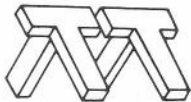


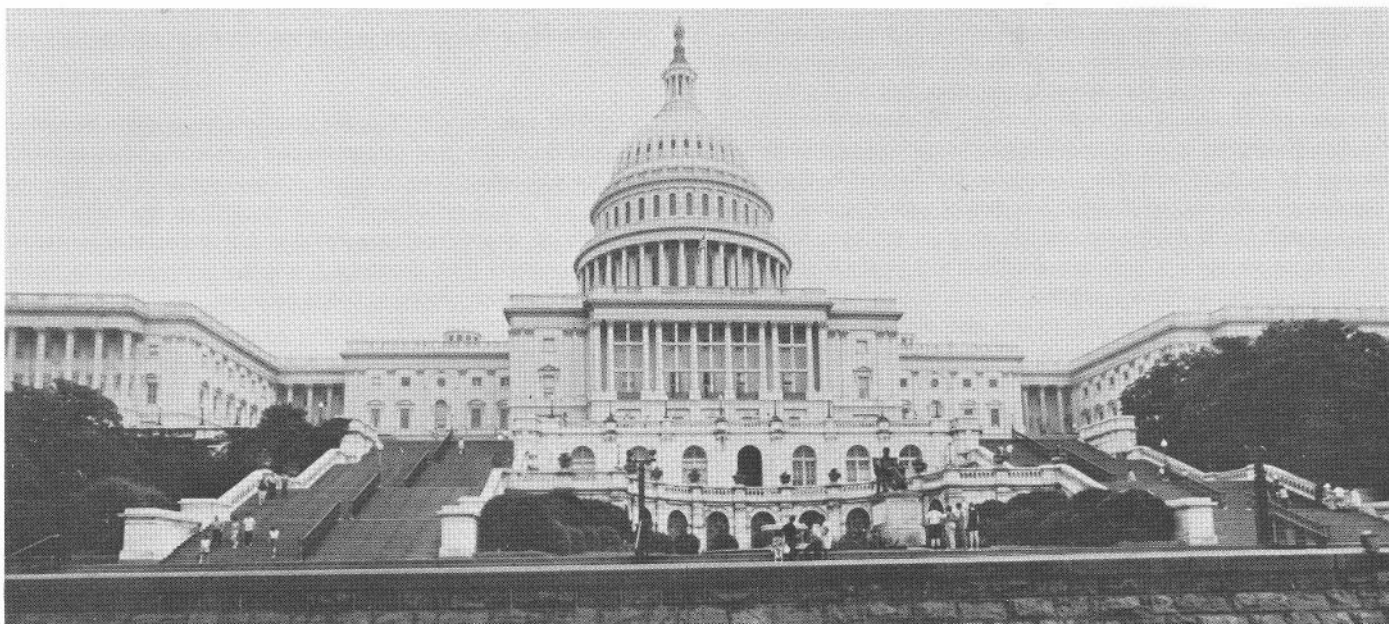
IEEE GROUP ON  
MICROWAVE THEORY  
AND TECHNIQUES

# NEWSLETTER



EDITOR: J. B. Horton  
Electronic Resources, 4561 Colorado Blvd., Los Angeles, California 90039

Number 62, April 1971



The United States Capitol Building in Washington, D.C., with the Senate on the left of the dome and the House of Representatives on the right.

The Washington, D.C. Chapter of G-MTT will host the 1971 IEEE International Microwave Symposium at the Marriott Twin Bridges Motel on May 16-19, 1971.

**INSERT - Feature on 1971 IEEE International Microwave Symposium**

## SYMPOSIUM HIGHLIGHTS

"Systems" is the dominant topic that has shaped the Symposium. It is exciting to see the years of work on solid-state microwave oscillators and on microwave integrated circuits come together in radar for civilian use such as in automobiles. It is also exciting to see that present systems interest in phased array radar has increased activity in the design of solid-state phase shifters. There are two sessions on systems, two sessions on ferrite devices, two on solid state oscillators, and one each on acoustics, CADAR, MIC, filters, diode control, and transmission lines.

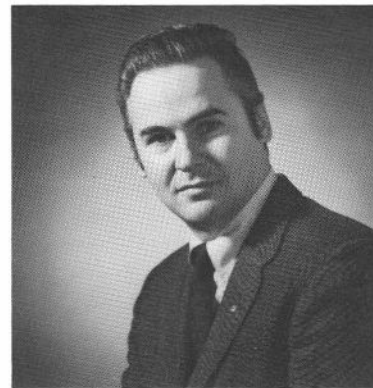


## EDITORS NOTES

by J. B. HORTON

Two almost sharply contrasting themes seem to dominate this issue of the Newsletter. Foremost is the upcoming 1971 G-MTT Symposium. This meeting is the highlight of the year for microwave activities and the Symposium this year offers an excellent technical program plus the opportunity to exchange new ideas and opinions with other members of the Microwave community. This issue contains a four-page special feature on the Symposium. The second theme spread through the articles is one of impending curtailment of group activities because of lack of operating funds. Sy Okwit, in his Chairmans Viewpoint points out the possible reduction of page allocation for the Transactions. Work on the Scholarship program has been tabled by ADCOM for the present, and other programs such as the W.W. Hansen Award have been slowed considerably by lack of allocated funds from IEEE. This brings the Group face to face with the task of finding new sources for funds. We can sell Group activities through our Symposium activities and through the Transactions. We can also campaign for new members. For the most part, this work is well under way at present, and it is a matter of working harder and selling harder to increase the incoming revenue. But what about new sources of income? Should the Group enter into new business ventures? Traditionally, the Group has maintained a policy of strictly high level technical environment in the Transactions and at the annual Symposium. I believe this is the strong feature of the Group and is one of the desirable traits we all want to keep. But what about this financial problem? Can additional funds be obtained by having exhibits at the annual symposium? Would symposium exhibits be a new business venture that offer the industry a chance to centrally locate microwave products in a strictly microwave atmosphere? This has been a problem in the past at other symposia.

The Group ADCOM is considering ways of obtaining additional funding. One of these is exhibits at the Chicago Symposium in 1972. The ADCOM would very much like to get options from members about exhibits at the symposium. The Newsletter is the logical place to air your opinions and I will welcome your letters for the Letters to the Editor feature of the Newsletter.



## CHAIRMAN'S VIEWPOINT

by SY OKWIT

As many of you are already aware, the Institute is facing severe fiscal problems this year. The changing national priorities and its effect on the economic climate of our industry has had an eroding effect on the Institute's budget which in turn has filtered its way down into the Groups.

This year finds MTT in the disappointing position of having to consume the modest cash surplus that we have worked hard to build up over the past several years. In fact, we will probably go beyond the surplus and into a deficit position. Your AdCom has always worked diligently to assure fiscal responsibility but the sudden, unexpected burdens resulting from decreased financial support from the Institute precluded a smooth curbing of Group activities.

The largest single expenditure in our budget is the publication of our Transactions. It was planned, that for the year 1971, the Transactions would publish 1,200 - 1,250 pages. The financial crisis, which was first made known to the AdCom early this year, has forced the Institute to limit our publication to about 1,000 pages. This has placed the MTT Editor in an embarrassing situation since many plans and commitments have already been made, and our issues are complete (at Headquarters) through the July publication. Consequently, the greater than 20% decrease in budget pages is made more burdensome by the fact that it will have to be accomplished in the last five issues.

Our Editor is making every attempt to accomplish this in an orderly manner; by delaying special issues and judiciously building up publication backlog. Unfortunately, this answer to the fiscal problem is made at the disadvantage of technical communication.

The only way to minimize this burden placed on the Transactions, is to increase the Group's income. Aside from the membership dues (which have recently been increased), the two potentially largest items of income are from:

1. Voluntary page charge fees paid by the employers of authors who publish in the Transactions, and

2. Institutional listings that appear on the back cover of our Transactions.

Both of these income items have been disappointingly low in the past year.

I would like to take the liberty in this short message to ask each and every MTT member to discuss both of these income items with his respective management. It appears to me that it is to the advantage of each employer, be it corporation, university, or Government, that they support this vitally important communication medium. At an approximate publication cost to the Group of \$70 per Transaction page, a mere \$14,000 would be required to bring our publications into a more reasonable state. It is the responsibility of each and every one of us to take a more active role in assuring that this message is heard.

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## PROFESSIONAL ACTION COMMITTEE REPORT by R.A. Rivers

The committee has had one meeting in the Boston Area in March. Some of the tentative subjects for investigation are in the areas of Political Action, Public Relations, and Professional Ethics. They are what I would call Professional Obligations. Activities in these areas determine the level of an individual's responsibility to society. Should the professional care enough to maintain a relationship with society by being personally responsible, by contributing his special knowledge and expertise to the public, and by influencing public policy through the lawmakers? The technical societies have avoided their responsibility to society in the matter of ethics, public education, and education of our lawmakers.

Other subjects for investigation are Economic Benefits, Professional Placement, Continuing Education, Institutional Professional Education, Professional Services, and Professional Contact. These may be grouped under the heading Professional Benefits or Privileges. The level of these benefits determines an individual's ability to act in a professionally responsible way.

It is the objective of the committee to study in detail and report on the many aspects of professionalism. After reporting to the membership through the available communications media, then the committee will attempt to take action if any action is warranted and if it has the support of the membership. The desire is to stop the "arm waving" about what the IEEE should do and substitute rational action based on facts.

There will be some criticism of a Group activity in this field. Some would desire no discussion of any non-technical matter. I assume that their feeling is that the IEEE is perfected, and that any discussion of its role will destroy the IEEE. I ask; Is it really perfected? If the organization is so precarious that its role cannot be discussed in a rational fashion by the membership, then we really do have a problem.

If you have any contributions to make to this activity, please contact me.



## EXCERPTS FROM ADCOM MEETING

by AL CLAVIN

Chairman S. Okwit called the meeting to order and indicated that three basic topics for discussion during this meeting would be (a) IEEE policy regarding Society and Group Status and possible implication with regard to the GMTT, (b) The GMTT Finances, and (c) Direction for the Professional Action Committee. These topics would be discussed at the appropriate place on the agenda.

J. Bryant pointed out that there was pressure to merge groups and evolve to a Society status. Achieving Society status may be difficult in the near future without a strong base. S Okwit stated that a firm reading was not as yet available from IEEE Hq, regarding Societies, however it would seem that by 1973 the group structure would be replaced by a Society structure. The IEEE Hq is in the process of setting up general guide lines for Societies. E. Torgow offered the following two part motion:

1. Resolve that it is the intent of the MTT to consider Society status, possibly with other groups and/or Councils.

2. Resolve that until such time as the relationship between Councils, Groups, Societies and Divisions are defined the MTT recommends that a "status quo" be maintained with regard to Councils.

H.W. Cooper seconded the motion and the two part motion carried.

S. Okwit indicated that to become a Society a good five year plan was a prerequisite. To this end, he established a committee to be chaired by H.M. Altschuler. J. Bryant and S. Okwit are to serve on the committee. An effort will be made to have preliminary plans by the May meeting. S. Okwit stated that he was in receipt of a letter from the Communication Technology Group Ad Com regarding the formation of an IEEE Communication Society.

Several Chapter Chairmen were at the meeting to report the progress in their areas. Reports were given for the Baltimore Chapter by Larry Whicker, for the Boston Chapter by R.A. Sparks, and for the Denver Chapter by D.F. Wait (for M. Decker).

Standard's Coordinating Committee Chairman P.H. Smith reported on the activities of this committee. Members of the committee are R.W. Beatty, P.A. Loth, and G.L. Matthaai. The Waveguide

Standards Committee is chaired by R. Lowman; the Waveguide Measurements Committee is chaired by S. Adams; the Polarization and Modes Committee is chaired by G.A. Deschamps and the Microwave Magnetics Committee is chaired by L. Young. P. Smith indicated that under the prerogative as Chairman he is elevating the Waveguide Measurements Committee to full Committee (Ad Hoc) status.

Publications Committee Chairman G. Haddad reported on the MTT Transactions. The special issue on Biological Effects should be out by the end of the month. The special issue on MIC's is just waiting for a few papers from England to be complete. The special issue on Microwave Measurements is going well, approximately 20 papers have been submitted. A special issue on Civilian or Commercial Applications of Microwaves is being considered for 1972. He reported that the cover of the Transaction will be in two colors instead of three. This will save \$140 per issue. The number of pages estimated through June is about 600 pages. G. Haddad indicated that it will be very difficult to live with the 992 pages allocated.

Finance Chairman E. Torgow reported that the final statement of Group Financial Operations for 1970 shows an \$8,429 annual deficit, reducing the Group reserves to \$8,232. The 1970 Symposium refund has not as yet been credited to the Group account.

H. Cooper reported that there were no problem areas of consequence regarding the 1971 G-MTT Symposium. They will need 430 attendees to break even. He next discussed the "non-technical Panel Discussion" to be held Monday evening May 17, during the Symposium. The proposed subject is to be "Changing Priorities and Engineering". Senator Proxmire has been invited to be one of the panelists but has not as yet confirmed.

D. Leeson indicated that he is preparing a revised scope and goals for the various technical committees and will have a draft by the May meeting.

Regarding Chapter Activities, P. Rodrique reported that the National Lecturer, Carl Blake has set up an itinerary which lists 13 dates thus far. He reported that the depressed employment situation has dampened attendance at some Chapter meetings.

R. Rivers reported that the first meeting of the Professional Action Committee was held 18 March 1971. Tentative subjectives were discussed. No priorities were established. A list of subjects were compiled which would serve as a basis for future investigation. Monthly meetings are tentatively planned.

The next meeting will be held at the Marriott Twin Bridges Motel, Washington, D.C. on 16 May 1971 at 2:00 P.M.



## IEEE AND ITS MEMBERS

by Director  
LEO YOUNG

(Last year the 30 Groups of IEEE were grouped into six Divisions, each headed by a director. The first directors were appointed — but eventually each director will be elected by members of Groups in a Division. Thus, the Electrosiences Division, Division 4, elected its first director for 1971. One other Division, Division 3, also elected a director for 1971. The four remaining Divisions continue to be headed by appointed directors for the time being.)

The Electrosiences Division — the only Division to have adopted a name so far — consists of six Groups and one Council: G-AP, G-ED, G-MTT, G-Mag, G-PMP, G-SU, and QEC. Last year it was ably directed by Dr. William Lang. As your new director for 1971, I want to report to you after my first month "in office."

The task of the Division director has been defined as the opening of channels of communication. Such channels must be kept open between the Groups and the Board of Directors, among the Groups themselves, and especially from within the organization to wherever a need arises. IEEE must be able to recognize and investigate such needs and to do something about them.

IEEE is a successful organization that is passing through a period of rapid change. The Institute has been preoccupied with organization, and it has done a great job of tidying up the many facets of electrical engineering on a technical level. It has collected, documented and disseminated technical information. It has produced standards, fostered meetings and made technical knowledge widely and easily available. However, only our members can turn these services into action. President Jim Mulligan is rightly concerned about what the Institute is NOT doing for its individual members.

I feel that it is essential for us to maintain IEEE's fine organization, but we must expand our horizons. This will require informed and thoughtful actions, to preserve what is good in the old and to introduce the new. For example, we are faced with a new situation, and new member needs as a result of current unemployment and underemployment of engineers in the U.S., where some 90 percent of our members reside. How can we (meaning IEEE) do more for our members who are unemployed? How can we do more for our members who are still employed? How can we improve the engineer's "image" in the eyes of the public? How can we bring matters of concern to engineers to the attention of the public? What positions should IEEE take on issues that affect engineers and engineering?

Engineers are concerned with things, and our organization has reflected this attitude. IEEE has adapted its services to meet new technical needs, but there has been much uncertainty and (Cont. on Page 5)

soul-searching on what non-technical services the Institute should innovate for its members.\* I have no doubt that a consensus is emerging, and that IEEE will play its part, serving the individual as well as professional needs of its members.

The Groups collectively are the technical backbone of IEEE. In addition to their basic function of providing technical services, most Groups have developed their own identity and a group spirit which in itself is a strong asset. Being associated in a Division should make it easier for Groups to share experiences, exchange ideas, work together, and act together on matters of common concern. My main task will be to facilitate this process. I intend to keep in close touch with the Groups through their AdCom chairmen, most of whom I met again at the TAB\*\* meeting in Washington on January 15, and at the Division dinner meeting the evening before. I also attended the TAB OpCom\*\*\* meeting in New York on January 5, and the Board of Directors meeting on January 6, and spent a most instructive evening with IEEE President Jim Mulligan on January 12. I plan to attend most of the Division's AdCom and Council meetings in New York in March, and to have another meeting with your chairman one evening during the IEEE Convention. I hope that these meetings and discussions and other contacts will indeed help to open up new channels of communication, and will result in an organization that is more responsive to our members' interests. In particular, I would like to keep in touch with all of you, and would be glad to hear your views, complaints, and especially your encouragement. If you have any pertinent information or suggestions, and especially if you can help in any way, please write to me at Stanford Research Institute, Menlo Park, California 94025.

In summary, we must continue to adapt our organization to meet new needs. We have been successful in the past on a purely technical plane, and technical problems will continue to be our primary concern in the future. But let us see the whole picture, and also care for the individual member on whom the practice of engineering depends.

\*For example, see the correspondence in IEEE Spectrum for January 1971.

\*\*Technical Activities Board.

\*\*\*TAB Operating Committee.

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### NEW NEWSLETTER ON COMPUTER AIDED DESIGN

A new bimonthly Newsletter for Computer Aided Design has made its debut last February. The newsletter is an inter-group publication that will provide its readers with information on the availability of CAD programs, technical reviews of articles on CAD, Calls for Papers, announcements of meetings and other items of CAD interest.

The newsletter is available free of charge to IEEE members. Current recipients of the newsletter are all members of the Computer Society and all those who have been recipients of the CADAR Newsletter. If you wish to receive the newsletter send your name, address and IEEE Membership No. to Dr. H. Freitag, IBM - Post Office Box 218, T. J. Watson Research Center, Yorktown Heights, New York 10598; or to Mrs. Herrick, IEEE Headquarters, New York City.

### IEEE Enters Environmental Quality and Social Problems Fields

In response to the recommendations of its Vice Chairman in 1970, Dr. John R. Whinnery, for action on the impacts of electrotechnology on environmental quality and social problems, the Technical Activities Board (TAB) has authorized two new TAB committees: The TAB Environmental Quality Committee and the Ad Hoc Committee on the Application of Electrotechnology to Social Problems. The first Committee will be operational and, therefore, permanent while the second will be active just so long as social problems need to be identified from an electrotechnical standpoint. The Environmental Quality Committee is now in process of being organized and will include representatives from all IEEE Groups wishing to participate.

The Purpose and Activities of the TAB Environmental Quality Committee have been approved, as follows:

#### PURPOSE

To coordinate and stimulate the efforts of the IEEE Groups in the field of environmental quality to better apply electrotechnology and make information available to those that need it.

#### ACTIVITIES

1. Arrange with other engineering, scientific and governmental groups and societies for the establishment of technical meetings on environmental quality that may be expanded later to international meetings.
2. Document the technical areas of activity and interest of the IEEE.
3. Plan the dissemination of information on IEEE activities in this field.
4. Arrange for sessions at IEEE regional meetings and conventions.
5. Document the availability of resources for use by the Institute and others.

The roles of the Ad Hoc Committee on the Application of Electrotechnology to Social Problems will be as follows:

1. To identify more clearly and specifically the problems to which IEEE might contribute solutions;
2. To identify relevant present interests and activities of the Groups;
3. To coordinate and otherwise facilitate joint efforts, particularly to support new activities, program and projects.



**CHAPTER  
ACTIVITIES**  
by  
G. P. RODRIGUE

The next principal event for chapter activities is the Chapter Chairmen's meeting to be held on Sunday evening, May 16, 1971, at the Marriott Twin Bridges Motor Hotel in Washington, D.C. Chapter Chairmen will receive a notice by May 1, giving the room location and time of the meeting. I would like to encourage each chapter to send a representative. For further information about the agenda, contact me at Georgia Tech (404-873-4211, x 318).

An updated speakers list is being compiled for distribution to our MTT chapters. Anyone having heard a particularly good speaker is urged to submit his name and topic to me at Georgia Tech, Atlanta, Georgia 30332.

The schedule for our National Lecturer, Carl Blake, is rapidly becoming filled as indicated by his itinerary listed below. However, if you are still interested in having him talk at your chapter meeting, please contact him at MIT, Lincoln Laboratory, MS C371, Box 73, Lexington, Mass. (617-862-5500 x 5312). His present itinerary for 1971 is:

Boston	11 February
Orlando	16 February
Houston	16 March
Dallas	17 March
Ft. Worth	18 March
Atlanta	20 April
Huntsville	21 April
N. Jersey	22 September
Schenectady	23 September
Philadelphia	(Tentative)
Phoenix	15 November
San Diego	16 November
Denver	18 November



**CHAPTER  
NEWS**

**CHAPTER MEETINGS**

**Atlanta Chapter**

Date: October 27, 1970 (21)  
 Speaker: R. W. Camp  
 Title: Devices and Techniques with Adaption to Airborne Solid State Radar  
 Affiliation: Georgia Institute of Technology

Date: November 18, 1970 (22)  
 Speaker: Alan Schell  
 Title: Beam Waveguides for Microwaves  
 Affiliation: Air Force, Cambridge Research Laboratory

Date: February 15, 1971 (53)  
 Speaker: J. E. Pippin  
 Title: Microwave Ferrite Devices  
 Affiliation: Electromagnetic Sciences Inc.

Date: March 16, 1971 (22)  
 Speaker: H. A. Ecker  
 Title: Bioengineering Aspects of Microwaves  
 Affiliation: Georgia Institute of Technology

**Baltimore Chapter**

Date: December 3, 1970 (14)  
 Speaker: W. G. Spaulding  
 Title:  
 Affiliation: Army Missile Command, Huntsville

Date: March 3, 1971 (25)  
 Speaker: Edwin Turner  
 Title: The Electrically Small Antenna  
 Affiliation: AF Avionics Laboratory, WPAFB

**Dallas Chapter**

Date: January 14, 1971 (38)  
 Speaker: F. B. Fank  
 Title: Status of CW and Pulsed Gunn Effect Oscillators  
 Affiliation: Varian Associates

Date: February 9, 1971 (120)  
 Speaker: John D. Goekin  
 Title: Microwave Communications  
 Affiliation: Microwave Communications, Inc.

Date: March 17, 1971 (45)  
 Speaker: Carl Blake  
 Title: Applications of Solid State Microwave Power Sources  
 Affiliation: MIT, Lincoln Laboratory

Date: April 14, 1971 (27)  
 Speaker: D. R. Taft  
 Title: Microwave Integrated Module Using Ferrimagnetic Materials  
 Affiliation: Sperry Microwave Electronics

(Continued Pg. 12)

# — FEATURE —

1971 IEEE INTERNATIONAL  
MICROWAVE SYMPOSIUM  
Marriott Twin Bridges  
Motor Hotel, Washington, D.C.  
MAY 16 – 19, 1971



Sy Okwit  
Keynote Speaker



Walter R. Hinchman  
Banquet Speaker



W. J. Evans  
Microwave Prize Recipient



Thomas A. Saponas  
Student Paper Winner

## CONDENSED PROGRAM

Sunday, May 16	1900-2200	Registration Main Lobby	
	1900-2200	Rap Session – Cocktails ADCOM – Members – Wives	
Monday, May 17	0730-1600	Registration Lobby	
	0900-0930	Welcoming Remarks and Keynote Address	
	0940-1230	I. Filters and Couplers	II. Integrated Circuits
	1400-1700	III. Transmission Lines and Meas- urements	IV. Microwave Acoustics
	1930-2200	Panel Discussion – Changing Priorities and Engineering	
Tuesday, May 18	0830-1600	Registration Lobby	
	0900-1200	V. Ferrite Ma- terials and Circulators	VI. Avalanche Diodes
	1330-1630	VII. Ferrite Limiters & Phase Shifters	VIII. Computer Oriented Micro- wave Practices
	1800-1900	Cocktail Hour Persian Room	
	1900-2200	Banquet Persian Room	
Wednesday, May 19	0900-1200	Registration Lobby	
	0900-0940	IX. Winning Student Paper	
	0950-1230	X. Microwave Applications for the 70's	XI. Gunn Devices
	1330-1630	XII. Civil Radar Systems	XIII. Solid State Micro- wave Devices

# FEATURE

## 1971 IEEE INTERNATIONAL MICROWAVE SYMPOSIUM



H. W. Cooper  
Chairman, Steering Committee

### INVITATION FROM THE CHAIRMAN

Microwave integrated circuits, microwave acoustics, and computer aided design techniques as well as civil applications of microwaves will be covered in depth in 1971 Symposium. Automobile radar for a safer world and microwave transmission of electrical energy from space to earth we hope will contribute to our theme—"Microwaves For A Better World." In addition we will examine in a panel session on Monday evening the impact of changing national priorities on the engineer.

The Twin Bridges Marriott location is optimum for our Symposium since we will occupy most of the facilities and have the benefit of being the only Symposium in the hotel. To allow our sessions to proceed on schedule, buffet luncheons will be arranged and tables will be identified so that persons interested in the same topic can join for luncheon discussion.

For ladies, the Washington Symposium has many attractions, including tours of the Capitol (Congress will probably be in session) as well as Georgetown and the Naval Academy at Annapolis.

The Washington Chapter of G/MTT extends you all a warm welcome to attend this year's International Microwave Symposium in our Nation's Capital.

H. WARREN COOPER

### REGISTRATION

Symposium registration will be available Sunday through Wednesday in the Main Lobby of the Marriott Twin Bridges Motel.

Hours are:

Sunday May 16	7:00 – 10:00 P.M.
Monday May 17	7:30 – 4:00 P.M.
Tuesday May 18	8:30 – 4:00 P.M.
Wednesday May 19	8:30 – 12:00 P.M.

Conference fees for registration at the Symposium are:

Registration (IEEE Member) . . . . .	\$18.00
Registration (Non-Member) . . . . .	\$30.00
Registration (Student) . . . . .	\$ 2.00
Cocktail Party – Cash Bar	
Banquet . . . . .	\$14.00
Ladies Program . . . . .	\$24.00

### HOTEL ARRANGEMENTS

The Marriott Twin Bridges Motor Hotel in Washington, D.C., site of the Symposium, has reserved a block of 350 sleeping rooms. To assure accommodations in the hotel where all Symposium activities will be held, make reservations no later than May 1, 1971. All reservations requested after this time, as well as any received after the 350 rooms have been reserved, will be assigned by the Marriott on an available basis at one of the many other fine hotels nearby.

It is important that reservations be made as early as possible.

### MEALS

Buffet luncheons at \$4.00 each will be set up in the Chesapeake Bay Room each day for those wishing to talk shop during lunch. Food service from four serving lines will be fast.

In addition, the Symposium hotel has three restaurants that offer many varieties of excellent food and beverage: Fairfield Inn, the largest, accommodates 375. The Sirloin and Saddle Room accommodates 125, and the Windjammer (120) in addition to its menu and cocktails, offers a beautiful view of the Potomac River reflecting the Washington skyline.



## FEATURE

### 1971 IEEE INTERNATIONAL MICROWAVE SYMPOSIUM



#### SYMPOSIUM DIGEST

Can't make the Symposium? Send for your copy of the 1971 IEEE G-MTT Symposium Digest. It presents a brief synopsis of all the papers including the more important figures. While many of the papers will be published more comprehensively in the IEEE Transactions on Microwave Theory and Techniques, most are not. The Digest offers the quickest publication of the state-of-the-art material given at the Symposium.

#### Digest Prices:

IEEE Member	\$ 5.00
Non-member	\$10.00
Institution	\$15.00

Before June 1, 1971, send your order with remittance to: C.E.H. Edward, Code 410 Harry Diamond Laboratories, Washington, D.C. 20438.

For additional information about the Digest, contact one of the members of the Digest Committee, F. Reggia (Chairman), H. Schrank or E. Wolff.

### SAPONAS STUDENT PAPER WINNER

Marvin Cohn, Chairman of the Student Awards Committee for the 1971 G-MTT Symposium, has announced that Thomas A. Saponas is the winner of the student paper contest. Mr. Saponas paper is entitled, "Generation of Confined Spectrum Pulses Using an Absorption PIN Diode Modulator". His sponsor is Professor J.R. Ashley of the University of Colorado.

Thomas A. Saponas attended secondary and high school in Colorado Springs, Colorado, and is now in his senior year at University of Colorado, Colorado Springs, attending the University on a Boeing Company Scholarship. He expects to graduate with a BSEE in May 1971. In addition to his studies, he is a teaching assistant at the university and is a member of Tau Beta Pi, student member of IEEE, the Association for Computing Machinery, and Audio Engineering Society.

The winning paper was sponsored by Dr. J. R. Ashley, associate professor of electrical engineering at the University of Colorado. Dr. Ashley is well known to the microwave field through his many contributions including co-authorship of a paper at the 1971 Symposium (Session VI-5).



SYMPOSIUM STEERING COMMITTEE

Front Row (l to r) — M. Cohn, W. Cooper (Chairman), W. Gabriel, E. Wolff, L. Whicher  
Back Row (l to r) — R. Van Wagoner, H. Schrank, F. Reggia, R. Garver, J. Kaiser

# FEATURE

## 1971 IEEE INTERNATIONAL MICROWAVE SYMPOSIUM



### Social Events

The Symposium activities will begin at 7 pm Sunday, May 16, with a RAP session which includes cocktails and general get-together with other attendees, Symposium officials, ADCOM members, wives, etc. This will be an opportunity to meet with many old friends and enjoy a relaxing evening.

The principal social event of the Symposium is the annual cocktail hour/banquet scheduled for Tuesday evening, May 18, in the Marriott Persian Room. Featured speaker at the banquet is Mr. Walter R. Hinchman. Mr. Hinchman's topic is "Changing National Priorities: A New Challenge for the Communications Engineer". Mr. Hinchman is with the Office of Telecommunications Policy, Executive Office of the President. He is responsible for policy studies concerning broadcast and cable television and related services, domestic satellites, specialized communications carriers, and mobile communications. Mr. Hinchman received his B.S. in Physics from Ohio State University in 1955. He is a member of the AIAA, Research Society of America and several U.S. CCIR study groups.

### LADIES' PROGRAM

The Washington area offers the visitor a wealth of museums, churches, and monuments in addition to the Capitol and other government buildings. The following program has been planned for the ladies while the technical sessions are in progress. Hopefully, many will come and enjoy it. Transportation will be by chartered bus.

#### MONDAY, May 17

- 9:00 am Continental Breakfast at Marriott.
- 10:00 am Sightseeing trip to National Shrine of the Immaculate Conception and to the Islamic Center—the only Mosque in the Western Hemisphere.
- 1:00 pm Dutch treat lunch at Maison des Crepes in Georgetown and shopping or browsing in the nearby shops.
- 3:30 pm Arrival back at Marriott.

#### TUESDAY, May 18

- 9:00 am Leave Marriott by bus for guided tour through new State Department building.
- 11:00 am Guided tour through Capitol. Dutch treat lunch in cafeteria. Visit National Art Gallery or Smithsonian Museums.
- 3:30 pm Arrival back at Marriott.

#### WEDNESDAY, May 19

- 9:30 am Trip to Annapolis for a guided tour through the U.S. Naval Academy, lunch at the Harbour House, and a visit to one of the historic old homes in that area.
- 3:30 pm Approximate arrival back at Marriott.

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### EVENING PANEL DISCUSSION

Monday, May 17

1930-2200

- Topic: Changing Priorities and Engineering
- Chairman: R.A. Rivers
- Panelist: Representatives from Professional Societies & IEEE

## FEATURE

### 1971 IEEE INTERNATIONAL MICROWAVE SYMPOSIUM



#### SYMPOSIUM TECHNICAL PROGRAM COMMITTEE

Front Row:

A. Clavin, S. Rosenthal, G. Haddad, R. Garver, D. Varon

Middle Row:

E. Wolff, T. Saad, R. Moore, H. Sobol, R. Fisher, L. Cuccia, L. Silverman, R. Sparks, F. Reggia, S. Okwit, L. Whicker, M. Hines, J. Cheal

Back Row:

L. Dickens, M. Cohn, W. From, J. Horton, A. Bahr

Not Shown in Photograph:

G. Bodway, F. Brand, W. Cooper, W. Edwards, W. Gabriel, D. King, D. Leeson, A. Solomon

**Special offer to non members  
who join IEEE at the symposium.**

Part of your symposium registration can be applied to your IEEE membership fee.

For information: Inquire at the membership desk  
(R. A. Sparks)

**Ft. Worth Chapter**

Date: May 12, 1970 (19)  
 Speaker: H. Hayes  
 Title: Design of Active Element Phased Arrays  
 Affiliation: Texas Instruments

Date: October 10, 1970 (9)  
 Speaker: P. Montgomery  
 Title: Ridged Waveguide Array Elements  
 Affiliation: Texas Instruments

Date: December 8, 1970 (21)  
 Speaker: E. Riike  
 Title: Tour of American Airlines Flight Training Facility  
 Affiliation: American Airlines

Date: February 9, 1971 (17)  
 Speaker: J. Hooker  
 Title: DF Position Fixing by the Kalman Filtering Technique  
 Affiliation: General Dynamics, Ft. Worth

Date: March 18, 1971 (13)  
 Speaker: Carl Blake  
 Title: Applications of Solid State Microwave Power Sources  
 Affiliation: MIT, Lincoln Laboratory

Date: April 13, 1971  
 Speaker: H. Upton (1), C. Witzke (2)  
 Title: Rotor Blade Radar Antenna  
 Affiliation: (1) Bell Helicopter, (2) Texas Instruments

**Houston Chapter**

Date: March 16, 1971  
 Speaker: Carl Blake  
 Title: Applications of Solid State Microwave Power Sources  
 Affiliation: MIT, Lincoln Laboratory

**Los Angeles Chapter**

Date: December 10, 1971 (61)  
 Speaker: John Goekin  
 Title:  
 Affiliation: Microwave Communications, Inc.

Date: February 18, 1971 (32)  
 Speaker: R. J. Wenzel  
 Title: Synthesis of Filters  
 Affiliation: Wavecom, Inc.

**Orlando Chapter**

Date: October 20, 1970 (15)  
 Speaker: W. A. Birge  
 Title: Optical Communications Systems for Local Data Distribution  
 Affiliation: Martin Marietta Corp.

Date: November 17, 1970 (13)  
 Speaker: Beryl Barber  
 Title: Parametric Amplifiers—Their Development and Application  
 Affiliation: Sonoma Engineering and Research Co.

Date: January 21, 1971 (12)  
 Speaker: Gerald Levy  
 Title: A Survey of Some Aspects of the Microwave and Antenna Programs at JPL  
 Affiliation: Jet Propulsion Laboratory

Date: February 16, 1971 (12)  
 Speaker: Carl Blake  
 Title: Application of Solid State Microwave Power Sources  
 Affiliation: MIT, Lincoln Laboratory

Date: April 20, 1971  
 Speaker: R. T. Daly  
 Title: Commercial and Medical Applications of YAG:Nd Lasers  
 Affiliation: Quantronix Corp.

**Phoenix Chapter**

Date: January 18, 1971 (30)  
 Speaker: E. D. Metz  
 Title: New Technologies in Integrated Circuits  
 Affiliation: Motorola, Inc.

Date: February 15, 1971 (23)  
 Speaker: Norman Gri  
 Title: Microwave Transistors From Small Signal to High Power  
 Affiliation: Fairchild Microwave & Opto-Electronics

Date: March 15, 1971 (14)  
 Speaker: S. V. Forgue  
 Title: Photosensitive Imaging Tubes and Related Solid State Considerations  
 Affiliation: RCA Laboratories, Princeton

**Schenectady Chapter**

Date: October 20, 1970 (16)  
 Speaker: Harold Sobol  
 Title: Microwave Integrated Circuits  
 Affiliation: RCA Laboratories, Princeton

Date: February 25, 1971 (13)  
 Speaker: Ron Gutmann  
 Title: An Ordered Array of Terminated Metallic Posts as an Embedding Network for Lumped Microwave Devices  
 Affiliation: RPI

Date: March 18, 1971  
 Speaker: R. A. Dehn  
 Title: Design of Main Ring Cavities for the National Accelerator Laboratory's 200 GeV Proton Synchrotron  
 Affiliation: General Electric Co.

Date: April 22, 1971  
 Speaker: R. F. Harrington  
 Title: Computational Methods in Microwave Engineering  
 Affiliation: Syracuse University

**S. E. Michigan Chapter**

Date: February 23, 1971  
 Speaker: V. R. Brown  
 Title: Environmental Monitoring All Solid State for the Seventies  
 Affiliation: Environmental Metrology Corp.





### DESIGN OF MODERN COMMUNICATION CIRCUITS

The Communications Research Laboratory of McMaster University, Hamilton, Ontario, Canada, is organizing a three-day summer school on the design of modern communication circuits to take place August 30 - September 1, 1971 at McMaster University.

The aim of the course is to present the latest techniques, with equal emphasis on theoretical and practical aspects of circuit design, to the practicing electrical engineer or educator. The lectures will be given by members of the Laboratory and Industry.

#### TOPICS TO BE COVERED

- (1) Integrated Circuits Technology
- (2) High Frequency and Distributed Circuits
- (3) Circuit Analysis and Sensitivity Analysis
- (4) Active and Digital Filters
- (5) Review of Circuit Synthesis Techniques
- (6) Computer-Aided Circuit Design

#### LECTURERS

Dr. John W. Bandler, Assistant Professor of Electrical Engineering, McMaster University.

Dr. Edward Della Torre, Associate Professor of Electrical Engineering, McMaster University.

Dr. Simon S. Haykim, Professor of Electrical Engineering, McMaster University.

Dr. H.C. Lin, Manager of Advanced Development, Molecular Electronics Division of Westinghouse Electric Corporation, Baltimore, Maryland.

Dr. Naresh K. Sinha, Associate Professor of Electrical Engineering, McMaster University.

#### FEES

The cost of the school will be \$100. This includes a banquet on August 30 and lunches during the school. Those who register on or before July 23 will be assured of a trip to see the Stratford, Ontario, play "Much Ado About Nothing" on August 31 at no extra cost (wives included).

#### ACCOMMODATIONS

On-campus accommodation from the evening of August 29 to noon on September 1 including meals will be available at \$30 single, \$50 double.

Further information may be obtained from

Dr. John W. Bandler  
Department of Electrical Engineering  
McMaster University  
HAMILTON, Ontario, Canada  
Phone (416) 522-4971 Ext. 305

#### "MICROWAVE ANTENNA MEASUREMENTS"

A Five-Day Short Course July 12-16, 1971  
San Fernando Valley State College  
Northridge, California 91324

This course is an intensive study of the measurement of microwave antenna radiation characteristics including directivity, gain, pattern, boresight, polarization and phase. Radome and reflectivity measurements will also be treated. Included will be treatments of modeling techniques, the testing of large antennas, gain standards and quantifying hazardous electromagnetic fields. The course covers the theoretical basis of the measurements as well as current techniques including the analysis of error. An important segment deals with the design and evaluation of antenna measurements facilities.

This will be the third in a series of yearly short courses which are anticipated to be offered alternately between San Fernando Valley State College and Georgia Tech. This year's offering will include a tour of the antenna laboratory of the Lockheed-California Company's Rye Canyon Research Laboratories.

The faculty for this short course will be Messrs. Searcy Hollis and Gerald Hickman of Scientific-Atlanta Inc. and Edmond S. Gillespie of S.F.V.S.C. Guest lecturers will include A.M. Archer and Don Stephens, Lockheed-California Company; Ron Bowman and Allen Newell, National Bureau of Standards; Vaughn Cable, S.F.V.S.C.; Gerald Levy; Jet Propulsion Labs.; and Harry Sefton, Bunker-Ramo Corporation.

The fee is \$300 which includes text and parking and classroom supplies. For further information contact Dr. Edmond S. Gillespie, School of Engineering, San Fernando Valley State College, Northridge, California 91324; (213) 885-2178 or 885-2190.

#### "COMMUNICATION SYSTEMS DESIGN LINE-OF-SIGHT, TROPOSCATTER, SATELLITE AND OPTICAL"

A Five-Day Short Course July 19-23, 1971  
San Fernando Valley State College  
Northridge, California 91324

This course will treat the design and performance evaluation of line-of-sight, tropospheric scatter, satellite, and optical communication systems. The factors affecting the performance of communication systems such as thermal and intermodulation noise, non-linear distortion and, in the case of optical systems, background and detection noise will be discussed in detail. Microwave and optical propagation as well as antenna systems will also be covered.

The unique design features of each of the four major types of systems will be treated. A thorough presentation of multiple access techniques for commercial satellite systems will be given. For the optical systems an introduction to lasers and the associated optical components will be

presented. An important segment of the course will be the design trade-offs appropriate to each type of system. The course will cover not only the theoretical aspects of communication systems but also practical design considerations drawn from the extensive experiences of the lecturers.

The faculty for the course will include Dr. Philip Panter, consultant; Mr. John Ward, ITT/Aerospace; Messrs. Simon Bennett and Irving Dostis, COMSAT; Dr. Sherman Karp, U. S. Department of Transportation; Dr. Jack Holmes, Jet Propulsion Laboratory and Dr. Edmond S. Gillespie, San Fernando Valley State College.

The fee for the course including texts, parking, and classroom supplies will be \$300. For further information contact Dr. Edmond S. Gillespie, School of Engineering, S.F.V.S.C., Northridge, California 91324, (213) 885-2178 or 885-2190.

#### CALL FOR PAPERS

#### **JOINT CONFERENCE ON SENSING OF ENVIRONMENTAL POLLUTANTS**

This joint Conference on sensing of environmental pollutants will be held at the Cabana Hyatt House, Palo Alto, California, November 8 - 10, 1971.

The Conference is being cosponsored by the American Chemical Society (ACS), The American Institute of Aeronautics and Astronautics (AIAA - Host Society), The Institute of Electrical and Electronic Engineers (IEEE), The Instrument Society of America (ISA), The National Aeronautics and Space Administration (NASA) and The National Oceanographic and Atmospheric Administration (NOAA).

The purpose of the Conference is to exchange information on the basic phenomenology related to sensing and measurement of pollution of the air, water and land environment. The Conference is directed to representatives of all technical disciplines concerned with the development, evaluation and use of pollution measuring techniques.

Papers are solicited which emphasize the physical and chemical processes involved in instrumentation for detecting and measuring specific contaminants. Preliminary drafts of final papers or abstracts of at least 1000 words should be submitted for acceptance review. Significant results and sketches of pertinent charts or figures should be included wherever possible.

Three (3) copies of draft papers or abstracts must be submitted by May 14, 1971, to the Technical Program Chairman:

Robert L. Chapman  
Beckman Instruments, Inc.  
2500 Harbor Boulevard  
Fullerton, California 92634

Authors will be mailed notification of acceptance by June 23, 1971.

#### **1971 IEEE INTERNATIONAL SYMPOSIUM ON ELECTRO-MAGNETIC COMPATIBILITY TO BE HELD JULY 13 - 15, 1971 PHILADELPHIA, PENNSYLVANIA**

The 1971 IEEE International Symposium on Electromagnetic Compatibility is to be held in Philadelphia, Pennsylvania at the Bellevue Stratford Hotel on July 13, 14, and 15.

The Symposium is sponsored by the IEEE Group of Electromagnetic Compatibility. Over twelve technical sessions and workshops are planned on topics associated with the prediction, measurement, control, and effects of electromagnetic radiation and noise, including such subjects as Spectrum Pollution, Radiation Hazards and Side Effects, Home & Industrial Electrical Devices, Biomedical Applications Digital Systems, Frequency, Allocation and Spectrum Conservation.

The three day Symposium will include a luncheon on the second day. Mr. Louis A. deRosa, Assistant to the Secretary of Defense (Telecommunications) will be the principle luncheon speaker. The title of his presentation is "Electromagnetic Compatibility - Cost and Promise".

#### CALL FOR PAPERS

#### **1971 IEEE INTERNATIONAL ANTENNAS & PROPAGATION SYMPOSIUM AND UNSC/URSI MEETING**

**TO BE HELD  
SEPTEMBER 20-24, 1971 - - -  
UNIVERSITY OF CALIFORNIA,  
LOS ANGELES, CALIFORNIA**

The 1971 Fall Meeting sponsored by the U. S. National Committee of URSI and the 1971 IEEE International Antennas and Propagation Symposium will be held jointly at UCLA. URSI and IEEE/G-AP technical programs will be arranged separately except for appropriate coordination.

Authors are invited to present original papers in their fields of interest, treating theoretical, experimental or developmental work related to the topics below:

- URSI Commissions & Special Topics
- I. Radio Measurements related to Radiometers, Receivers and Antennas; Evaluation of Screen Rooms and Anechoic Chambers
  - II. Radio and Non-Ionized Media
  - III. Ionospheric Radio: Influence of Electric Field and Artificial Perturbation of Ionosphere
  - IV. Magnetospheric Radio: Wave Emissions from ELF to HF and Wave-Particle Interactions
  - V. Radio and Radar Astronomy
  - VI. Radio Waves and Transmission of Information: Radiation and Diffraction, Guided Waves and Periodic Structures, Plasmas, Stochastic Effects, Propagation in General Media, Antennas and Arrays, Numerical Methods, Communication Theory.

1. Topics for the G-AP Symposium  
Phased Arrays
2. Spaceborne Antennas
3. Signal Processing Antennas
4. Numerical Methods in Antenna and  
Diffraction Problems
5. Plasmas and Propagation in Random  
Media
6. Propagation Effects in Sharing Com-  
munication Satellite Systems and  
Terrestrial Services
7. Ionospheric Heating
8. Electromagnetic Probing in  
Geophysics
9. Sea-wave Backscatter Applied to  
Oceanography
10. Millimeter Wave Propagation
11. Transient Radiation and Relativity  
Applications

Deadlines for submission will be about mid-year. Details will be given in the 2nd call for papers. All abstracts and summaries should be sent to:

Prof. V. H. Rumsey  
Dept. of Applied Physics &  
Information Sciences  
The University of California,  
San Diego  
La Jolla, California 92037

## CALL FOR PAPERS

### 1971 IEEE (22nd) VEHICULAR TECHNOLOGY CONFERENCE

**TO BE HELD  
DECEMBER 7-8, 1971 - - -  
DETROIT, MICHIGAN**

Papers covering contributions in the following or related areas are invited:

Vehicular Communications  
Techniques  
Digital Techniques  
Spectrum Utilization  
Data Transmission  
Antennas  
900 MHZ Equipment Technology  
Computers

Vehicular Command and Control  
Systems  
Traffic Control & Surveillance  
Public Safety  
Location  
Transportation Systems  
Computers

Electronics in Vehicle  
Automatic Vehicle Guidance  
Entertainment & Accessories  
Vehicle Safety — Air Bags, etc.

Propulsion Technology  
Electric Propulsion  
Electronics & Fuel Control for  
Internal Combustion Engines  
Electronics & Emission Controls  
for Internal Combustion  
Engines

Prospective authors are requested to submit six (6) copies of an 800 to 1,000 word summary of their paper, single spaced with a two inch left hand margin and typed in a 4-3/4 inch column. The cover page should include the name, title, company affiliation, and address of the author or authors. Summaries are to be submitted by June 15, 1971, to the Technical Program Chairman:

Mr. A.E. Marshall  
Ford Motor Company  
23400 Michigan Avenue  
Dearborn, Michigan 48124

Authors of accepted papers must submit a complete Transactions paper to the Technical Program Chairman by December 1, 1971.



## LETTERS TO THE EDITOR

Dear John,

(2-20-71)

Thanks for air mailing my copy of the Newsletter including the Directory. You are off to a flying start as Newsletter Editor, and it looks like G-MTT has done it again. They have an outstanding team of officers and Committee Chairmen. My extension has been approved, so I'll stay here until early in July. Actually, I've just scratched the surface of things to do and places to see. But there is no place like home. So I'll look forward to seeing you later.

Sayonara,

Bob Beatty

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### Unemployment/Employment: What Role should GMTT Play?

I recently became aware of several industrial job openings for microwave engineers. My problem was that I did not have knowledge of unemployed microwave engineers of the right type and experience to fill these positions, yet from our questionnaire, I know that 11% of the 25% responses we received stated that they were unemployed. Certainly amongst these there should be someone who could fit the job openings. The problem, then, is how to match these openings with unemployed engineers and what, if anything, should GMTT do to close the gap? As a suggestion, I would like to propose that MTT Adcom set up a committee to act as a referral clearing house. They would solicit responses from industry and from engineers, on a short form, describing requirements for jobs as well as experience and abilities of engineers. Resumes could then be forwarded to potential employers for their enquiries to the particular engineer. I also feel that the chapters could pay an important role in this activity by setting up a similar referral service for local areas, forwarding the names of engineers and/or employers to the Adcom central committee.

Do you feel that this is a service that MTT should engage in and would you be willing to send resumes to the committee if you happened to be unemployed? I would appreciate your responses to the above questions.

A. Clavin  
Vice-Chairman  
GMTT Adcom

Third Class



THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC  
DALLAS, TEXAS