in this separate group would not express the views of the entire membership.

Another subject covered in the questionnaire is opinion polls. Polls on a particular question often require a person to oversimplify and over generalize, as is the danger with the present questionnaire. Question 6E concerning polls on national scientific subjects was probably included because of the recent ABM controversy. But this is precisely an example of what little value a poll would be, because the hard information needed was not provided. Unfortunately the ABM question was a political contest, not a technical discussion, and hence there seemed to be more name calling than careful analysis (see Raymond M. Wilmotte, "Engineering Truth in Competitive Environments," *IEEE Spectrum*, pp. 45-49, May 1970). On the other hand it seems Spectrum would be a good vehicle for such discussion on the technical merits of a particular program as was done to some extent on the ABM issue.

I do not believe Spectrum or any other IEEE publication is the appropriate place for publishing articles on social and political subjects. There are presently plenty of publications dealing with these, and the IEEE might best serve its members by doing a good job in the technical area.

Discontinue the newsletter. Discontinue the Microwave prize. Discontinue the National Lecturer. The most important purpose of the MTT is to publish the transactions; and less important hold the symposium.

Relative to "Social, Political, Economic Activities" of MTT or IEEE: I oppose all such suggestions and will resign from the society if such a resolution is approved.

THE MICROWAVE ENGINEER IN POLITICAL AND COMMUNITY LIFE

by
Barbara Everitt Bryant

What are microwave engineers like in their political and community life? A survey by questionnaire of the audience at G-MTT's 1970 International Microwave Symposium evening session May 11, 1970 (see Spectrum, July 1970, pp 110, 111) on "The Engineer, Technology and Society," showed one-third of the 120 respondents contributed money to a political party or candidate in 1968 (or since), while 13.4% campaigned for a party or candidate. Only three held elective civic or political office although another four had in the past. Five held appointive civic or political posts.

The current elective and appointive posts included a political party precinct committeeman, a recreation board chairman, a town councilman, a member of a sewer advisory committee and a member of a city council advisory committee.

Politically, those surveyed who were U. S. citizens divided their votes evenly between Republicans and Democrats. By voting behavior at the last state and national election, they reported voting 23.3% straight or mostly Democrat; 23.3% straight or mostly Republican and 32.4% split tickets. By party identification, they claimed to be 29.3% Democrats, 30.0% Republicans and 30.8% Independents.

Respondents were heavy consumers of print media, but not of television and radio. Ninety percent said they read technical and scientific journals regularly, but only 80% were regular newspaper readers. News magazines were read regularly by 55%, occasionally by another 29%. Regular use of trade journals was reported by 49.1%; and other non-technical, non-news magazines were used regularly by 30% and occasionally by 34%.

Book reading reports ran: for fiction, 23% regularly, 55% occasionally; for non-fiction, 40% regularly, 46% occasionally; for technical books, 40% regularly, 47% occasionally.

TV watching was typically 1-5 hours per week, reported by 47% of respondents; 27% watched 6-10 hours. Radio listening was similar, 1-5 hours for 60%.

In IEEE, to which 93% of the respondents belonged, one-third belonged to two technical groups, 18% to three, and 12% to four or more. Respondents were more active in Groups, which reflect technical interest, than in Sections which reflect geographical location. Forty-one percent had held a Group or Group Chapter office but only 18% a Section office.

Other professional memberships were 30% in Sigma Xi, 27.5% in Eta Kappa Nu, 12.5% in Tau Beta Pi, 12% in American Institute of Physics and approximately 7% in AAAS.

Geographically the respondents represented 19 states, the United Kingdom and Canada — Asians and Europeans at the Symposium apparently did not attend this session. One-fourth were from California where the G-MTT Symposium was held. The largest age group, one fourth of those

present, was 35-39 years. Forty-two percent were 40 or over. Only one person present was under 25, 15% 25-29 and 16% 30-34.

Ninety-four percent were employed, although 14% were seeking employment, 10% on their own initiative. Only one individual reported being a member of a labor organization.

Industry was the biggest employer (47.5%), followed by universities and educational institutions (22.5%). Employer products were 49% defense or space end use, 21% education, 14% R&D and only 8% consumer and commercial.

LONG ISLAND ENGINEERING SOCIETIES TO QUIZ CONGRESSIONAL CANDIDATES — OCTOBER 21

The Long Island Section of the Institute of Electrical and Electronics Engineers, with the co-sponsorship of other technical and engineering organizations, will conduct a non-partisan political forum on the evening of October 21. All congressional candidates for the counties of Nassau and Suffolk have been invited to answer questions of interest to the technical community. The forum will be held in the auditorium of the Walt Whitman High School in South Huntington, Long Island.

Among the co-sponsors are the American Institute of Aeronautics, The American Society of Mechanical Engineers, The Society for Information Display and the New York State Society for Professional Engineers.

This unprecedented program has been organized by the IEEE in response to what is clearly unprecedented interest on the part of engineers in today's burning national issues. At the head of the list are questions of particular interest to engineers, such as job security, economic conversion and national scientific goals and priorities. But beyond this, engineers, more than ever, are asserting their roles as citizens and are vitally concerned with such issues as foreign policy, pollution control, poverty, urban decay, etc. Questions reflecting these interests have been provided to the candidates in advance and each will be given an opportunity to answer. In addition, there will be opportunities for questions from the floor.

Members of the IEEE, of the co-sponsoring organization, and their guests are urged to attend this public meeting to listen and to be heard. The candidates will become aware, if they are not already, that the technical community comprises a substantial portion of their electorate and that this strength will be felt at the polls. The meeting will be covered by the press and it is our hope that the candidates' statements will be widely publicized.

Last minute details of the meeting will be provided to you through other media.

EDITOR'S COMMENT: This meeting is an important milestone as it represents the first time a number of different technical societies are acting in unison on behalf of Engineers.



CHAPTER ACTIVITIES

by J.B.HORTON

I am happy to report that two more special chapter sponsored seminars are scheduled for this Fall. This brings the number of special chapter functions to seven this year. The Fall seminars are to be held in Boston and Long Island on October 22 and November 12, respectively. The topic for the Boston seminar is Microwave Phase Shifters; the meeting will be held at 7:00 p.m., October 22, at the Sylvania GT&E Laboratories, 40 Sylvan Road, Waltham, Massachusetts (contact R. A. Sparks, 617-274-7100 x3601 for further information). The Long Island seminar is a one-day meeting on Microwave Solid-State Power Generation, to be held at the Garden City Hotel, Garden City, Long Island, from 9:00 a.m. to 4:00 p.m. on November 22. Note that registration must be made before November 5, 1970 (contact Irwin Bardash, 516-694-7440, or Jack Goldberg, 516-265-3810). Announcements and more information on both of these meetings appear in this issue of the NEWSLETTER and I urge you to review the programs. I doubt that the limited travel funds of most members will permit many out-of-towners to attend these meetings, but under

better economic conditions both programs would warrant a trip. As an alternate, what are the possibilities of having one of these seminars at your chapter?

I am sure that by this time everyone is aware that new Group officers were elected in September. I am happy to report that Mr. Carl Blake of Lincoln Laboratories, MIT, has been nominated for 1971 G-MTT National Lecturer. Mr. Blake has not announced the title and content of his talk, but it will probably concern phased array radars. More information about his talk will appear in the January issue of the NEWSLETTER. For information on the 1971 National Lecturer schedule, contact J. B. Horton, 214-238-2434.

Dr. Harold Sobol, the 1970 G-MTT National Lecturer, will complete his schedule on October 20 at Schenectady. Dr. Sobol's itinerary includes sixteen chapters during 1970. His schedule of the remainder of this year is:

San Francisco, October 5
Orange County, October 6
San Diego, October 7
Schenectady, October 20

It is interesting to note that the largest attendance recorded for a regular chapter meeting this year was 123, at Milwaukee, with Dr. Sobol as speaker.

I would like to remind the chapter officers that the compilation of data for the 1971 G-MTT COMMITTEE DIRECTORY has begun. If you have not already done so, please send a complete list of your chapter officers to me as soon as possible. Also, any suggestions about the format and content of the COMMITTEE DIRECTORY would be welcome.



CHAPTER NEWS

MISSOURI CHAPTER

Past Meeting

Date: September 15, 1970
Speaker: Dr. Fred J. Rosenbaum
Affiliation: Washington University
Abstract: Circuit Design for Wideband Gunn Devices

PHOENIX CHAPTER

Past Meeting:

Date: September 21, 1970
Speaker: Jim Black
Attendance: Sixteen
Affiliation: Motorola Semi-Conductor Products

Attendance: Eighteen
Future Meetings
Date: October 20, 1970
Speaker: Dr. Martin Grace
Affiliation: Sperry Rand Research Center
Abstract: Trapatt Mode Microwave Oscillators and Amplifiers
Date: November 17, 1970
Speaker: Dr. Art Solomon
Affiliation: Sylvania

Subject: Electronic Migration
Failure Modes in Integrated Circuits

SOUTHEASTERN MICHIGAN CHAPTER

Past Meeting:

Date: September 22, 1970
Speaker: Paul C. Goodman and G. Ronald Simpson
Affiliation: Omni Spectra, Inc.
Subject: Automated Precision Measurements Using a Computerized Network Analyzer
Abstract: The computerized network analyzer has become an essential piece of test equipment for the modern microwave measurements laboratory. Omni Spectra, Inc. has installed a Hewlett-Packard

system at their main facility in Farmington to expedite both product development and production testing of precision broadband microwave components.

The discussion reviewed the principles of operation of the basic network analyzer system and showed how a small dedicated computer is used to expand the capabilities and usefulness of the system. The network analyzer uses a phase locked sampling circuit to convert signals to lower frequencies where direct amplitude and phase measurements are easily performed. This sampler is combined with sweep signal generators, broadband directional couplers, and electromechanical switches to permit complete S-parameter characterization of two-port devices.

Future Meeting

Date: October 20, 1970
 Speaker: William P. Harokopos
 Affiliation: Bendix Research Laboratories
 Title: Application of Microwave Sensors to Traffic Safety
 Location: Bendix Research Laboratories

With the current rapid progress in many areas of solid-state electronics, the 1971 sessions are expected to feature new circuit techniques and new device applications, and the realization of complete system functions through novel integration concepts. Areas of application include medical, computer, communications, government, consumer and industrial electronics and their interfaces with optical, acoustical, mechanical and biological systems. Papers, not previously published or presented, describing significant contributions in the following or related areas, are invited:

integrated electronics,
 circuit techniques,
 memories,
 new device applications,
 optoelectronics,
 microwave electronics,
 computer aids to design,
 medical electronics.

Authors must submit both a 35-word informative abstract and a 300-500 word summary, appropriate to a 20-minute paper, that must reach the Program Committee Secretary:

F.E. Emery, MS-16
 Texas Instruments Inc.
 P.O. Box 5012
 Dallas, Texas 75222

by October 16, 1970.

3. Transistor Devices — Hon Lee, RCA
 Somerville, New Jersey
4. Bulk Effect Devices — Les Eastman,
 Cayuga Associates, Ithaca, New York
5. Conclusions and Anticipated Trends
 and Requirements — Carl Blake,
 Lincoln Labs, Lexington, Mass.

A thorough description of the latest solid state developments and techniques used to generate power at microwave frequencies will be presented by the most qualified people in this rapidly expanding field. Avalanche diode, transistor, and bulk effect devices will be described in sufficient detail to enable the microwave engineer to determine the optimum device for a specific application. Ample time has been set aside for questions and discussions of each topic during the course of the seminar.

Additional information may be obtained by contacting Irwin Bardash (694-7440) or Jack Goldberg (265-3810).

PAPERS DEADLINE FOR SPECIAL ISSUE ON MIC'S DRAWS NEAR

The deadline for papers for the special issue of the IEEE Transactions on Microwave Theory and Techniques on Microwave Integrated Circuits is November 15, 1970. The issue will be devoted to applications of MIC's in the design and development of active microwave components and systems. Papers and correspondence items reporting new and significant developments in the field are solicited. Contributions should be concerned mainly with design techniques, device-circuit interactions, device characterization, recent devices developed for microwave integrated circuits and recent fabrication techniques for fabricating passive circuit elements.

Length and style for the papers should be in accordance with the "Information for Authors" published in the Transactions. Four copies of each complete manuscript should be submitted to the Guest Editor, J. B. Horton, MS-16, Texas Instruments Incorporated, Box 5012, Dallas, Texas 75222 (telephone 214-238-2434).



CALL FOR PAPERS

1971 IEEE INTERNATIONAL SOLID
 STATE CIRCUITS CONFERENCE
 FEBRUARY 17-19, 1971---
 PHILADELPHIA, PENNSYLVANIA

SEMINAR ON MICROWAVE SOLID STATE POWER GENERATION

Garden City Hotel — November 12, 1970

The Long Island G-MTT Group is sponsoring a Seminar on Microwave Solid State Power Generation. The seminar will be held on November 12, 1970, from 9:00 a.m. to 4:30 p.m. at the Garden City Hotel, Garden City, Long Island.

Program and Speakers

1. Introduction and General Review of
 Field — Fred Sterzer, RCA
 Princeton, New Jersey
2. Avalanche Diode Devices —
 Jim Gewartowski, Bell Laboratories
 Murray Hill, New Jersey

Microwave Phase Shifter Seminar
Thursday, October 22, 1970
GT&E Laboratory Auditorium
Waltham, Massachusetts

Topics to be presented are:

1. Characteristics of the dual-mode reciprocal ferrite phase shifter by C.R. Boyd Jr. of Microwave Applications Group.
2. Semi-conductor phase shifters by J. F. White of Microwave Associates.
3. Phase Shifters for array antenna applications by M. Mohr of Ratheon.
4. Affects of microwave phase shifter fabrication by D. H. Temme from the M.I.T. Lincoln Laboratory.
5. Digital diode phase shift networks for microwave thin film applications by Frank Opp, Texas Instruments.
6. Unemployment, professional unions and profitable pensions by A. Marrow, N.L.R.B.; and D. Mason, Northwestern Mutual Life Insurance Company, H. Goldberg, Analogic

IEEE TRANSACTIONS ON MICROWAVE
THEORY AND TECHNIQUES
SPECIAL ISSUE ON
MICROWAVE INTEGRATED CIRCUITS

The IEEE Transactions on Microwave Theory and Techniques plans to devote a special issue to microwave integrated circuits, to be published in July 1971. The purpose of this special issue is to focus attention on the applications of microwave integrated circuits in the design and development of active microwave components and systems.

Papers and correspondence items reporting new and significant developments in the field are solicited. In addition, several review papers will be invited to report the state of the art on research and development of microwave integrated circuits and related devices used in active microwave components and systems employing microwave integrated circuit technology. Contributions to this special issue should be concerned mainly with design techniques, device-circuit interactions, device characterization, recent devices developed for microwave inte-

grated circuits, the dependence of circuit performance on device design and measurable parameters, and recent circuit fabrication techniques for fabricating passive circuit elements such as resistors, capacitors, coils, biasing networks, etc.

Length and style for the 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 November 15, 1970, to the Guest Editor, Mr. J.B. Horton, MS-16, Texas Instruments Inc., Box 5012, Dallas, Texas 75222.

MICROWAVE SEMICONDUCTORS

The July 1971 issue of the PROCEEDINGS OF THE IEEE will feature papers on microwave semiconductors. The issue will be comprised of invited tutorial-review papers on the major topics that make up this field as well as contributed papers relating specific achievements.

Papers describing recent discoveries and progress in the areas of Gunn effect diodes, IMPATT diodes, microwave transistors, varactors, detectors, and bulk effect phenomena are welcome for consideration. Manuscripts should be submitted no later than November 30, 1970 to the Guest Editor, Dr. F.A. Brand, US Army Electronics Command, Attn. AMSEL-KL-I, Fort Monmouth, N. J. 07703.

NATIONAL TELEMETERING CONFERENCE

The 21st National Telemetry Conference and Exposition will be held at the Washington Hilton Hotel, Washington, D.C., on April 12-15, 1971. The conference will focus on the theme **TELEMETRY AND THE ENVIRONMENT: ACCEPTING THE CHALLENGE**. The CHALLENGE lies in completing the loop: data acquisition and reduction, decision making, and control. Papers on systems as well as on elements or components are welcome.

An award of \$250 will be made for the best paper of the NTC '71 Conference and Exposition.

Three copies of your complete manuscript (not necessarily in final form) and a 300 word

abstract must be submitted not later than December 14, 1970 to:

Henry B. Riblet
NTC '71 Technical Program Chairman
The Johns Hopkins University
Applied Physics Laboratory
8621 Georgia Avenue
Silver Spring, Maryland 20910
Telephone: (301) 953-7100

1971 IEEE/OSA CONFERENCE ON
LASER ENGINEERING AND
APPLICATIONS

The third biennial Conference on Laser Engineering and Applications will be held at the Washington Hilton Hotel, June 2-4, 1971, Washington, D.C., under the joint sponsorship of the IEEE Quantum Electronics Council and the Optical Society of America. The conference will again provide a forum for describing and discussing engineering aspects of laser devices and systems, as well as applications of coherent optical techniques to engineering and scientific problems.

Original papers, not previously published or presented, are solicited that describe new technical contributions in the field. Contact
Mr. Donald R. Herriott
Bell Telephone Laboratories
Murray Hill, N.J. 07974
Telephone (201) 582-3908

THE DEADLINE FOR SUBMISSION OF
PAPERS IS **JANUARY 11, 1971**

MEXICO 1971 INTERNATIONAL
IEEE CONFERENCE
ON
SYSTEMS, NETWORKS AND COMPUTERS
JANUARY 19-21, 1971
OAXTEPEC, MOR., MEXICO

This is the first of a series of conferences on systems, networks and computers. There will be sessions in the following areas:

Systems Engineering, Systems Science, Management Science, Operations Research, Network Theory, Integrated Circuits, Information Processing, Computer Science, Automatic Control, Communication Systems, Transportation Systems, Power Systems.

Contact:

Dr. Roberto Canales
Instituto de Ingenieria
Ciudad Universitaria
Mexico 20, D.F., Mexico

**CALL FOR PAPERS
1971 EUROPEAN MICROWAVE
CONFERENCE**

**STOCKHOLM, SWEDEN
AUGUST 23-28, 1971**

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 microwave fields are invited:

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

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

at the latest by March 1, 1971.

**SPECIAL PROCEEDINGS ISSUE ON
COMPUTERS IN DESIGN**

Since the PROCEEDINGS OF THE IEEE special issue on computer-aided design in November, 1967, this field has developed in two directions: 1) the computer hardware, software, and algorithmic resources available to the designer have vastly improved; and 2) there is an increasing tendency to automate both the design and the resultant production phases, resulting in a continuum of computer-based design activity.

To study the significance of these advances on the total design process, a PROCEEDINGS special issue on computers in design (CD) is scheduled for publication in November, 1971. The issue will be divided into three parts, as follows:

Part 1. Broad considerations: trends in CD, large CD systems, educational implications, etc.

Part 2. General purpose design tools: graphics, languages, data structures; numerical, simulation, and modelling techniques.

Part 3. Applications: applications of CD methods for specific problems, with emphasis on design results.

Contributed papers in all three categories are solicited for consideration. An author should submit his complete paper (including abstract) in triplicate by March 1, 1971, to one

of the following special-issue editors, depending on the category:

Part 1. Professor Sanjoy Mitter
Department of Electrical Engineering
Massachusetts Institute of Technology
Cambridge, Massachusetts 02139

Part 2. Professor D. A. Calahan
Department of Electrical Engineering
University of Michigan
Ann Arbor, Michigan 48104

Part 3. Dr. Harlow Freitag
IBM Thomas J. Watson Research Center
P.O. Box 218
Yorktown Heights, New York 10598

SECOND CALL FOR PAPERS

**ENGINEERING FOR CONSERVATION
OF MANKIND**

Sacramento, California May 11-13, 1971
Papers are invited from all fields of IEEE

activity related to the 1971 IEEE Region 6 Conference theme. These papers should report on new research, development concepts, techniques, systems, and components. Authors of accepted papers will be expected to give a 20-minute oral presentation followed by a 10-minute discussion period. Authors are specifically requested not to read their papers; rather, they should amplify and supplement their written presentation at the meeting. Maximum interaction between the authors and the audience is the goal of this Conference. All accepted papers will be published complete in the Conference Record which will be made available after the Conference.

Authors are invited to submit 500-word abstracts by December 1, 1970, to:

DR. R. F. SOOHOO, Program Chairman,
IEEE Region 6 Conference.
University of California at Davis,
Dept of Electrical Engineering,
Davis, California 95616.

**ANNOUNCEMENT OF 1971 IEEE
INTERNATIONAL MICROWAVE
SYMPOSIUM**

The IEEE International Microwave Symposium will be held in Washington, D.C., May 16-21 at the Marriott-Twin Bridges Motor Hotel. The theme for the Symposium is "MICROWAVES FOR A BETTER WORLD." Some of the key aspects of the symposium are as follows:

- Special sessions will consider the engineers role in society and the application of microwaves to non-military problems.

- A student paper competition for undergraduates and first-year graduate students will be conducted. Prizes will include a cash award plus expenses at the symposium.
 - The technical program will present advances in the state of art through contributed and invited papers. Areas covered will include microwave integrated circuits, filters and networks, Impatt and Gunn Oscillators, Microwave Acoustics and Microwave Ferrimagnetics.
- Additional information may be obtained by

contacting the following people:

General Information: Dr. Lawrence R. Whicker,
Publicity Chairman
Westinghouse Aerospace
P.O. Box 746, M/S 333
Baltimore, Md. 21203
Phone: (301) 765-6349

Technical Program
Information: Mr. Robert V. Garver,
Technical Program
Chairman
Microwave Branch 250
Harry Diamond Laboratory
Washington, D.C. 20438
Phone: (202) OX-6-9737

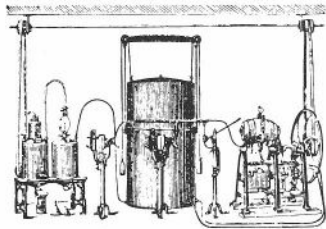
**1971 IEEE CONVENTION STATUS
MICROWAVE TECHNICAL APPLICATIONS**

We have been fortunate in obtaining eminently qualified individuals to be organizers/chairmen. The sessions are identified as follows:

Session No.	Tentative Title*	Organizer/Chairmen
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

*The final title will be the responsibility of the session organizer.

Each session organizer will plan 4 to 5 talks for a 2-1/2 hour session (including a short break). The speakers for these sessions and a very brief (2 or 3 sentence) abstract of their talk should be available no later than 15 September.



TECHNICAL NOTES

FCC, HEW IN COOPERATIVE TESTING AGREEMENT

Microwave cooking ovens will be given preproduction checks for radiation emission potentials under a cooperative testing agreement between the Federal Communications Commission and the Department of Health, Education, and Welfare.

The agreement was announced on April 27, 1970 by FCC Chairman Dean Burch and recent HEW Secretary Robert H. Finch.

Secretary Finch said the tests will permit possible radiation problems to be called to the attention of oven manufacturers before new models go into production. The Secretary emphasized that pre-production model tests will not constitute radiation safety approval or certification of prototype microwave cooking ovens by HEW under the Radiation Control for Health and Safety Act.

The radiation tests of microwave ovens will be made by the HEW Environmental Health Service's Bureau of Radiological Health in an FCC laboratory at Laurel, Maryland. The FCC tests prototype microwave ovens in the laboratory to determine whether their operation complies with technical standards designed to keep interference to communications devices at a low level.

Recent surveys by local and State public health agencies and the Bureau of Radiological Health showed that a number of microwave cooking ovens tested in homes and commercial establishments were emitting radiation above the voluntary industry standard of ten milliwatts per square centimeter.

The agreement will make available to the FCC a Bureau laboratory at Rockville, Maryland, for examinations to determine if design changes in production ovens have altered microwave frequency performances approved in pre-production models. The Bureau uses the laboratory in checking the radiation safety of electronic products in production, including microwave ovens.

Under the agreement, the Bureau not only will make radiation leakage measurements with oven doors closed, but will check the ability of safety interlocks to prevent ovens from operating as doors are being opened. In addition, the Bureau will be provided opportunities for observing oven design changes which may have radiation safety significance.

APPEAL FOR TECHNICAL BOOKS AND PERIODICALS

Dr. Robert E. Carlile
University of Missouri-Rolla

In the South of Viet Nam, below a military demilitarization line separating two idealologies, lives 17,000,000 people. These people have similar needs, wants, hopes and desires as do Americans. These desires - political, ethnic, religious, and educational - are real. For our purposes we ignore the political and religious considerations as outside of the realm of our relevant concerns. This leaves a concentration and focus on education.

For these 17 millions of population, records indicate less than 1,000 practising, trained engineers. The significant percentage of these engineers serve the armed forces or the government. One university provides four-year engineering training for South Viet Nam - The Phu Tho Engineering College, Saigon. This College offers engineering training in four disciplines: Electrical Engineering, Mechanical Engineering, Civil Engineering and Chemical Engineering.

Current enrollment at the College is 436. Approximately 22 graduates per year per discipline are graduated. Freshman entrance applications per discipline average 1,000 to 1,400. Acceptances per discipline are 35 due to limitations on space, facilities and faculty.

The University of Missouri-Rolla in cooperation with the Agency for International Development and the Ministry of Education, Viet Nam is providing assistance to the Phu Tho Engineering College with three faculty currently at Phu Tho and two additional faculty to join the Mission by 1 September, 1970. In cooperation with their Vietnamese professor counterparts, plans will be developed to implement engineering programs which will provide the quality, quantity and type of engineers required for the commercial, industrial, governmental and developmental needs of Viet Nam for the present and for the future.

One of the primary needs of any engineering institution is that of a comprehensive and current technical library. This request is being made to the Institute of Electrical and Electronics Engineers, Inc. for technical materials for the Phu Tho Engineering College Library from their Group Offices and from the individual membership.

Materials which are being solicited for the Library are:

IEEE Transactions
Electrical Engineering Current Texts
Proceedings of IEEE Groups, Seminars,
Paper Presentations

The UMR office of International Studies will, upon notification of the availability of these materials, see that they are placed in the hands of the Phu Tho Engineering College Library and that the donors are appropriately acknowledged. Notice of such availabilities may be sent to Dr. R. E. Carlile, Director, CIPAS-UMR, 110 Mining Building, University of Missouri-Rolla, Rolla, Missouri 65401; Tele. (314) 364-6571.





PERSONALITIES



Mr. Carl Blake has been nominated by the MTT Ad Com as National Lecturer for the year 1971. Mr. Blake is the Leader of the Phased Array Radars Group at the M.I.T. Lincoln Laboratory. Previous to this assignment, he was engaged in low-noise receiver research and development. Mr. Blake joined Lincoln Laboratory in 1957, prior to which he was Assistant Professor of electrical engineering at the University of Maine. Mr. Blake received his B.S. and M.S. from M.I.T. He is a member of Eta Kappa Nu and is a past Chairman of the Boston Section, G-MTT.

More details on this nomination will be forthcoming in the next Newsletter.

(Your Editor received the following postcard from Dr. Leo Young)

Antwerpen Street 24
Dania, Haifa
15 September 1970

Dear Al,

We're enjoying our stay in Haifa, where we arrived almost 3 weeks ago. We have a delightful house with a gorgeous view out to sea. We acquired a 1970 Volvo, as there are not many buses near where we live. The children are in local schools and struggling with the language. The Techm'on people have been most helpful with

housing, customs, schools, etc. I have a nice office at the Techm'on and met quite a few of the faculty and students. There is a lovely clean beach near our house, with soft sand and remarkably warm water. The children love it and we've already been there on two Sabbath afternoons. Hope all is well with you.

Best regards,
Leo

HADDAD RECEIVES RESEARCH AWARD

"To GEORGE I. HADDAD, enthusiastic teacher who takes great interest in working with all students, for his outstanding contributions to research in a university environment; and for simultaneously distinguishing himself as a teacher as well as by many significant contributions to professional and committee activities in and outside the university, we present this fourteenth Curtis W. McGraw Research Award."

The Curtis W. McGraw Research Award was established to recognize outstanding early achievements by engineering college research workers and to encourage the continuance of such productivity in the future. The award was sponsored by the Engineering College Research Council with the assistance of the McGraw-Hill Book Company. The award consists of \$1,000 in cash and an appropriately engraved certificate.

Professor Haddad, Director of the Electron Physics Laboratory and Professor of Electrical Engineering at The University of Michigan, has served on several committees of the Institute of Electrical and Electronics Engineers. He was Chairman of the Technical Program Committee of the 1968 International Microwave Theory and Techniques Symposium and as a member of that symposium's administrative committee. He has been a member of the technical program committees of the International Electron Devices Meeting and International Solid-State Circuits Conference. He also served as Technical Program Committee Chairman for the 8th Annual Electron and Laser Beam Symposium and as editor of its proceedings.

He is presently editor of the IEEE Transactions on Microwave Theory and Techniques.



LETTERS TO THE EDITOR

Editor, G-MTT Newsletter

The following information will be of interest to G-MTT members who are engaged in computer-aided design.

A special session that will be a tutorial state-of-the-art presentation of Computer Applications to Network Theory (CANT) will be part of the forthcoming 1970 IEEE G-CT Symposium in Atlanta, Georgia, December 14-16, 1970.

The session is organized by Ronald A. Rohrer. The speakers will consist of Donald O. Pederson (simulation, analysis, modeling), George Szentirmai (filter design), C. Hugh Mays (layout and wire routing), Sidney Parker (sensitivity and reliability), Stephen W. Director (optimization), and Ron Rohrer. The material to be discussed in this session will be closely tied to the forthcoming special issue of the CT Transactions on computer-aided design.

Very truly yours,

Dan Varon
Chairman, COMPCOM

Editor, G-MTT Newsletter

Alvin Clavin has widened the scope of the Editor's Notes column from guided microwaves to guided opinion about the present plight of engineers. This is a welcome change in the G-MTT Newsletter for this problem needs as much discussion as possible.

In the July issue he turned his gentle wrath against unionism. His remarks carried with it a veiled threat that you're a little less professional if you join a union. He equates management with professionalism; unionism with thievery. There is no union leader or member that wants a free ride. No one condones feather-

bedding or make work projects. Union people blow their cool when charged with these tactics. Feather-bedding and make work have become scare words to be used against children.

When A. Clavin focuses his attention on the needs of engineers he is on solid ground. By all means press for an IEEE sponsored pension fund; it's our greatest need right now. A professional society is sorely needed and may help to crystallize the political and economic philosophy of the members. But let the members decide.

I have always enjoyed the newsletter for its free format and changing styles of each editor. Again, I heartily approve of the present editor's policy change of talking about political and economic matters. I welcome all members to join us in the discussion and hope it will be open, continuing, and fruitful.

R.P. Meixner
RCA-DEP
Moorsetown, New Jersey

Editor, G-MTT Newsletter

Unionism for engineers is in many respects a search for status - a status which will grant immunity from layoffs, unfair wage practices, and a host of other sins. European engineers enjoy a status often envied by their US counterparts (although their salaries and taxes are hardly objects for stateside envy). Their answer is not unionism, but rather, as you suggest, the professional societies. A glimpse of how the other fellow operates is sometimes illuminating:

The European engineering professional societies serve both technical and administrative purposes and often have quasi-official powers. Typical functions (in addition to the "technical" as provided by the IEEE) are:

- Title certification as set forth by law. In Europe the titles of "Civil Engineer" ("Civil" as in the original US usage, meaning non-military) "Graduate Engineer" and the like are for University or College graduates, "Engineer" for technical school graduates, and "technician"

for trade school graduates. Misuse of titles is a legal offense. Membership in the engineering societies assumes a priori the requisite title.

- Wage and employment statistics are collected and published at periodic intervals.
- Legal advice and standard engineer-employer contracts are available to all members.
- A collective voice, such as that of the AMA in the US, is provided for engineering as an assembled profession.
- Inter-disciplinary activities such as advising on university curricula.

Engineers are free to bargain individually or to not join the society. But in cases of disagreement between an Engineer and his employer, the advice available to members is often simply considered to be cheap insurance. Memberships are high: one seldom meets non-members in professional circles.

There are, of course, drawbacks. First, the professional society is usually far more expensive than the pure technical institute. In Norway, the annual dues are:

Engineer's Professional Society: \$35.00
E.E.'s Technical Institute: 7.00

Although these figures apparently are roughly the same as those for the IEEE (plus a subscription to the Proceedings and G-MTT), they are high on a relative scale: position-for-position, the Norwegian engineer in the fields covered by the IEEE earns half as much and pays twice as much in taxes as does his US counterpart. (In terms of what most could earn in the US, this is like saying that the IEEE costs an equivalent of \$75.00 per year.) Secondly, conservatism tends to rule the roost: the self-educated engineer with no formal university degree often faces a long and hard battle to get his title.

Aside from their "union-like" activities, the professional societies offer a hidden but very real advantage: they represent all engineering activities. Think of a parallel: prior to the AIEE-IRE merger, power engineers read power and electronics engineers read electronics. The phenomenal success of the Spectrum attests to the fact that there is a

good deal of cross-field reading going on now. The all-engineering professional journals are a step further. As electronics engineers, we are seldom exposed to the real problems confronting the airport planner or the sewerage engineer, but the journal on our desk can give us an insight that is not only interesting but may be valuable. Technical publication is often enhanced by being a bit broader (does the ASCE duplicate IEEE's activities in, say, traffic signaling?, and so on). The relation of the technical society to its parent professional society is about like that of the professional groups to the IEEE. Publications give an index, and the only ones I have at hand are the Norwegian:

Norwegian Societies	Total pages in 1969:			
	IEEE			
"Technical Weekly"	1286 pages	Proceedings	2182 pages	
"Electro Journal"	578 pages	Trans MTT	1164 pages	

The professional society answers the engineer's need for status, professional and technical information, and a collective voice that is heard and heeded. Perhaps the advocates of "unionism" should see how other systems operate before designing their own - seems logical, for the same men would never bother to re-invent the transistor.

Sincerely,
M. Michael Brady
Norconsult A.S.
1322 Høvik, Norway

Editor, G-MTT Newsletter

I have just read your notes in the July Newsletter concerning the subject of Unionism and the potential effects it may have with regard to engineer's security. I can only heartily agree with you.

This is not written to take issue with you but rather to delve further into the subject of a "Professional Society" rather than a "Technical Institute." I have, for a long time, pondered the question of how the engineers could truly establish the position of a professional, whatever the term means, and frankly I have been unable to come up with any kind of a productive answer.

It is my belief that we in Engineering are convinced that we are practicing professionals. However, I believe we do this by comparing ourselves to the two main groups in this country - the AMA and the ABA.

These two latter groups do, in main, practice their profession in a much different manner than does the engineer. Examine for a moment the major, singular difference. Members of the AMA and the ABA work as independent agents; they are the business enterprise while the engineer is normally an employee of the business enterprise. This excludes, of course, the consultant and the M.D. or attorney employed in industry. As a group of independent agents, they can form together to lobby and influence legislation that benefits them directly. In this respect, the engineering group is probably remiss in not having done things to enhance his own position.

For example, let me point out one particular area where the AMA (and other self-employed) has done a real service to their members. This is in the area of a tax deduction on funds set aside for retirement purposes (the Keough Act). This law does not apply to the engineers since they are not self-employed. The answer is, of course, that the COMPANY has usually provided a retirement plan. This is good, but it has certain limitations. First of all, it is usually contributory and the contribution is taxable income. Second, and more significant in especially such areas as aerospace, military suppliers, etc., the engineer often has little or no control of his period of employment. This is not a condemnation of the employer; he has no other recourse in times such as now, but it is symptomatic of the society.

In my opinion this is an example of one way a Society could provide a major service to the engineer. I am sure there are many others.

Such a Society could, for example, work in the areas of economic advantage for the engineer, development of an image of true professionalism for the public, and it might even consider the areas of recognition of specialization.

Cordially yours,
Daniel H. Goodman

Editor, G-MTT Newsletter

I am writing to tell you about a unique program in the field of computer technology which we feel would be of interest to you and to your readers.

During the week of November 2nd through 6th, 1970, Washington University will present a short course on Optical Data Storage. This program, which is presented by the Division of Continuing Professional Education, will focus on advances in optical technology which promise to provide mass-storage devices based on such new techniques as holography and laser. The course will (1) present reviews of the state of the art and the comparative features of magnetic memories, or semiconductor memories, orthoferrite memories, and of optical memory systems, (2) it will introduce the basic electro-optical techniques and principles, including holography, storage media, light deflection and detectors, and (3) will describe the current state of the work in optical memories by various research groups in the United States.

The course will be coordinated by Dr. William S.C. Chang, Chairman of the Department of Electrical Engineering, Washington University, St. Louis, Missouri and by Dr. Herwig Kogelnik, head of the Coherent Optics Research Department, Bell Telephone Laboratories, Holmdel, New Jersey.

Speakers on specific topics will be invited from many research laboratories in the United States. For additional information contact Dr. William S.C. Chang, Box 1127, Washington University, St. Louis, Missouri 63130, or phone Area Code 314, 863-0100, Extension 4004.

Sincerely,
Joseph Movshin
Assistant Director

Editor, G-MTT Newsletter

Right now we have Takusan demonstrations against continuation of the U.S.-Japan mutual security treaty. Even ETL is not immune, though we are a Government Lab. and quite a ways out from downtown Tokyo. I am going to talk to the Tokyo G-MTT Chapter on July 1st.
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