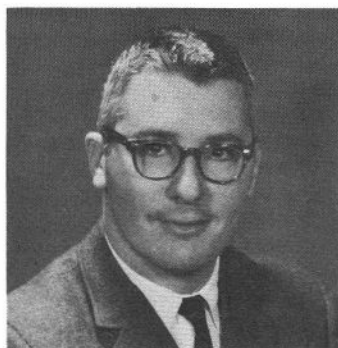




EDITOR: G. P. Rodrigue

School of Electrical Engineering, Georgia Tech, Atlanta, Georgia 30332

Number 69, Fall 1972



Harrison Rowe

ROWE AND YOUNG WIN MICROWAVE PRIZE

The 1973 Microwave Prize has been awarded to Drs. Harrison E. Rowe and Dale T. Young of Bell Telephone Laboratories. Their companion papers, "Transmission Distortion in Multimode Random Waveguides" and "Optimum Coupling for Random Guides with Frequency Dependent Coupling" published in the June 72 GMTT Transactions were nominated by the Awards Committee, chaired by D. D. King. This selection was unanimously approved by ADCOM. Presentation of this award is traditionally made at the Symposium banquet, which this year will take place in Boulder, Colorado, on June 5, 1973.

Dale T. Young received his B.S. degree from the University of Oklahoma in 1956 and subsequently was awarded the M.E.E. in 1960 and a Ph.D. in 1966 also at Oklahoma. During this time he was employed by Bell Laboratories from 1960 to 1965. He held an Assistant Professorship at Kansas State University during the academic year 1966-67 and rejoined Bell Labs in 1967. He initially worked on mode conversion problems in multimode waveguides and on a solid state repeater for a waveguide system. From 1967 to 1971 he worked on optical transmission systems. At present he is in the millimeter wave system laboratory at Murray Hill. Dr. Young is a member of IEEE, Tau Beta Pi, Eta Kappa Nu, Pi Mu Epsilon, Sigma Xi, A.M.P.I., and D.H.I.A.

Harrison E. Rowe was born in Chicago, Illinois, on January 29, 1927. He entered the Massachusetts Institute of Technology, Cambridge, Massachusetts, in 1944, leaving to serve in the U. S. Navy in 1945, and returning to M.I.T. in 1946. He received the B.S., M.S., and Sc.D. degrees in electrical engineering from M.I.T. in 1948, 1950, and 1952, respectively.

He joined the Radio Research Laboratory of Bell Telephone Laboratories in 1952, where he is presently a supervisor on the technical staff. His publications include 26 papers and one textbook, spanning a variety of fields including parametric amplifiers, noise and communication theory, modulation theory, propagation in random media, and related problems in waveguide, radio, and optical communication systems. He is also the joint author of four patents.

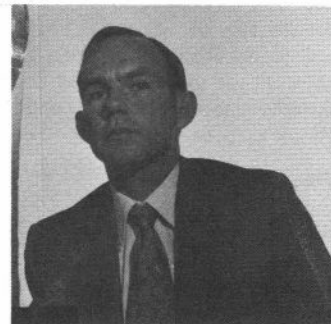
Dr. Rowe is a member of Sigma Xi, Tau Beta Pi, Eta Kappa Nu, and Commission 6 of URSI, the International Scientific Radio Union.

Horton, Rivers ADCOM Executives

John B. Horton will move up from ADCOM Vice President to the Presidency in 1973, and Robert A. Rivers will become the new Vice President as a result of the annual election of officers. Both have had long careers on the GMTT Administrative Committee.

John, who served as Program Chairman for the 1969 GMTT Symposium in Dallas, has been chairman of ADCOM's Membership Services Committee as well as Newsletter Editor in former years. John is with TRW Systems Group, Redondo Beach, Calif.

Bob Rivers, President of Air Com, Inc. Union, N.H., has spearheaded a number of adhoc ADCOM Committees. The most recent (and probably most notable) is the Professional Action Committee that has been in the forefront of the move to revamp IEEE's Constitution and disposition.



Dale T. Young

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PRESIDENT'S MESSAGE

by Al Calvin

The membership has approved the Constitutional change, allowing the Institute to undertake professional activities. No longer can there be any argument over what the membership wants. The vote was overwhelmingly in favor of the change. However, this conviction of the membership must yet be translated into action, therein lies the challenge.

The members of the Institute, especially those in Groups, during their normal work day generate technical information, hopefully of publishable quality. Thus, the employers pay engineers for their time while they are making technical contributions to their employers as well as to the IEEE. This will no longer be true in the area of professional action. The engineer must do this work, not on his employer's time but on his own time, and there will be few engineers who will be able to devote their energies to these activities. I believe that whoever can devote time should certainly volunteer to do so. However, I believe that the Institute must engage professionals, at a salary, to carry on these tasks on behalf of all of us.

This costs money and we, as members, must be willing to pay the bill. There is no doubt that the token increase of dues for professional action, to be incurred next year, will be inadequate. However, I also feel that the members are willing to pay for something if they get return. It is therefore important that the IEEE supply, to all membership, goals and plans for the coming year and progress reports as to the attainment of these goals.

It is not going to be easy for the IEEE to help instigate, for example, "portable pensions". In order to be truly portable, the companies must finance their pension plans at 100% funding. Very few, if any, companies do this presently. However, if the plan is to be truly portable, the employee must be able to take his share of the plan with him — 100% when he is terminated or when he leaves his current employer. Companies will generally resist this, since it ties up much more of their funds than presently allocated for pensions. However, if the large aerospace companies do not get together and institute their own portable pension plan, the Federal legislature will undoubtedly step in. After all, private pension funds were an issue of the recent Presidential campaign.

We need to all get together behind the IEEE in its new professional action activities, in spirit and with wallet in hand if it is going to be successful.

Reminiscing

With this "President's Message" column, I will no longer be writing regular items for the Newsletter, and as a parting shot, I thought that you might bear with me for some reminiscing of the past five years. Five years because it was approximately then that I was first elected to the MTT Ad Com and assigned the job of Newsletter Editor. Thanks for early conversations and guidance are due both Ted Saad and Saul Rosenthal. I wanted to change the Newsletter; to change its logo, format and style, and to try to make it a sounding board for the MTT Membership. My method was to write editorials on the current engineering scene, hopeful



EDITORS NOTES

by Pete Rodrigue

This time it's not the U.S. Mail's fault, or IEEE's, or the printers, but mine. In case you wondered what happened to the "October" issue of your Newsletter, the fact is that your editor didn't push it ahead as he should have. The fact that no firm deadline existed — such as an impending Symposium — put this number fairly far down in the "Urgent" box. For this delay I apologize.

This issue brings primarily news of GMTT plans, organization and awards. Congratulations to Drs. Harrison Rowe and Dale Young of Bell Labs on their being awarded the Microwave Prize (page 1). New ADCOM members were elected to three year terms and the three new faces on that Committee are profiled on page 6. Elected to the Presidency for the new year is John Horton, a long time ADCOM pro. As next year's Vice President we have long time ADCOM Maverick Bob Rivers (Anybody remember the closed circulation controversy?) who more recently has spearheaded the professional action movement within our Group and Division IV.

At the September ADCOM meeting (complete report on page 4) plans were reviewed for next years Symposium at Boulder, and Atlanta was selected as the site for the 1974 Microwave Symposium. Both the '73 and '74 Symposia will be somewhat experimental. In '73 the meeting will be held entirely on campus at the University of Colorado breaking our tradition of hotel hopping. In Atlanta in 1974 the GMTT Symposium will be held at the same location and in the same week as the GAP-URSI Symposium with one day of overlap and planned joint sessions. It should offer an interesting opportunity to see how well these two groups "mix".

that readers would respond to some of the possible controversy. I often actively solicited senior members of MTT to voice their opinions on current topics.

Some of the topics that I addressed were "Potential Problems for Small Microwave Companies," "Industrial versus Military application of Microwaves," "Professionalism and MTT," "The Role of the IEEE in Today's Society," "Modern Technology and the IEEE," "How Does the Engineer Build an Equity," "A Surplus of Engineers?," "The Economic Well-Being of the Engineer and the IEEE," "Unionism," "Aerospace Depression — Is This Time Different?," and lastly "On Changing the Constitution of the IEEE."

Many people responded by contributing opinions, the letters to the editor section grew, and I believe we were able to accomplish the result of making the Newsletter a true membership forum.

Additionally, we conducted a survey (under the management of George Oltman) and found our membership much concerned about aspects of professionalism and unemployment. I believe that MTT took a leadership role among all the Groups to speak out in behalf of its membership to the IEEE hierarchy for a change in the status of the IEEE towards professionalism. I believe that that goal has been reached. The recent election passed the constitutional change with 84% yes and 13% no with 40% of the mem-

bership voting (a new record turnout).

I hope in some small way that my efforts as Newsletter Editor, Vice-Chairman and President of MTT during these five years have helped in this progress. Surely the next five years will show the IEEE developing into a powerful and respected professional society and I am sure that MTT will continue to contribute to both the technical and professional aspects of the Institute.

At this moment, five years seems like a short time to have started and ended an Ad Com career. I will always look back at these five years as some of the most interesting and rewarding in my professional life. I want to thank all members for their help and interest; and especially, the members of Ad Com for their generous cooperation.



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Application to mail at Second Class Postage rates is pending at N. Y., N. Y.

NATIONAL LECTURER FOR 1973

Dr. John L. Allen
Associate Director of Research for Electronics
Naval Research Laboratory
Washington, D. C.

Dr. Allen's lecture will address the reliability of solid state phased arrays and the role of solid state phased arrays in military systems. He will place particular emphasis on the need for fundamental studies and tests to determine the failure mechanisms in solid state modules. He will point out that microwave power transistors presently represent the major problem and that studies are required to answer the questions:

1. What fails in transistors?
2. How can we predict what fails?
3. How can such failures be eliminated or minimized?

Biosketch

John L. Allen was born in Estherville, Iowa, on June 13, 1931. He graduated from Pennsylvania State University in 1958 with a B.S. degree in engineering science and from Massachusetts Institute of Technology with an M.S. in electrical engineering in 1962 and a Ph.D. in communications biophysics in 1968.

He joined the Research Department of NRL as the Associate Director of Research for Electronics on March 1, 1971. Prior to coming to NRL, he spent 4 years in the U.S. Air Force (1950-1954) - 2 years as a student and an instructor at the Air Force Radar School and 2 years at M.I.T. Lincoln Laboratory. While attending Pennsylvania State University, he was employed as an engineer by HRB Singer, Inc. After graduating, he returned to Lincoln Laboratory as a staff member and advanced to the position of Associate Head of the Radar Measurement Division.

Dr. Allen is a fellow of the Institute of Electrical and Electronic Engineers and member of Tau Beta Pi Engineering Honor Society. He has served on several studies and committees for professional societies and for the Department of Defense.

For Scheduling:

Call J. L. Allen (202) - 767-3324 or
 L. Whicker (202) - 767-3312



John L. Allen



EXCERPTS FROM ADCOM MEETING

by J. B. Horton

The G-MTT Administrative Committee met September 11, 1972 at IEEE Headquarters, New York, N.Y., for its "annual" meeting. The "annual" meeting is a particularly significant meeting in that elections are held, the Microwave Prize is announced, The National Lecturer is selected, and the site for the G-MTT International Symposium, two years hence, is selected.

Al Clavin, G-MTT ADCOM President, opened the meeting with a brief review and approval of the minutes of the May ADCOM meeting, followed by an outline of the meeting agenda.

E. N. Torgow, Finance Committee Chairman, reported that the Transactions page budget for 1973 is 900 pages as requested by the Publications Committee, with no increase of Group fees planned for 1973. During the discussion that followed, Gene commented that no real growth in membership has been shown this year, and that G-MTT is expected to have near break-even finances for 1972.

G. I. Haddad, Publications Chairman, reported that Martin Caulton has been appointed Associate Editor of the Transactions for Special Issues. He will also serve as the Vice Chairman of the Technical Committees and a member of the IEEE Publications Committee.

Fred Rosenbaum, Transactions Editor, announced that three special issues are planned for 1973. These are on Microwave Acoustics (Editor: T. M. Reeder), Power Amplifiers (Editor: M. E. Hines), and Computer Oriented Microwave Practices (Editors: Dan Varon, J. W. Bandler). Fred reported that total Transactions pages for 1972 will be approximately 900.

Bob Garver, Chairman of Page Charges Committee, reported that a 60% voluntary page charge return was received for the first half of 1972. He stated that quite a few of the returns were from Japan.

Bob Knox next reported on the 1972 G-MTT International Microwave Symposium. He distributed the Symposium final report and discussed the outcome of the Symposium in detail. A surplus of \$7233 was realized. All attendees were greatly impressed by the fine job the Chicago chapter did on the 1972 Symposium. The ADCOM expressed a unanimous voice of appreciation to the Chicago chapter.

David Waite distributed the schedule for the 1972 G-MTT Symposium to be held in Boulder. He reported that no particular difficulties are being encountered and that all is on schedule. Bob Beatty noted that facilities are being arranged for the ADCOM meeting, the Chapter Chairman's meeting, and several technical committee meetings (workshops) to be held during the Symposium. Some discussion followed on the Special Issue of the Transactions on Symposium papers. W. Cooper moved that the December issue be made the Symposium issue. Motion was passed.

Discussion on the 1973 Technical Program Committee followed. Bob Beatty announced that the TPC meeting will be held on January 22, 1973 instead of January 16 as originally planned. Al Clavin stated that the ADCOM meeting will be held on January 23 following the TPC meeting.

F. R. Arams announced that a proposal was received from Atlanta for the 1974 G-MTT Symposium. Several other chapters expressed interest, but declined prior to the meeting. B. D. DeMarinis, chairman of the North Jersey chapter, stated that the North Jersey Chapter intends to submit a proposal for 1975.

G. R. Harrison presented a detailed proposal from the Atlanta Chapter for the 1974 Symposium. The symposium is to be held in conjunction with the G-AP Symposium, URSI, and the Radome Symposium. All four Symposia are to be a part of "Microwave Week" in Atlanta in June, 1974. All symposia will be centrally located at Georgia Institute of Technology, with exhibits by G-MTT and G-AP. E. N. Torgow proposed that ADCOM accept the Atlanta proposal. Motion was carried.

F. R. Arams announced that the Technical Applications sessions were removed from the March 1973 IEEE Convention by the Convention Program Committee. He stated that G-MTT will try to reinstate these sessions next year.

Al Clavin presented a petition by G. P. Rodrigue to select the G-MTT Symposium site two years in advance of the symposium. Discussion followed; motion was passed. (Note that this means that selection of the 1975 Symposium site will be made at the June 1973 ADCOM meeting at the Symposium.)

K. Tomiyasu, Chairman of the Nominations Committee, presented a slate of 19 candidates for election to ADCOM.

The following were elected:

R. W. Beatty, NBS, Boulder
R. M. Knox, IIT Research Institute
H. G. Oltman, Hughes Aircraft Co.
D. Parker, Stanford Research Institute
G. P. Rodrigue, Georgia Institute of Technology
J. J. Taub, AIL
L. Young, Stanford Research Institute

Next, the President and Vice President for 1973 were elected:

J. B. Horton, President
R. A. Rivers, Vice President

D. D. King submitted a written recommendation nominating the following authors for the Microwave Prize:

Harrison E. Rowe and D. T. Young

for significant contributions to the theory of millimeter waveguides and optical fibers in their companion papers entitled,

"Transmission Distortion in Multimode Random Waveguides" and "Optimum Coupling for Random Guides with Frequency-Dependent Coupling." published in the IEEE Transactions on MTT, June 1972, pp 349-372. ADCOM unanimously approved the award.

P. H. Smith submitted a written report on Standards Activities. Discussion of his report followed. Phil stated that Bob Beatty will chair the Standards Coordinating Committee starting in 1973.

L. R. Whicker reported on Chapter Activities. He stated that the Washington chapter is planning another lecture series. Subject is Communications Systems (fee: \$15). Dick Sparks reported that Boston has scheduled a 10 week Radar Lecture series (400 have registered to date: fee is \$60.00). L. R. Whicker announced that a speaker's list has been completed and will be distributed to chapter chairman.

Next, L. R. Whicker nominated John L. Allen for 1973 National Lecturer. Dr. Allen is Associate Director of Research for Electronics, Naval Research Laboratory, Washington, D.C. His topic will concern reliability of microwave transistors in solid state phased arrays. Dr. Allen was elected unanimously.

L. R. Whicker reported that the schedule for the 1972 National Lecturer, T. S. Saad, will include 18 talks.

Harold Sobol, Technical Committees Chairman, reported that several of the technical committees are very active. MTT-1, Computer Oriented Microwave Devices, plans a special Trans-

actions issue, plans a one-day workshop in the Boston area and is actively participating in cooperative activities with other Groups. MTT-3, Microwave Ferrites, is planning a workshop at the 1973 Symposium, and is working on a joint technical committee with G-MAG. MTT-16, Microwave Subsystems, has recently co-sponsored a workshop on Automotive Radars. Ten papers were presented with 59 attending. Also, this committee is planning to organize a session at the Communications Conference in 1973. MTT-9, GigaHertz Logic, is organizing a group of four papers for submission to the Transactions by April, 1973. MTT-7, Microwave Active and Non-Linear Circuits, is planning a special Transactions issue on Power Amplifiers.

Bob Rivers discussed some of the recent Professional Action activities. Discussion was centered around portable pensions.

Al Clavin announced that the next ADCOM meeting will be held on Jan. 23, 1973 at Boulder, Colo.

Meeting was adjourned by A. Clavin at 1645.

PERSONALITIES

Leo Young, a past chairman of GMTT AdCom, has been re-elected to a second term as Division 4 Director/Delegate to the IEEE Board of Directors. In his first term of office on the BOD, Leo was instrumental in getting the activist movement off the ground. Division 4 includes in addition to GMTT the following IEEE Groups, Societies and Councils: AP, ED, Sonics and Ultrasonics, PHP, Magnetics, and QEC. Leo is Program Manager, Microwave Techniques, Stanford Research Institute, Menlo Park, California.

Nat Pelner, recent chapter chairman of the Los Angeles Chapter, has agreed to serve as Associate Editor of the GMTT Newsletter and in this capacity will act as West Coast "listening post" and coordinator. Nat is with Hughes Missiles Systems Division, Canoga Park, California.

Martin Caulton of RCA Laboratories, Princeton, N. J. has been appointed Associate Editor of the GMTT Transactions for Special Projects. This heading includes Special Issues, Reprint Volumes, Review Papers, and Technical Committee Coordination.

The 1972 IEEE David Sarnoff Award recipient is **Edward C. Ramberg**, recently retired from RCA Labs. The award was made at the Electron Devices Meeting in Washington, D. C. on December 5 for Dr. Ramberg's "Outstanding contributions to electron physics, electro-optics, and television."




CHAPTER ACTIVITIES

by L. R. Whicker

Fall Meetings and Speakers Lists

The program of activities for the 1972-1973 year has been initiated by most of our chapters. Lecture series have been scheduled by two of our larger chapters. In Boston, the MTT Chapter (with co-sponsorship by the Section) is conducting a Radar Lecture Series with speakers scheduled on a bi-weekly basis. The profit minded Washington Chapter is again sponsoring a Monthly Lecture Series. This year's topic is "Microwave Communications Systems." Perhaps a lecture series at one of the larger West Coast Chapters might be worthwhile.

To assist the chapters in planning the 1972-1973 program, a speaker's list has been prepared and forwarded to the Chapter Chairmen. We will attempt to expand and keep the list up-to-date on a yearly basis.

Section/Chapter Financial Support

The governing bodies of the IEEE have finally recognized that certain Sections have shown reluctance to support Chapter activity. As an interim solution the portion of the funds received by the Section which is intended for Chapter support is being clearly identified. The total support has been increased by \$50,000. This is calculated for each Section by increasing the Chapter member allowance from 25¢ to 70¢ and the Chapter meeting allowance from \$15.00 to \$20.00. It is hoped that these steps will improve Section/Chapter relations and provide the necessary financial support for good Chapter programs.

Meeting and Symposia

As has been mentioned earlier, the Denver Chapter is hosting the 1973 Microwave Symposium which is scheduled for June 4, 5, and 6 at the University of Colorado, Boulder, Colorado. A first Call for Papers has gone out. At the September 11 ADCOM meeting Atlanta was selected as the site for the 1974 Microwave Symposium. The Atlanta Symposium will be held during a week of symposiums on the Georgia Tech campus. One day of joint sessions with AP are planned. Pete Rodrigue is Chairman of the Steering Committee for the 1974 Symposium.

Proposals for the 1975 and 1976 Symposium will be needed for the June 1973 ADCOM meeting.

National Lecturer

Ted Saad is completing his very active tour as National Lecturer in which he has visited almost 2/3 of our Chapters. Plans have been finalized for next year's National Lecturer. John L. Allen has been selected. John's lecture will address the reliability of solid state phased arrays and the role of solid state phased arrays in military systems.

Chapter Chairmen or Program Chairmen are encouraged to contact John Allen or myself to arrange for 1973 speaking dates.

MEET THREE
NEW ADCOM
MEMBERS



Robert M. Knox

Robert M. Knox received the Bachelor of Electrical Engineering degree from the University of Minnesota in 1957. Following two years as a commissioned officer in the U.S. Navy, he joined the Hughes Semiconductor Division, Newport Beach, California. He studied under the Hughes Master of Science program at the University of Southern California in Los Angeles, and in 1961 received the M.S.E.E. degree. From 1962 to 1964 he was employed by Collins Radio Co., Cedar Rapids, Iowa. Since 1965 he has been with IIT Research Institute, Chicago, Illinois.

Mr. Knox joined the IEEE as a student member in 1956. He has served as Vice-Chairman and Chairman of the Chicago Chapter, G-MTT. He was Co-Chairman of the 1972 IEEE-GMTT International Microwave Symposium held in Chicago, May 22-24, 1972.

Mr. Knox is a member of HKN and has published eleven papers.



H. George Oltman

George Oltman has been on the microwave scene since 1950 when he joined the antenna laboratory of Sandia Corporation. In that year he graduated from the University of New Mexico with a degree in physics. He later took a leave of absence and obtained a Masters Degree in Physics from the same institution. It is that physical sciences background and the broad range of interests which it engenders that has been responsible for the wide range of scientific and engineering work in which he has engaged. This work is focused around wave motion and circuits and includes antennas of most types; filters, couplers and other passive components; millimeter wave components; microwave acoustics; and microwave sources including vacuum tubes and Gunn, Impatt and Trapatt solid state sources. He holds four patents in vacuum tubes, microwave acoustics and light deflection, and has four patents pending in techniques for summing the powers of solid state sources. He has 21 papers and publications covering the above fields. Away from work he is an active backpacker and scuba diver with his children and an inactive private pilot, radio amateur and photographer.

George is presently a senior staff engineer in the Missile Systems Division of Hughes Aircraft. Prior to his present position he was with the Physical Research Center of TRW Systems; the engineering staff of Rantec; antenna group manager at Electronic Specialty and Sandia.

He has been active in IEEE work since 1956 when he was Chairman of the Albuquerque PGAP. Since then he has been Los Angeles Chapter Chairman of both G-MTT and G-AP, Division Representative to the Los Angeles Council and is presently nominated as member-at-large for the Council. George generated, published and tabulated our 1970 GMTT Survey and has published the MTT Directory for the past two years. He is a member of the American Physical Society, a Fellow of the British Interplanetary Society and a member of the Research Society of America (RESA).



Don Parker

Dr. Parker received the B.S. degree in 1956 from Brigham Young University, the M.S. degree in 1957 from Harvard University, and the Sc.D. degree in 1964 from the Massachusetts Institute of Technology. He has engaged in research and teaching since 1957 when he was appointed as a Staff Associate at MIT Lincoln Laboratory. Until entering the Air Force in 1961, his research included various problems in field theory, electromagnetic radiation, and acoustical wave propagation. As a First Lieutenant in the USAF Electronics Systems Division, Dr. Parker managed an applied research program to develop improved design methods for information and communication systems. In 1964 he became a Staff Member in the Space Communication Division of Lincoln Laboratory, where he performed research on the generation of high microwave power using solid state devices. His theoretical and experimental research includes the design of high power stable frequency multipliers, transient analysis of frequency multipliers, and analysis of oscillations in bulk effect semiconductors and avalanche diodes. Dr. Parker joined Stanford Research Institute in 1969, and since that time has continued research on the high efficiency modes in avalanche diode oscillators and IMPATT amplifiers. He is Director of the Electromagnetic Techniques Laboratory in the Electronics and Radio Sciences Division of SRI. Concurrent with his research, Dr. Parker has taught graduate and undergraduate courses at BUY, MIT, Northeastern University and San Jose State College.

Dr. Parker was a Gordon McKay Fellow at Harvard University. He is a member of IEEE professional groups on Microwave Theory and Techniques and Electron Devices, Tau Beta Pi, Sigma Xi, and Phi Kappa Phi. He served as Secretary-Treasurer of G-MTT Administrative Committee during 1972.

GMTT/1973 INTERNATIONAL MICROWAVE SYMPOSIUM AT BOULDER

BOULDER, Colo. — The final call for papers has gone out for the 1973 IEEE G—MTT International Microwave Symposium, and arrangements for special events are being completed, according to Symposium Chairman D. F. Wait.

The G—MTT Symposium will be held June 4—6, 1973, at the University of Colorado in Boulder.

"Microwave Applications in the '70s" is the theme of the 1973 symposium. Technical Program Chairman R. W. Beatty has announced that papers describing original work in the development of new microwave theory and techniques and in new applications are being solicited. The work submitted should not have been previously presented or published.

The following microwave subjects are regarded as being particularly appropriate:

1. Waveguide Analysis, Techniques, and Devices
2. Microwave Measurements
3. Microwave-Acoustic Interactions
4. Millimeter and Submillimeter Techniques
5. Microwave-Optical Interactions
6. Microwave Biological Effects
7. Microwave Integrated Circuits
8. Computer-Aided Microwave Practices
9. Microwave Communications and Control Systems
10. Microwave and Industrial Applications
11. Microwave Gigabit Data Rate Applications
12. Solid State Microwave Devices (Active and Passive)

The Symposium will also include exhibits, located close to the technical sessions meeting rooms, of microwave equipment and devices. For information about these exhibits, please contact:

Professor J. Robert Ashley
Electrical Engineering Department
University of Colorado
Colorado Springs, Colorado 80907

A special feature of the 1973 symposium will be banquet speaker Ray Stanish, who for the past 15 years has amused and entertained thousands of people with his humorous but informative treatment of such subjects as atomic energy, Einstein's theories, the creation of the universe, and computers. Stanish holds degrees in physics, mechanical engineering, and engineering mechanics from Case Institute of Technology in Cleveland, where he has also taught. For eleven years he was associated with TRW, Inc., in various capacities, including that of assistant to the director of the Industrial Computers Division.

Persons desiring more information about the 1973 G—MTT Symposium should contact the Bureau of Conferences and Institutes, 217 Academy Building, University of Colorado, Boulder, Colorado 80302, telephone (area code) 303—443—2211, extension 6485.

EDITOR'S CORRECTION

The July 1972 GMTT Newsletter (page 2) incorrectly stated that Hal Altschuler is vice-chairman of the Technical Program Committee for the 1973 Symposium. Actually the vice-chairman is Ernest L. Komarek of the Electromagnetics Division, NBS, Boulder.

ATLANTA TO HOST 1974 SYMPOSIUM

The 1974 Microwave Symposium is being planned as one of four to be held on the Georgia Tech campus during the week of June 10th thru 14th. The three others are the GAP, URSI, and Radome Symposia. The Microwave Symposium will be held on Wednesday, June 12, through Friday, June 14. A special feature of the meeting on Wednesday will be joint sessions planned with AP and dealing with phased array antennas.

The microwave group is planning to use as headquarters the Sheraton Biltmore Hotel located just off the Georgia Tech campus. This location will facilitate evening sessions in the hotel as well as the traditional cocktail party, banquet, and general "camaraderie" of our annual gatherings.

Inquiries relative to this Conference can be addressed to:

Professor G. P. Rodrigue
School of Electrical Engineering
Georgia Institute of Technology
Atlanta, Georgia 30332

IEEE REGIONAL OUTSTANDING LECTURE TOURS

Given below is a supplementary list of speakers who have agreed to participate in the IEEE Regional Outstanding Lecture Tours. The first list of 36 speakers was published by IEEE in February 1972.

The topics offered by all speakers will be general reviews with concern for applications, making them more suited to broad Section meetings than specialized Chapter meetings. The same speakers may also be willing to offer specialized lectures to Chapters.

SPEAKER	INSTITUTION	TOPIC
Dr. Lewis Clairbourne	Texas Instruments	Applications of surface wave acoustic wave devices to communications equipment (radar, VHF, UHF, bandpass filters). Systems applications.
Dr. L. Stephen Coles	Stanford Research Institute	Speech Understanding Systems.
Mr. Harold S. Field	Omni Tech Corp.	Oil-well instrumentation. Instrumentation for petroleum production.
Dr. Herbert Matthews	Sperry Rand	Surface acoustic waves. Magnetoelastic phenomena.
Prof. Albert H. Rubenstein	Northwestern University	Research on research. (Industrial engineering and management sciences)
Dr. C. H. Walter	Ohio State Research Foundation	New developments in antennas.

Requests for speakers and further information should be made to Dr. Peter D. Edmonds, Administrator, Technical Services, IEEE Headquarters, 345 E. 47th St., New York City, N.Y. 10017. Phone (212) 752-6800 X333, or to coordinators of Group and Society Programs.



LETTERS TO THE EDITOR

September 29, 1972

Re: Comment on Waveguide Designations
Howard E. King G/MTT Newsletter –
July '72

Dear Editor:

We should be concerned about international acceptance of waveguide designations. I was surprised to find the only source of WR430 to be a west coast broker, who ordered it from England. It is hard to believe this guide is not stocked in the U.S.A.

As long as all doors are open, how about a logarithmic system of waveguide designations. (See enclosed chart) This is a simple system, and leaves room for expansion in any way that comes along. The approximate center frequency is called out, followed by a number after the dash, which is the power of ten multiplier. The frequency called out is for transmission of the dominate mode in the guide.

Standardization may be of small significance in the future. The cost of tooling to make a new guide cross section is not high these days, nor is a run of several thousand feet of special guide. A simple and versatile system is needed.

WAVEGUIDE DESIGNATIONS

WR System	Old	
	IEC-R System	Proposed System
2300	3	3-2
2100	4	4-2
1800	5	5-2
1500	6	6-2
1150	8	8-2
975	9	9-2
770	12	1.2-3
650	14	1.4-3
510	18	1.8-3
430	22	2.2-3
340	26	2.6-3
284	32	3.2-3
229	40	4.0-3
187	48	4.8-3
159	58	5.8-3
137	70	7.0-3
112	84	8.4-3
90	100	1-4
75	120	1.2-4
62	140	1.4-4
51	180	1.8-4
42	220	2.2-4
34	260	2.6-4

28	320	3.2-4
22	400	4-4
19	500	5-4
15	620	6.2-4
12	740	7.4-4
10	900	9-4
8	1200	1.2-5
7	1400	1.4-5
5	1800	1.8-5
4	2200	2.2-5
3	2600	2.6-5

Example: X - Band
1-4 Guide For 10,000 MHZ

Very truly yours,
AMANA REFRIGERATION,
INC.

Arnold M. Bucksbaum
Design Engineer
Radarange & Microwave Ovens

October 25, 1972

Dr. A. Clavin, President of
MTT, IEEE
Hughes Aircraft Co., Canoga Park
Calif, 91304

Dear President A. Clavin;

In Japan, there are the Institute of Electronics and Communication Engineers of Japan which has similar purpose and fields with IEEE. The IECE sponsors some Technical Group Meetings such as "Semiconductor Transistor Meeting" and "Electron Devices Meeting" etc. which are held individually every month and whose members are mostly the same group ones of IEEE. We have enough meetings without adding one more technical group meeting sponsored by IEEE. So I, as the Chairman, am planning to have our ED-Meeting not like general technical meeting but as a part as a lecture meeting which we ask for some authorities from USA some talks when they visit Japan. It will be useful to support our group more actively in future.

I would like to ask for you to correspond with someone to give the short talk for our Meeting, if you know someone who may visit to Japan.

With best wishes and I am most appreciative for your assistance.

Sincerely yours,
Prof. Jun-ichi Nishizawa
Chairman of Tokyo Chapter
of IEEE ED-Group,
Tohoku University, Sendai
JAPAN

Dear Editor:

Ing. Friedrich Rühmann, the Editor of AEÜ, a German Electronics Magazine has asked me to communicate the information in the enclosed flyer to you for possible publication in the newsletter with the hope that the readers may be interested in the announcement.

Sincerely yours,
Raj Mittra
Professor

"AEÜ, a leading international scientific journal, now in its 26th year of publication, invites papers and letters in the areas of electronics, communications, electromagnetics, and other topics in radio engineering. Papers may be submitted either in German or English and are published in their original language except for the abstracts which are published in German and English both. Prospective authors from scientific and engineering communities in Europe and overseas are encouraged to send in their contributions for possible publication in the journal.

Prospective authors in North America are invited to send their manuscripts in duplicate to one of the following North American editors of the journal:

Electronics

(Antennas and Propagation, Solid-state Electronics, Microwaves, Quantum Electronics)

Professor Raj Mittra
Electrical Engineering Department
University of Illinois
Urbana, Illinois 61801 USA

Communications:

(Information Theory, Communications and Networks, Circuit and System Theory, Reliability)

Professor Mischa Schwartz
Polytechnic Institute of Brooklyn
333 Jay Street
Brooklyn, New York 11201 USA

A third copy should be sent to:

Managing Editor AEÜ
F. Rühmann
Postfach 166
D-7501 Groetzingen, West Germany

Papers: maximum length twenty double spaced typewritten pages; average time for publication approximately 6 months.

Letters: maximum length six double spaced typewritten pages; published as quickly as possible.

There are no page charges and the authors receive 75 reprints free of charge. A leaflet, Instructions for Authors, and a sample copy of the journal is available on request from the Managing Editor AEÜ."



CALL FOR PAPERS

G—MTT TRANSACTIONS PLANS SPECIAL ISSUE ON COMPUTER—ORIENTED MICROWAVE PRACTICES

The IEEE Transactions on Microwave Theory and Techniques is planning to devote a special issue to computer-oriented microwave practices (COMP) to be published in March 1974. This second Special issue on COMP (the first appeared in August 1969) will, it is hoped, focus on modeling of active and passive devices for use in computer-aided design. This topic encompasses the solution of field problems as well as circuit-oriented work and measurements.

Papers and short papers reporting new and significant developments in COMP are solicited. Computer program descriptions are also solicited.

Contributions are solicited in the following areas but need not be limited to them:

- | | |
|-----------------|-------------------------|
| 1. Modeling | 4. Sensitivity |
| 2. Analysis | 5. Measurements |
| 3. Optimization | 6. Program Descriptions |

Length and style for papers and short papers should conform to the "Information for Authors" published in the Transactions. Computer program descriptions should conform to the "Information on Computer Program Descriptions" also published in the Transactions. Three copies of each complete manuscript should be submitted for review no later than July 2, 1973 to the Guest Editor, Dr. J. W. Bandler, Dept. of Electrical Engineering, McNaster University, Hamilton, Ontario, Canada. Further information can also be obtained from the Associate Guest Editor, Dr. D. Varon, Raytheon Company, 528 Boston Post Rd., Box 1R5, Sudbury, Massachusetts 01776.

MICROWAVE MATERIALS AND PROCESSING

Special microwave technical sessions, co-sponsored by IEEE Group on Microwave Theory and Techniques, will be offered at the Electronic Materials and Processing Symposium of the 1973 EI Conference, Palmer House, Chicago, September 30 through October 4, 1973.

The theme of the microwave sessions and workshop on microwave substrate measurements is:

THE REAL WORLD OF MICRO—WAVE MATERIALS — How to select, test, design and process materials/systems for cost/performance

The Symposium will provide a major opportunity for users and suppliers to discuss critical needs and problems and present contributions on the specific subjects of microwave substrates, metalizations and manufacturing methods, and the dependence of device COST, PERFORMANCE and RELIABILITY on a proper understanding of materials and methods: their selection, testing, incorporation into device design and chemical and mechanical processing.

Other Symposium subjects related to microwave device design and packaging include first, second, and third level circuitry and interconnection methods and materials, insulations for electronics, conductive and non-conductive adhesives, automotive electronics, and thin polymer film deposition.

Non-commercial, unpublished technical papers are solicited in the following areas:

A. MICROWAVE MATERIALS

Plastic, ceramic, and ferrite substrates: properties and variability, trade-offs, testing, processing

B. COST—EFFECTIVE MICROWAVE SYSTEMS

Designing with materials to meet cost/performance targets — the effect of market price, quantity, and reliability requirements (commercial and military) on optimum material selection and production methods.

Three types of papers are of interest: (1) technical discussions of new materials and research, (2) review papers covering important developments, and (3) interdisciplinary tutorial papers relating end product performance to materials behavior and processing.

ABSTRACT AND PAPER DEADLINES

By February 1, 1973 authors wishing to offer papers for the Electronic Materials and Processing Symposium of the 1973 EIC should submit both a 35 word abstract and a summary of 400 to 500 words including preferably at least one illustrative graph, picture or table (actual or expected findings). In order to minimize the rejection of worthwhile contributions, authors are encouraged to use care in preparing well written summaries that clearly describe their contribution, tell in what respect it is original work and indicate its relevance and usefulness.

Abstracts and summaries should be sent to:

Mr. James D. Earon
EIC Vice Chairman
Belden Corporation
Technical Research Center
P. O. Box 386
Geneva, Illinois 60134

Questions concerning microwave sessions may be directed to W. H. From, Raytheon Company, Bedford, Massachusetts (617—274—7100, x3601) or Harlan Howe, Microwave Associates, Burlington, Massachusetts (617—272—3000).



FINAL CALL FOR PAPERS
1973 EUROPEAN MICROWAVE CONFERENCE
4-7 September 1973, Brussels, Belgium

The third European Conference on Microwaves will be held at Brussels University from 4 to 7 September 1973. It is organized with the support of Fabrimetal and the co-operation of the Institute of Electrical Engineers (Great Britain), the Institute of Electrical and Electronic Engineers (IEEE Region 8, Professional Groups M.T.T., A.P., E.D.), and the Belgian Committee of URSI. The main topics of the Conference will be:

- Passive components for microwaves (millimeter and optical waves included) and their computer optimization.
- Active semi-conductor elements and integrated sub-systems.
- Components and systems for communication purposes.
- Microwave acoustics.
- Industrial applications of microwaves.
- Microwave tubes.
- Microwave materials, properties and measurements.

Deadline for submission of papers: March 1, 1973.

Conference address:

Dr. ir. Gh. Hoffman, Secretary General
 1973 European Microwave Conference
 St. Pietersnieuwstraat 41
 B-9000 GENT Belgium

**1973 CORNELL ELECTRICAL
 ENGINEERING CONFERENCE**
**"MICROWAVE SEMICONDUCTOR
 DEVICES, CIRCUITS,
 AND APPLICATIONS"**
August 14, 15, 16, 1973

The fourth Biennial Cornell Electrical Engineering Conference, August 14-16, 1973, will present the topic, "Microwave Semiconductor Devices, Circuits, and Applications". As at the previous conferences in the series, papers presented at this conference are expected to reflect this continuous broadening of the field. Contributed and invited papers will summarize the state of the art through seminar, tutorial, and research presentations, and a Proceedings will be published.

The technical program will include general papers on applications, as well as material on microwave semiconductor generating and amplifying devices, system components, and entire systems.

Both individual and family accommodations will be available in dormitories and area motels and hotels; sightseeing and daily entertainment programs will be arranged.

The Program Chairman of the Conference is Professor Lester F. Eastman, Cornell School of Electrical Engineering, Phillips Hall, Ithaca, NY 14850, to whom requests for further information, and technical paper abstracts, should be submitted.

SHORT COURSES

**"Numerical Techniques for
 Antennas and Electromagnetics"**

A short course on the above subject will be held at the University of Southern California from June 25 to 29, 1973. The course will be conducted by Professors W. V. T. Rusch and R. Mittra and the list of speakers will include: Professor R. Harrington of Syracuse, Dr. W. Imbriale of TRW, Professor R. Kouyoumjian of Ohio State, Dr. E. K. Miller of Lawrence Radiation Laboratory and Dr. K. Mitzner of Northrop Norair. The topics of Method of Moments, Wire Antennas and Arrays, Radar Scattering and EMP Problems, Reflector Antennas, Geometrical Theory of Diffraction, Scattering from Large Complex Bodies, Numerical Convergence and Stability Problems, Remote Sensing, etc. will be discussed in the four-and-one-half day program.

Further inquiries may be directed to:

Professor W. V. T. Rusch
 University of Southern California
 Electrical Engineering Department
 Los Angeles, California 90007
 (213) 746-2578

Professor Raj Mittra
 University of Illinois
 Department of Electrical Engineering
 Urbana, Illinois 61801
 (217) 333-1200

**COMMUNICATION SYSTEMS
 APPLICATIONS**

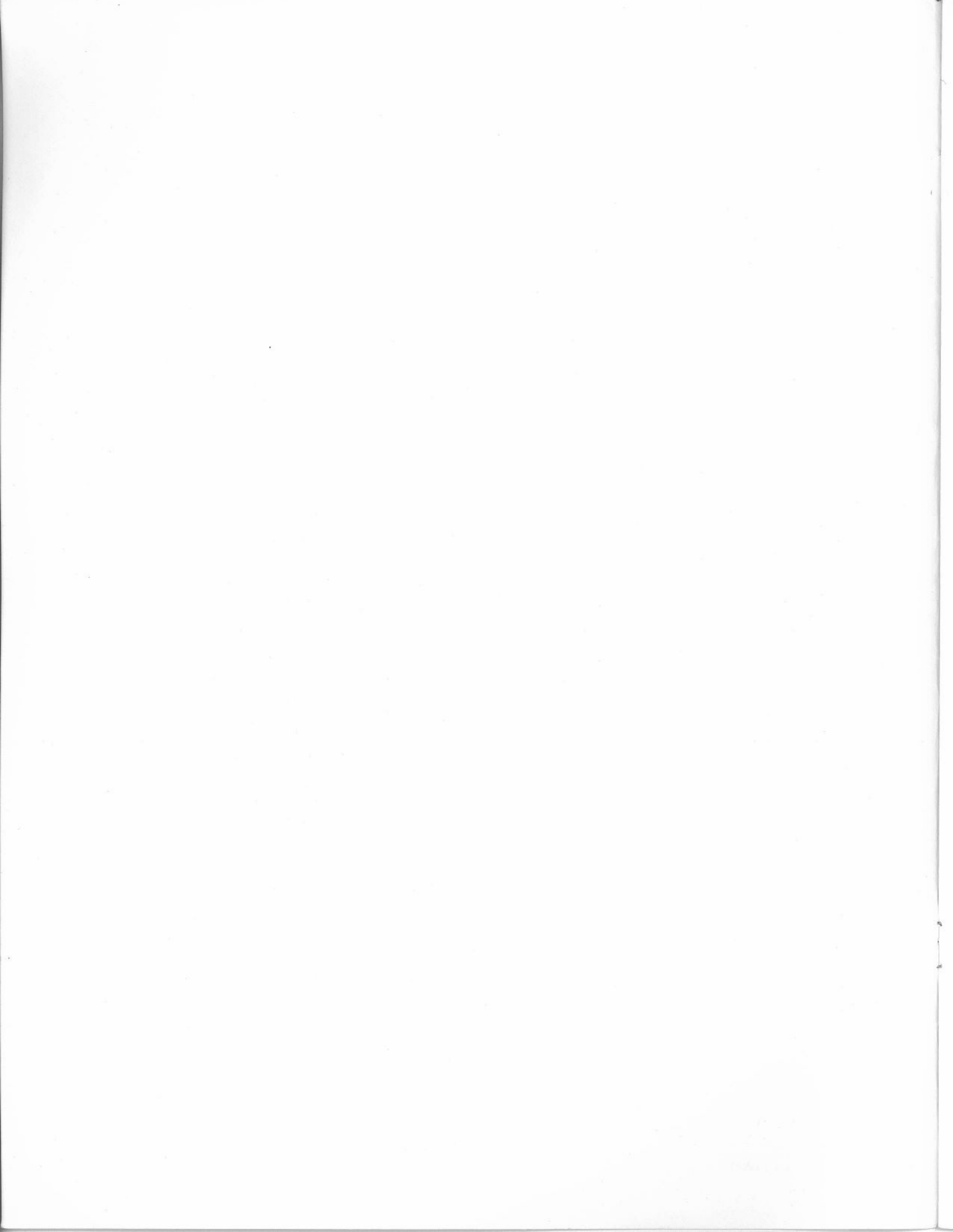
The College of Engineering, University of South Florida, and the IEEE (Institute of Electrical and Electronics Engineers) Florida West Coast Section will hold two seminars in the area of Communication Systems Applications.

The APPLIED COMMUNICATION SYSTEMS ENGINEERING Seminar will be the first, and will be held in St. Petersburg Beach, Florida April 2-6, 1973. It will cover the fundamentals in this field, but will be user-oriented. There will be twelve lecturers, with ten from industry, government and public carriers.

The COMMUNICATIONS BETWEEN COMPUTERS Seminar will be the second, and will be held in Orlando, Florida, April 9-13, 1973. It will address itself to the problem of finding and defining the interface between computers and communications. It also is user-oriented, and is specifically aimed at individuals actively working in this field. The fifteen lecturers represent an international cross-section of industry, government, public carriers, consultants and universities concerned with the communications/computer interface.

The seminars can be attended individually or in sequence. For application forms and more details contact Dr. R. Henning, Assistant Dean, College of Engineering, University of South Florida, Tampa, Florida 33620. Telephone - (813) 974-2581.





BRITISH INDIVIDUAL STUDY COURSES NOW AVAILABLE THROUGH IEEE

In a move designed to strengthen a growing educational bond between the IEEE and its counterpart in Great Britain, the IEE, agreement has been reached to offer specially developed individual study courses of the IEE to the Electrical/Electronics Engineering Community in the U.S. by the IEEE.

At first four courses will be available: "Field Effect Transistors" by Robert King, MA, of Imperial College of Science and Technology; "Pulse Code Modulation" by Professor K. W. Cattermole, BSc, of the University of Essex; "Digital Instrumentation" by A. R. Owens, MSc, and D. Everett, BSc, of the University College of North Wales; and "Modern Control Theory" by J. M. Layton, BSc, BA of the University of Birmingham. In April 1973 a fifth course will be available on "Color Television" by C. R. G. Reed, MA, of the Research Department of the British Broadcasting Corporation.

The courses aim to provide an engineer who qualified between five and twenty years ago with opportunities to bring himself up-to-date in post-graduate specialist subjects in electrical, electronic and control engineering. The courses run continuously and a student, having registered, may start at any time after the initial commencement date for that course. Each student will be associated with an individual tutor who will advise and comment on his progress. Each course consists of about fifteen lessons and take roughly six months to complete.

The fee for each course to IEEE members will be \$75.00, to non-members \$110.00. Registration forms and additional information on each of the courses are available from the IEEE Educational Services Department (Mrs. E. White).

THREE NEW BOOKS PUBLISHED BY IEEE PRESS

Three new volumes in the IEEE PRESS Selected Reprint Series are now available. The new books are Semiconductor Memories, edited by David A. Hodges of the University of California, and Power Semiconductor Applications, volumes I and II, edited by John D. Harnden, Jr., and Forest B. Golden of General Electric.

Interest in semiconductor memories is growing rapidly, and the engineer or student concerned with their application in computers or other systems will find a wealth of information in Semiconductor Memories. The 31 reprinted articles — drawn from trade magazines, engineering journals, and manufacturer's literature — give the reader an appreciation of the characteristics, limitations, and trends affecting these memories. This 296-page book, sponsored by the IEEE Computer Society, is priced at \$6.00 for the Member Edition (paperbound). A clothbound edition is available at \$11.95 to the public (\$8.95 to members).

Power Semiconductor Applications, Volume I: General Considerations will be a valuable source book and textbook to engineers working in industry, in power, in transportation — anywhere that electric power is used and controlled for a myriad purposes. The 67 reprinted papers in this 568-page book emphasize the applications of high-power semiconductors rather than the devices themselves. The three parts into which it is divided treat the many aspects of equipment design considerations, inverters, and power conditioning for motors. The Member Edition (paperbound) is priced at \$7.50 and the clothbound edition at \$14.95 (\$11.20 to members).

Power Semiconductor Applications, Volume II: Equipment and Systems also has an applications rather than a device emphasis. It complements and supplements the more general treatment of Volume I by giving numerous examples of applications categorized by function and by industry. Depending on the needs of the reader, it may be used alone or in conjunction with Volume I. This 344-page book, which contains 40 reprinted papers, is available in a Member Edition (paperbound) for \$6.00 and in a clothbound edition for \$11.95 (\$8.95 to members).

Volume I and II may be purchased as a set at a significant savings. The paperbound set is priced at \$12.00 for members and the clothbound set is \$24.50 to the public and \$18.40 to members.

IEEE PRESS Books of Selected Reprints are available from the IEEE and are also distributed worldwide by John Wiley & Sons. Six have now been published, and others being readied for publication are on digital signal processing, lasers, minicomputers, integrated optics, and bubble-domain technology.

