



**EDITOR:** G. P. Rodrigue

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

Number 76, Summer 1974

## '74 AWARDS BANQUET

The Annual Awards Banquet was held on June 13 in Atlanta at the Sheraton Biltmore Hotel with well over two hundred in attendance. Dr. C.L. Hogan, President of Fairchild Camera and Instrument Corp., was the featured speaker, and he discussed the promise and problems of high technology industry in today's competitive international marketplace.

Highlighting the awards program was the presentation of the first Microwave Career Award to W.W. Mumford. E.G. Cristal was awarded the first Microwave Applications Award. The 1973 Microwave Prize to W.R. Smith. H.M. Gerard and W.R. Jones was presented to two-out-of-three (Jones was not able to make it). Fellow Awards were presented to Marvin Cohn and S. Sign.

Outgoing ADCOM President John Horton received the traditional pin from current ADCOM President Bob Rivers. IEEE President John Guarrera also participated in the awards ceremony and G.P. Rodrigue, Symposium Steering Committee Chairman, served as MC.

Preceding the banquet Scientific-Atlanta hosted a cocktail party for all attendees that did much to instill the spirit of Southern Hospitality in all.



*C. L. Hogan addresses Symposium Banquet.*

## PHILADELPHIA, SAN DIEGO SELECTED TO HOST FUTURE SYMPOSIA

At its June meeting MTT-ADCOM selected the Cherry Hill Inn in suburban Philadelphia as the site of the 1976 MTT-S International Symposium. The San Diego area was selected as the site for the 1977 Symposium.

Strong proposals were submitted by four groups representing the Boston, Ottawa, Philadelphia and San Diego areas. While underlying reasons are difficult to pinpoint the following facts figured in the decision. The Philadelphia group has endorsements of five MTT Chapters representing 627 MTT members and that area has not hosted an MTT Symposium for 12 years. There existed some underlying apprehension of the high cost of visiting downtown Boston in the 1976 bicentennial year. A few members were uncertain of the merit of holding our meeting outside the continental USA in view of technicalities of travel budgets. Finally, it is presumed that fond recollections of the Del Coronado Hotel in 1960 glowed in the hearts of some old timers.

Serving as Steering Committee Chairman for the '76 Symposium is B.D. DeMarinis of ITT/DCD. The Technical Program Committee will be headed by Fred Sterzer and Marty Caulton of RCA's Research Center. The '77 MTT Symposium Steering Committee will be chaired by Dave Rubin of NEL with George Schaffner of Teledyne Ryan acting as Program Committee Chairman.

Planning for the '75 International Symposium scheduled for May 12-14 at Rickey's Hyatt House, Palo, Alto, Ca., is well under way. Steve Adam held an organizational meeting of the Program Committee for that conference over lunch on June 13. First calls for that meeting were distributed in Atlanta.



*W. W. Mumford receives Microwave Career Award from Bob Rivers.*



## EDITORS NOTES

by Pete Rodrigue

On item constantly on ADCOM's agenda is the budget. Having just served as Steering Committee Chairman for the '74 Symposium, I have become increasingly aware of different currents of budget philosophies among ADCOM members. The two schools of thought are outlined below.

Group A believes that the Annual Symposium should produce appreciable revenue for our annual budget and therefore the profit on this operation should be maximized with "state-of-the-art" registration fees. The surplus from such operations could increase the number of Transactions pages printed annually. The '73 Symposium cleared approximately \$14,000 (equivalent to roughly 133 transactions pages). The returns are not yet in on the '74 Symposium.

Group B feels that the conference should be budgeted for a modest profit, but without a commitment to underwrite other group operations. If publications are a problem Group B feels that it should be solved by (1) higher page charges (the present \$55/page is about one half the actual cost), (2) attempt further reductions in publication cost (with attendant reduction in quality?), (3) increase society dues appreciably, (4) attempt to reduce the number of published pages whose charges are not paid.

It can be reasonably argued that "industry" pays conference registration fees so raising those fees is no problem. But what about individuals who may, in fact, pay their own way, especially local registrants? Similarly, it can be argued that "industry" would be prepared to pay a larger fraction of the cost of publishing a page of the transactions. (If every page charge was honored, the society would still have to pay \$50/page!) But this premise is under considerable doubt - we've got to ascertain how much elasticity there is to the page charge business. What are your ideas on these budget matters? How much elasticity do you think there is?

I believe that there is room for adjustments in prices in both areas. I think the average conference attendee will be happy if things run smoothly, and he feels that he's not being excessively "ripped off". (On the other hand, a few always feel victimized.) No one argues with the idea that it's commendable for an industry to pick up the tab for the Conference cocktail party as SA did in Atlanta. I thought it was terrific for them to offer! Since there is a great concentration of industry in Palo Alto, Philadelphia, etc., I trust that future conferences will follow the Atlanta example in that regard.



ADCOM Members Wait and Tomiyasu Confer Outside of Smoke-filled Room



## PRESIDENT'S MESSAGE

by R. A. Rivers

The 1974 International Microwave Symposium was a great success! The combination of Southern Hospitality, the excellent facilities at Georgia Tech, and the dedicated effort of Pete Rodrigue and his associates, lead to an all encompassing enjoyable Symposium. It should be remembered that the meeting contiguous to the AP-S Symposium was a first for the MTT-S. It was done consciously to see the extent of our common interest. I found the common day meeting useful and stimulating. It would be valuable for you to advise me or other ADCOM members of the desirability of again scheduling with the AP-S. It will be some time before we can again schedule meetings together since the ADCOM has already chosen New Jersey for the site of the 1976 Symposium, and has chosen San Diego as the 1977 site.

It was an honor to be able to present some completely new awards to some of our outstanding contributors. Bill Mumford was the first recipient of our Microwave Career Award. E.G. Cristal was the first recipient of our Microwave Application Award. I was also honored to be able to present our continuing Microwave Prize for the best Transaction Paper to W.R. Smith, H.M. Gerard and W.R. Jones.

In addition, for the first time we have the President of IEEE, John Guarrera, at our banquet. He presented Fellow Awards to Marvin Cohn and S. Singh. This was the first time we have presented some of our Fellow Awards at our own banquet. I hope that in the future we can present all of our Fellow Awards at our Banquet. President of the IEEE, John Guarrera, was also recognized for having received his Fellow Award.

I had a great time - I hope you did as well.



Smith and Gerard Receive Microwave Prize From Bob Rivers

## REPORT ON TRIP TO USSR

J.B. Horton, W. Gelnovatch, G.I. Haddad

In early May of this year, a 13 man delegation of IEEE members attended the 1974 Popov Society Congress in Moscow, USSR, as a part of the joint US/USSR technology exchange. Included in the delegation were members of Division 4, Electromagnetics, with most of the delegates representing MTT, ED or AP. The delegation was headed by IEEE President John Guarrera and consisted of:

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| IEEE | J. J. Guarrera - IEEE President<br>(accompanied by Mrs. Guarrera)   |
|      | R. Benoir - Division I Director<br>(accompanied by Mrs. Benoir)   |
|      | C. R. Russell - Division 8 Director   |
| MTT  | D. J. Angelakos - UC, Berkeley, Ca.<br>V. G. Gelnovatch - USAECOM,<br>Fort Monmouth, N. J.<br><br>G. I. Haddad - University of Michigan,<br>Ann Arbor, Mich.<br><br>J. B. Horton - GE Co., Valley Forge<br>Space Center, Pa.                  |
| ED   | K. Bullington - Bell Labs, Holmdel, N. J.<br><br>D. R. Collins - TI, Dallas, Texas<br><br>H. M. Schlicke - Allen-Bradley,<br>Milwaukee, Wisc.<br><br>F. N. Trofimenkoff - University of<br>Calgary, Canada<br><br>A. H. Waynick - ONR, London |
| AP   | D. K. Cheng, Syracuse University,<br>Syracuse, N. Y.<br>(accompanied by Mrs. Cheng)   |

Our visit to the USSR included attending the Popov Society Congress and visiting a number of universities and technical institutions. The official program agenda was:

- I. Popov Society Congress (3 days) - plenary sessions only with tours to:
  - Institute of Radio Engineering and Electronics, USSR Academy of Sciences
  - Chromation Color TV Tube Factory (Moscow)
  - Radio Day Celebration and Concert
  - Special Reception for Foreign Delegations
2. Visit to Leningrad (2 days)
  - Visit to A. S. Popov Museum
  - Visit to Heritage Museum

3. Visit to Novosibirsk (2 days)

Visit to Akademgorodak

Tour of Orbita Ground Station for Space Communication

4. Visit to Kiev, Ukraine (2 days)

Research Institute of Experimental and Clinical Oncology

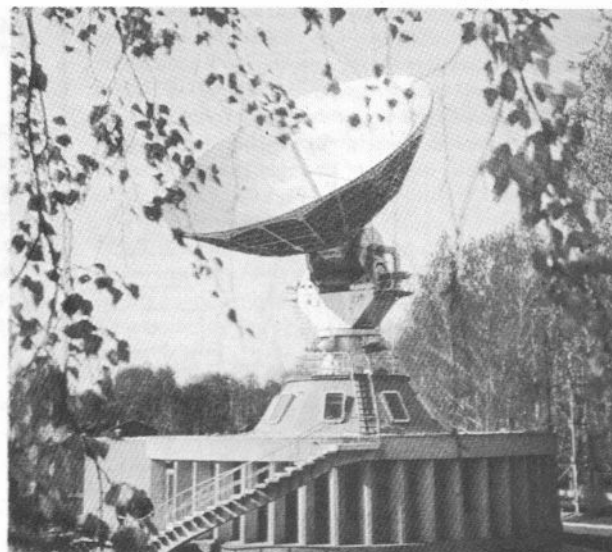
As you might surmise from the schedule, we were very busy when you consider the travel time between the cities of Moscow, Leningrad (350 miles north of Moscow), Novosibirsk (2000 miles east of Moscow), and Kiev (700 miles southwest of Moscow). Travel was by airline (Aeroflot) in all cases, but involved long waits and in one case, overnight flights. However, several experiences were very memorable and in general we were given the full-fledged VIP treatment.

Technical interface at the Popov Society Congress was very minimal, primarily because of the language barrier. Tours of the institutions were extremely interesting, since our guides spoke English in almost all cases, and generally engineers/scientists whom we met spoke English. Usually, specific experiments were discussed by the principal engineer involved and in almost all cases, this engineer spoke in good technical English.

Our visit to Leningrad included a tour of the Popov Museum, conducted by Popov's daughter and granddaughter. We were also given a tour of the Heritage Museum, which is probably one of the world's outstanding museums, especially in paintings of renown masters.

In Novosibirsk we visited and were given tours of several laboratories in Akademgorodak, a planned city built literally in the middle of Siberia. This city has laboratories in most of the technologies and is comprised of about 30,000 engineers/scientists. Generally, we found the work we saw of a high level, dealing in surface wave acoustics and fundamentals of semiconductors (these areas were highlighted because of the Division 4 specialities). We found the personnel working at Akademgorodak extremely well educated, well up on

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Ground Station for Russian "ORBITA" Space System  
(Novosibirsk, USSR)



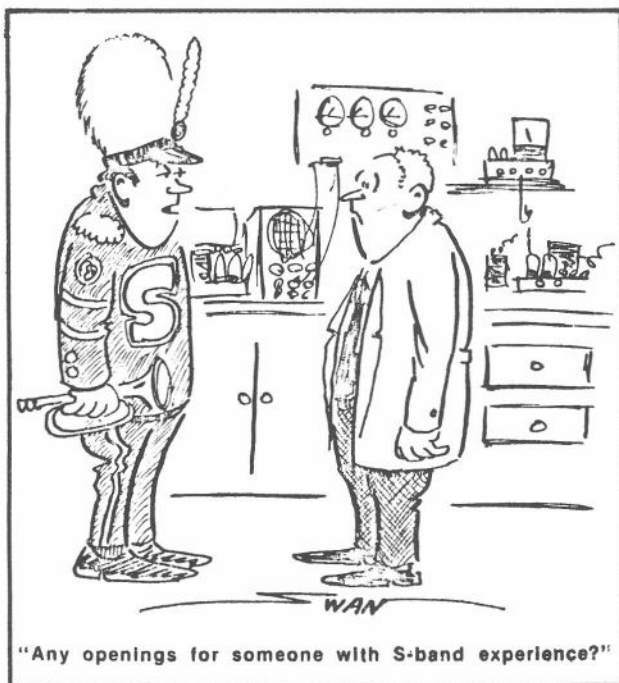
(Report of Trip to USSR Cont'd)

state-of-the-art technology in their fields, and in almost all cases able to converse in English and other languages. Their facilities were very modern and equipment was late model, including one test station made by Varian in the US.

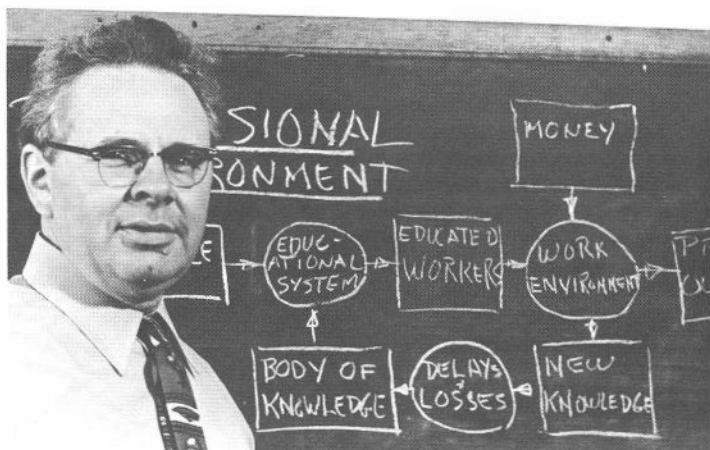
Our visit in Novosibirsk also included a tour of a space communications ground station which operates in the Russian Orbita space system. The station has a receive only capability, receiving one UHF radio channel and one TV channel. The station uses a 12 meter parabolic antenna, with a liquid nitrogen cooled parametric amplifier. The RF bandwidth is approximately 100 MHz, with a center frequency in the band of 3,4-3,7 GHz. Operation of the station appears to be irregular, probably on special occasions. The station was put into operation in 1967.

Our last stop was at Kiev. Here we were given an excellent tour of the Laser Laboratory of the Research Institute of Experimental and Clinical Oncology. Work at this laboratory is directed exclusively toward removal of scar tissue and tumors with lasers. We were shown laboratory facilities, equipment, and results of their work, all of which were excellent.

In summarizing the results of our trip, the lasting impressions are that for the most part it appears that much of the technology we saw was several years behind the US. However, our engineering/scientists counterparts in the USSR appear to be well educated, well aware of the state-of-the-art in their specialties, and capable of communicating in several languages. It is worthwhile noting that they also have similar problems in obtaining funding for their projects, do not get to attend as many conferences as they would like, and appear to have problems with the cost of living. Sound familiar?



## CANDIDATES FOR DIVISION IV DIRECTOR



R. A. Rivers

ROBERT ALFRED RIVERS (A-M '53 — SM '71) was born in Phillipston, Mass., September 5, 1923. He received his B.S. degree in EE from MIT in 1953.

In 1954 he founded AIRCOM, Inc., and has remained as President since that time.

Mr. Rivers is a member of ETA KAPPU NU, TAU BETA PI, as well as a Senior Member of IEEE.

## NEWSLETTER STATEMENT

There is one primary issue: "How can IEEE become an effective force in making possible a lifetime career in Electrical and Electronic Engineering". There are many aspects to the problem. It is an operating system problem involving: our society, our employers, our rule making government, our Body of Knowledge storage and dissemination system including our educators, and last but not least, ourselves as practitioners in the profession. Our Groups and Societies with their activities in support of the development, storage and dissemination of our specialized Bodies of Knowledge are absolutely necessary and desirable. Without these activities by our Groups and Societies such activities would have to be accomplished by some other well meaning but possibly not as competent organization. While absolutely necessary, it is not sufficient to engage only in Technical Activities.

As Engineers we find employment because someone wants innovation and improvement. We are able to design new things because our employers find it profitable. If our social system is modified so that innovation is not tolerated or desired, we will have no employment. It is thus necessary for us to influence government whenever and wherever rules are being promulgated or public funds allocated that affect our ability to innovate. We have goals in common with our employers in making innovation and improvement profitable.

As professionals we should work to make continuing technical competence possible in a real world environment. Our technical publications should be expanded in scope to include all of the information needs of members. These publications should be continually reviewed using a criteria of satisfying the needs of the reader-member as well as the writers.

I view the role of Division Director as one of representing the membership of the Groups and Societies of the Division. I will strive to represent the membership on the IEEE Boards and Committees.

## CANDIDATES FOR DIVISION IV DIRECTOR

## STATEMENT

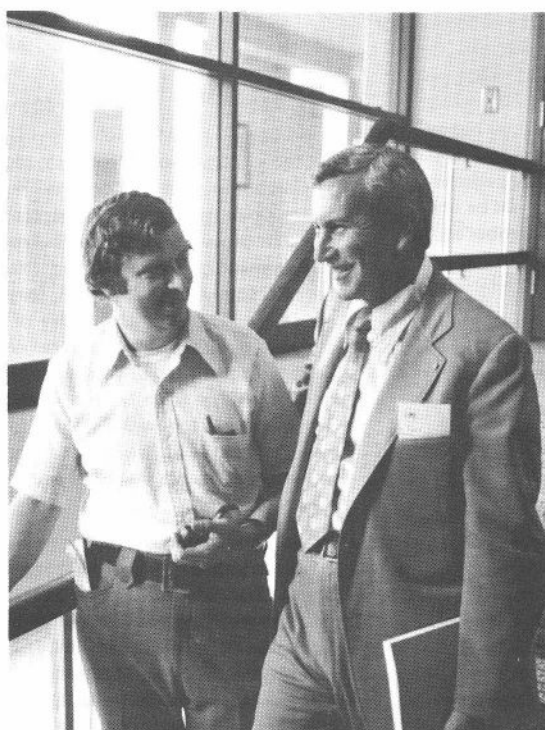
Division IV encompasses a very broad technological area of interest within IEEE. It is one of the largest divisions by membership and is responsible for about one-fourth of all the transaction pages published by IEEE. The Division Director's prime duty is to reflect the views of the division to the Board of Directors on both technical and professional matters and to work toward obtaining favorable action on these views. A second and no less important duty is that the Division Director, as a member of the IEEE Board of Directors, must also work diligently for the good of the Institute itself. The Division Director therefore, represents his particular division within the framework of the general welfare of the Institute.

My background as president of a society, member of the TAB publications board, and my present position as TAB Finance Chairman has given me wide experience in the various problems facing IEEE, ranging over the broad spectrum of administrative, fiscal, and publication matters.

My career experience in various technologies represented in the division should be helpful in performing my duties effectively.

If elected as your Division Director, I will strive for the following:

(a) Explore all means to improve communication and cooperation within the division for the benefit of all; (b) Be a strong advocate for Division IV views at the IEEE Board of Director level; (c) Support continued strong publication and education programs within IEEE; (d) Support strongly the involvement of IEEE in professional matters; (e) Examine and provide leadership toward improved efficiency within the Institute itself on services to members; and (f) Support the IEEE's timely involvement in current national and/or international issues where our technological expertise is essential.



*Fred Rosenbaum and Al Clavin at Symposium*



**Joseph J. Suozzi**

## BIOSKETCH

Dr. Joseph J. Suozzi received the BEE and MEE degrees from Catholic University, Washington D. C., in 1949 and 1954, respectively, and the Ph.D degree in electrical engineering from Carnegie-Mellon University, Pittsburgh, Pennsylvania in 1958.

He taught electrical engineering at Catholic University and worked at the Naval Ordnance Laboratory, Silver Spring, Maryland, in applied magnetism for three years. He has been with Bell Telephone Laboratories, Whippany, N. J. for sixteen years and is currently Head of the Electronic Power Systems and Computer Studies Department. He has written over twenty papers and reports in both computer and power magnetism and holds four patents.

Dr. Suozzi was the President of the Magnetism Society of the IEEE in 1969 and 1970. He was the first publication chairman and Editor-in-Chief of the Transactions on Magnetism. He was General Chairman of the International Conference on Magnetism in 1965 and 1967. In 1969, he gave a two week lecture tour in the Soviet Union at the invitation of the U. S. S. R. Academy of Science. In 1972, he received the annual alumni achievement award in engineering from the Catholic University. In 1973, Dr. Suozzi was elected a Fellow of the Institute of Electrical and Electronics Engineers for his contributions to power and computer magnetism. He is currently the Chairman of the TAB Finance Committee.



## ADCOM HIGHLIGHTS

by H.W. Cooper

The 1976 MTT-S International Microwave Symposium will be held at Cherry Hill, New Jersey, under the sponsorship of the five local MTT chapters in the New Jersey/Philadelphia metropolitan area. The 1977 Symposium will be held in San Diego, a very lovely spot for a Symposium!

The competition for 1976 was among New Jersey, Boston, and Ottawa. Boston and Ottawa also had excellent proposals, Boston being presented by Harlan Howe and the Ottawa proposal by Willem Steenaart. The winning 1976 proposal to be held at Cherry Hill the 13th to 16th of June 1976 was presented by Bernie DeMarinis. The losing cities were invited to re-submit. Boston plans to re-submit for 1978 and Ottawa may re-submit.

The meeting was opened by Bob Rivers. Larry Whicker reported on the highlights of the "TAB" meeting in Ottawa on the 17th of May. Larry reported that IEEE Past President Tanner suggested that democracy was not the best way for the election of officers in a technical organization such as the IEEE, but there is an active role for ADCOM presidents in electing the divisional officers. Larry also reported discussion at TAB on social implications—specifically the question of the support of BART engineers by the IEEE. IEEE President John Guerrara is to appoint a committee to look into this.

One of the consequences of the IEEE move from New York to New Jersey is the necessity for disposing of some of their inventory of old transactions. Bob Rivers has requested delay in the disposition of old transactions and has asked Don Parker to look into their sales thru the Newsletter and at the Symposium to new members.

The IEEE press has requested MTT approval for two books in the microwave area. The Publications Committee and the Technical Committees will review and contact the appropriate people at Headquarters.

At the last ADCOM meeting, George Oltman was appointed by Bob Rivers to chair a task force on an Applications Journal. In his report George stressed some of the difficulties inherent in an Applications Journal. One is the reluctance of companies to permit publication of applications papers that are other than advertising brochures, because the information therein allows competitors to compete better in the marketplace. A second question was whether this would lower the technical level of our publications. Bob Rivers appointed a committee to formulate implementation of the Applications Journal, initially as part of the regular transactions.

George Oltman reported that the One Day Symposium efforts were progressing well. An objective is to supply material so that chapters may organize their own One Day Symposiums in areas of interest to the microwave field.

Lamar Allen reported his contact with the National Science Foundation for a three to five year effort for collection and generation of material for a microwave encyclopedia. Lamar, Fred Rosenbaum and Hal Sobol will carry this effort on to the next step.

Under chapter activities, George O'Reilly reported that chapter reporting was poor—only ten chapters have reported, despite the fact that many others have held meetings. There were no reports from Boston, Denver and Los Angeles, as well as from other smaller chapters. Pete Rodrigue reported on newsletter progress. It was mentioned that it would be worthwhile to add chapter activities as a regular feature of the newsletter. Dave Wait reported on membership activities and is launching an intensive drive to recover lost sheep, and in addition bring students into the fold as they graduate or get into microwave activities. In addition, a chapter under the sponsorship of the India section was approved by the ADCOM.

Pete Rodrigue and Gordon Harrison reported the 1974 Symposium showed a good advance registration of 277, MTT only, and 103 who registered for both the AP and MTT meetings. Jim Gallagher reported the Sub-Millimeter Conference generated a surplus of \$4,000—\$5,000. Of the 180 papers in the conference, one-half were foreign. The Digest was 208 pages and extended versions of the papers will be considered for publications in a December supplement to the MTT transactions. They are considering a 1977 Sub-Millimeter Conference.

Steve Adams reported arrangements for the 1975 Symposium are going well and the first call for papers was distributed at the 1974 Symposium in Atlanta.

There was discussion of meeting dates for the Symposium. Len Lewin suggested that a Symposium date of 25th—30th of May would be desirable for university-types. The Symposium has been held as early as the first week in May and as late as mid-June. Suggestions from the members for future Symposium dates are welcome, but the earliest they could be implemented would be in 1978.

Transactions activities were reported on by outgoing editor Fred Rosenbaum. Fred indicated some financial problems, particularly due

to inadequate page charge response. The financial problems this year are particularly acute because we are committed to publish the proceedings at the Sub-Millimeter Symposium. We anticipate low page charge income for that publication because approximately 90% of the speakers at the Sub-Millimeter were university people. In general, universities do not honor the page charge request.

It was moved and passed that the December issue of the Transactions would be limited to extended versions of those papers that appeared in the Symposium Digest or that were presented at the Symposium. The intent is to insure that the reviewed and published material in the December issue does not duplicate the material in the Digest. A fundamental question may be whether the Symposium Digest should be sent automatically to all members. This subject will be investigated further.

Effective 15 June 1974 all papers go to Don Parker, the new editor of the Transactions.

Bob Rivers asked Don Parker and Warren Cooper to meet with Dick Emberson on the recurring problem of page charges. A new page charge chairman will be appointed and page charges will be pursued vigorously during the coming year. A suggestion has been made that for papers over the desired length page charges should be mandatory.

George Oltman reported that institutional listings were coming in fairly regularly and that we should push this as a source of additional income.

Treasurer Nat Lipetz reported on the overall financial situation of the society. It appears that we would have a loss of \$12,500 in 1975. Because the fee structure for IEEE billing must be at IEEE Headquarters before our next Administrative Committee meeting, ADCOM authorized Bob Rivers to raise the dues by \$1.00 if it appears necessary.

Al Clavin, the MTT-S Project Co-ordinator for Technology and Forecasting, reported that his solicitation of help from the Technical Committee Chairman for TF&A representatives resulted in Octavius Pitzalis (U.S. Army Electronics Command), Raymond Tang, (Hughes Aircraft Company), Dr. Charles R. Boyd, Jr. (MAG), and Dr. David Chang (University of Colorado). In addition, Leonard Swern (Sperry Gyro) and Karle S. Packard (AIL) offered to help. Al also received a letter from Dr. Ron Larson, the IEEE Representative to the U.S. House of Representatives Committee to Science and Astronautics who suggested solar power as a possible focus of our attention.

Hal Shrank stated that the Waveguide Standards Committees has two draft standards completed. They are under consideration for IEC approval—Number 147, Waveguide Component Definition of Terms, and Number 146, Definition of Fundamental Waveguide Terms. Steve Adams reported that the waveguide measurement committee is aiming to complete a draft document for at least four areas by this November.

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(ADCOM Highlights continued)

ber. Technical Committee Chairman Harold Sobol requested ADCOM to elect a new chairman because of the two year limitation on chairmen. He reported that Dick Williamson was now chairman of MTT-2, and that Dean Anderson would include integrated optics on MTT-3. Ken Button will work with him. A.W. Guy is new chairman of MTT-10. Marty Coulton of MTT-6 reported on the meeting to be held at Atlanta for planning and study of a proposal for publishing in IEEE reprint volume of MIC's.

Publicity Chairman, Bob Knox, reported that their fourth news release was issued in May with items on the Symposium, the new MTT Transactions editor, foreign activities, and the ADCOM planning meetings.

Operations Committee Chairman John Horton reported on the progress in updating the by-laws. Dick Sparks reported on the handbook of procedures and a request for candidates for ADCOM election in the Septembers was made by John Horton. George Haddad reported on the Microwave Applications Award, the Microwave Career Award, and the necessity for nominating candidates for awards in a timely fashion for 1975.

In closing, Bob Rivers set the December meeting for the sixth of December at IEEE Headquarters in New York and plans a split agenda with reports for the past year and plans for the coming year.

The meeting day was full and by this time your ADCOM members were ready to adjourn to the less demanding but more critical needs of cocktails and dinner.



*Pete Rodriguez Opens Banquet Program.*



*Marv Cohn Receives Fellow Citation.*



*Microwave Applications Award to Ed Cristal.*



*After the Banquet's Over.*

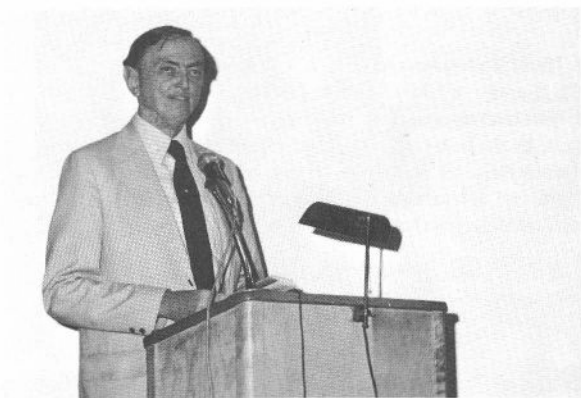
## MICROWAVE PRIZE RECIPIENTS

The following list of Microwave Prize recipients has been compiled and verified by Honorary Life Member Kiyo Tomiyasu:

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|--|---|
| <p>1957 Harold Seidel<br/>"Synthesis of a Class of Microwave Filters"<br/>IRE Trans. Microwave Theory Tech., vol. MTT-5, pp. 107-114.<br/>April 1957</p> <p>1958 Ladislav Goldstein<br/>"Nonreciprocal Electromagnetic Wave Propagation in Ionized Gaseous Media"<br/>IRE Trans. Microwave Theory Tech., vol. MTT-6, pp. 19-29,<br/>Jan. 1958</p> <p>Honorable Mention</p> <p>Seymour B. Cohn<br/>"Parallel-Coupled Transmission-Line Resonator Filters"<br/>IRE Trans. Microwave Theory Tech. vol. MTT-6, pp. 223-231.<br/>April 1958</p> <p>H. E. D. Scovil<br/>"The Three-Level Solid-State Maser"<br/>IRE Trans. Microwave Theory Tech., vol. MTT-6, pp. 29-38.<br/>Jan. 1958</p> <p>1959 Bert A. Auld<br/>"The Synthesis of Symmetrical Waveguide Circulators"<br/>IRE Trans. Microwave Theory Tech., vol. MTT-7, pp. 238-246.<br/>April 1959</p> <p>1960 A. F. Harvey<br/>"Periodic and Guiding Structures at Microwave Frequencies"<br/>IRE Trans. Microwave Theory Tech., vol. MTT-8, pp. 30-61,<br/>Jan. 1960</p> <p>1961 George L. Matthaei<br/>"A Study of the Optimum Design of Wide-Band Parametric Amplifiers and Up-Converters"<br/>IRE Trans. Microwave Theory Tech., vol. MTT-9, pp. 23-38.<br/>Jan. 1961</p> <p>1962 Leonard Lewin<br/>"On the Resolution of a Class of Waveguide Discontinuity Problems by the Use of Singular Integral Equations"<br/>IRE Trans. Microwave Theory Tech., vol. MTT-9, pp. 321-332.<br/>July 1961</p> <p>1963 Leo Young<br/>"Direct-Coupled Cavity Filters for Wide and Narrow Bandwidths"<br/>IEEE Trans. Microwave Theory Tech., vol. MTT-11, pp. 162-178<br/>May 1963</p> <p>1964 Seymour B. Cohn<br/>"The Re-Entrant Cross Section and Wide-Band 3-dB Hybrid Couplers"<br/>IEEE Trans. Microwave Theory Tech., vol. MTT-11, pp. 254-258, July 1963</p> | <p>1965 Hendrik Bosma<br/>"On Stripline Y-Circulation at UHF"<br/>IEEE Trans. Microwave Theory Tech., vol. MTT-12, pp. 61-72,<br/>Jan 1964</p> <p>1966 Arthur A. Oliner<br/>"Equivalent Circuits for Discontinuities in Balanced Strip Transmission Line"<br/>IRE Trans. Microwave Theory Tech., vol. MTT-13,<br/>pp. 134-143<br/>Mar. 1955</p> <p>1967 Robert J. Wenzel<br/>"Theoretical and Practical Applications of Capacitance Matrix Transformations to TEM Network Design"<br/>IEEE Trans. Microwave Theory Tech., vol. MTT-14,<br/>pp. 635-647.<br/>Dec. 1966</p> <p>1968 William F. Gabriel<br/>"Tunnel-Diode Low-Level Detection"<br/>IEEE Trans. Microwave Theory Tech., vol. MTT-15, pp. 538-553<br/>Oct. 1967</p> <p>1969 John D. Rhodes<br/>"The Stepped Digital Elliptic Filter" and<br/>"The Design and Synthesis of a Class of Microwave Bandpass Linear Phase Filters"<br/>IEEE Trans. Microwave Theory Tech., vol. MTT-17, pp. 178-184<br/>and pp. 189-204<br/>April 1969</p> <p>1970 William J. Evans<br/>"Circuits for High-Efficiency Avalanche-Diode Oscillators"<br/>IEEE Trans. Microwave Theory Tech., vol. pp. 1060-1067,<br/>Dec. 1969</p> <p>1971 M. E. Hines<br/>"Reciprocal and Nonreciprocal Modes of Propagation in Ferrite Stripline and Microstrip Devices"<br/>IEEE Trans. Microwave Theory Tech., vol. MTT-19, pp. 442-451,<br/>May 1971</p> <p>1972 H. E. Rowe and D. T. Young<br/>"Transmission Distortion in Multimode Random Waveguides" and "Optimum Coupling for Random Guides with Frequency-Dependent Coupling"<br/>IEEE Trans. Microwave Theory Tech., vol. MTT-20, pp. 349-365<br/>and pp. 365-372<br/>June 1972</p> <p>1973 W. R. Jones, W. R. Smith and H. M. Gerard<br/>"Analysis and Design of Dispersive Interdigital Surface-Wave Transducers"<br/>IEEE Trans. Microwave Theory Tech., vol. MTT-20, pp. 458-471,<br/>July 1972</p> |
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## FOUR PRESIDENTS OPEN '74 SYMPOSIUM



*Georgia Tech President Joseph M. Pettit*



*IEEE President John J. Guarrera*



*AP-S President Buck Walter*



*MTT-S President Bob Rivers*

S/MTT SUMMER 1974



## CHAPTER ACTIVITIES

*by L. R. Whicker*

### SYMPOSIA

The Atlanta Chapter is to be congratulated for conducting a fine MTT Symposium. The meeting did not lose its identity in the midst of the many other simultaneous meetings. The sessions were well attended and details were taken care of.

Other Chapters are to be congratulated also. Four Chapters or Groups of Chapters entered proposals for the 1976 and 1977 Symposiums. Proposing Chapters included Boston, Ottawa, San Diego and a Mid-Atlantic conglomerate. The competition was very keen and each Chapter had outstanding proposals.

Perhaps the losers will be winners in the future.

### CHAPTER CHAIRMAN'S MEETING

Another good Chapter Chairman's meeting was held in Atlanta at the MTT Symposium with thirty-two people in attendance. Twenty-four chapters were represented. This meeting provided a good forum for discussion of the interrelationship between MTT ADCOM and the Chapters.

### NATIONAL LECTURER

Nominations for the 1975 National Lecturer are needed. Letters have been sent to ADCOM members and to Chapter Chairmen. Please pass your candidates along to your Chapter Chairman or send them directly to me:

L. R. Whicker  
Code 5250  
Naval Research Laboratory  
Washington, D. C. 20375



## DIRECTOR'S REPORT

*Leo Young*

Director, Division IV  
Code 5200, Naval Res. Labs.  
Washington, D.C. 20390

## WITH THANKS AND APOLOGIES

I just returned from the AP-S/MTT-S Symposium in Atlanta, Georgia which to me was a lifting of the spirits. This is my last year as your Division IV Director, and I have not devoted as much time to the division as in the previous three years. This year I was appointed to be Chairman of USAC, which I consider to be a position second to none in IEEE, except for President. Doing my best as Chairman of USAC is a duty; attending MTT and AP meetings is a rare pleasure these days, as duty comes before pleasure. I particularly regret that during my brief stay in Atlanta there wasn't more time to spend with old friends, and I apologize to them for saying only a quick "Hello" and rushing to some meeting.

It was particularly gratifying to me to see the two Symposiums held back-to-back (as it were) in Atlanta. I have been a member of both Societies for over twenty years, and I believe the two symposia joined together must have been a welcome convenience to AP and MTT members. (About half the members in one Society also belong to the other).

I was reminded at the panel discussion on the Tuesday afternoon on professionalism in IEEE that it was the (then) G-AP and G-MTT that were in no small measure responsible for starting IEEE on this pioneering road. Sharing the panel with President John J. Guarrera, Richard J. Backe and myself were AP-S Ad Com members Raj Mittra and Wolfgang Kummer and S-MTT President Robert A. Rivers (who chaired the original Division IV Professional Activities Committee).

This may be my last year on the Board of Directors, and I hope that AP-S and MTT-S continue to pioneer both technically and professionally in years to come. I have enjoyed my years on the Board and thank you sincerely for the opportunity. For me being a director was both time consuming and gratifying. Remember your Board of Directors and your Ad Coms represent you, and don't let them forget it!



Microwave Safety Panel (Left to Right: Osepchuk, Czernski, Johnson, Elder, Grove, Tyler).

## PERSONALITIES

R. W. (Bob) Beatty retired as Senior Research Scientist from NBS, Boulder, on July 19 after 26 years of service. He began government service in 1940 at Naval Research Lab., Washington, D. C. Bob has been a member of MTT-S ADCOM since 1961. He was editor of the transactions from 1963 to 1965. He is currently chairman of the Society's Standards Coordinating Committee.

Bob plans to "relax until fall, then maybe get a non-government job."

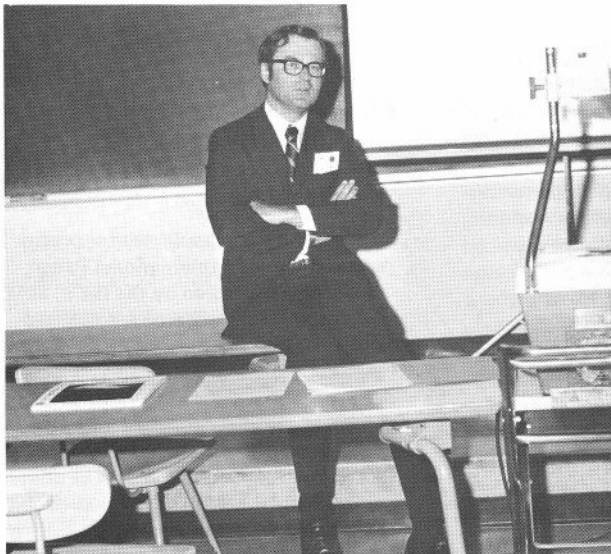


Bob Beatty and Lamar Allen at ADCOM Break

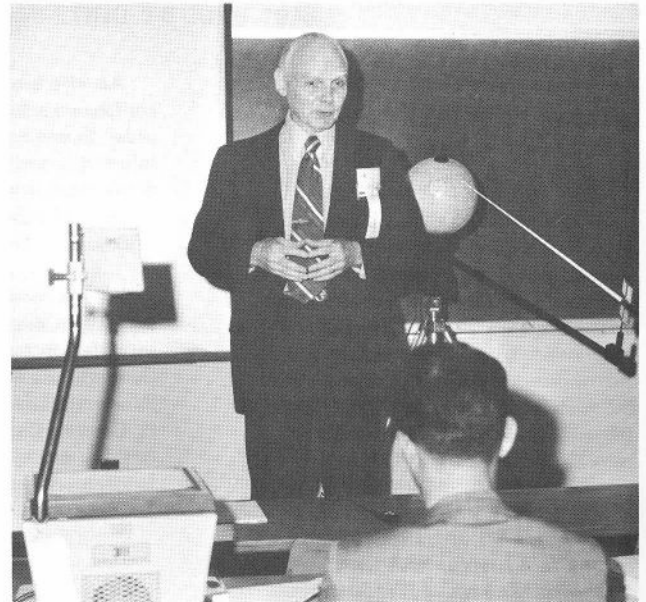


Hallway Talk (Left to Right: Ray Mittra, Joe Frank, Lamar Allen, Keith Alverson, Bob Stanford, John Amoss, Earl Meeks)

# TECHNOLOGY ASSESSMENT AND FORECASTING IN ATLANTA



*Alan Schell described Microwaves and Millimeter Antennas –*



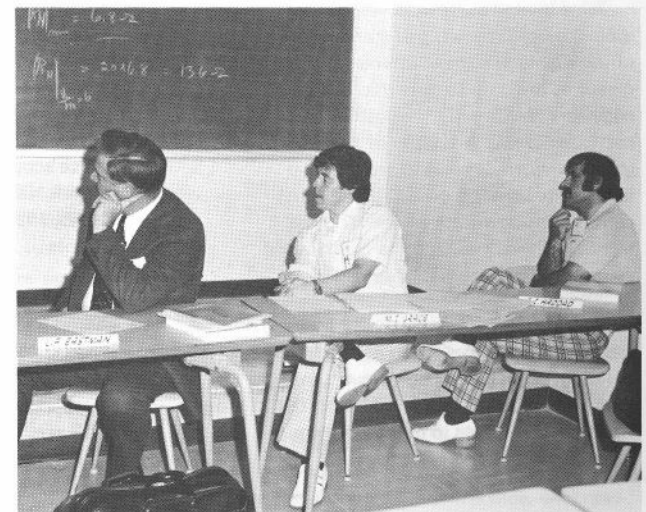
*Bill Brown promised power from outer space –*



*Ted Saad cited uses for microwave power –*



*And the multitude listened and questioned.*



*Meanwhile, the TRAPATT panel also listened (Left to Right: W. Cox, T. Fong, M. Hines, A. Clorfeine, L. Eastman, M. Grace, and G. Haddad).*



## MEETINGS

### 4TH EUROPEAN MICROWAVE CONFERENCE

Over a few years time, European Microwave Conferences have become the established forum of the whole European Microwave Community and one of the major events in the field on a worldwide basis. Following the success of previous events in London (1969), Stockholm (1971), Brussels (1973) and the more applications-oriented Microwave '73 in Brighton (1973), the permanent Management Committee, formed in Brussels in 1973, decided to hold a joint event in Montreux in September 1974. This 4th European Microwave Conference presents a number of innovations and may well mark a turning point for the Microwave Community, as it covers the areas of 3 different previous Conferences: Research and Development (previous Eu. M. C.'s), Hardware and Systems (Microwave '73) and Microwave and Optical Generation and Amplification (M. O. G. A.). A particular effort was made to ensure a balance between these different fields of endeavor.

The program consists of 18 contributed sessions. The subject of active solid state devices retains the largest attention with 5 sessions. Another significant feature of the program are 4 sessions devoted to communications systems and related components, emphasizing the strong activity of the community in this area. The other sessions follow the conventional pattern of previous European Microwave Conferences.

Nine invited surveys, presented by specialists of international standing are of wide general current interest and are meant to bring up to date microwave engineers not directly involved in these particular areas. A feature of this program is that these surveys are grouped in separate sessions, giving to all participants the opportunity to follow these lectures without missing the contributed sessions in their areas of interest.

The exhibition Microwave '74 will be located on the lower floors of the same building: Conference participants will thus be able to get acquainted with the latest developments in microwave equipment, hardware and systems.

An effort was made to render the conference schedule not too heavy, in order to enable participants to meet informally and visit the exhibition. Some time is left free for this purpose in the afternoons of Wednesday and Friday.

We are looking forward to welcoming you in the scenic and restful resort of Montreaux along the Lake of Geneva, next September. For further information, please contact Prof. Fred E. Gardiol, Conference Chairman, Chemin de Bellerive 16, CH-1007 Lausanne, Switzerland.

### 1974 IEEE INTERNATIONAL ULTRASONICS SYMPOSIUM MEETINGS

The 1974 International Ultrasonics Symposium will be held at the Pfister Hotel, Milwaukee, Wisconsin, November 11-13, 1974.

A partial list of topics includes:

- Acoustic imaging and holography
- Acousto-optic interactions and devices
- Bulk wave propagation characteristics
- Bulk wave devices - transducers, resonators, filters, oscillators. . .
- Industrial applications and macrosonics
- Non-destructive testing
- Medical applications - diagnostics, therapeutics, and effects
- Physical acoustics
- Surface acoustic wave propagation, waveguides, materials, and non-linear effects
- Surface acoustic wave devices, fabrication, transducers, delay lines, filters, convolvers, oscillators . . .

Any inquiries concerning registration, etc., should be addressed to:

Dr. Moises Levy  
Department of Physics  
University of Wisconsin-Milwaukee  
Milwaukee, Wisconsin 53201

### 1975 INTERNATIONAL RADAR CONFERENCE APRIL 21-23, 1975 WASHINGTON, D.C.

Papers are being solicited for presentation at the 1975 International Radar Conference sponsored by the IEEE, S-AES, and the Washington Section, to be held in Washington, D. C., April 21-23, 1975.

Papers on all aspects of radar su

Papers on all aspects of radar systems are of interest. Each paper will be allowed a maximum of typically 3000 words and six figures. Papers submitted for judging should conform with this constraint but may be in standard typescript. Authors should submit three copies of their drafts to Dr. Merrill Skolnik, Naval Research Laboratory, Code 5300, Washington, D. C., 20375, no later than November 15, 1974. For additional information contact Mr. R. T. Hill, Chairman, 202-692-7142.

Authors of those papers accepted will be notified by January 15, 1975, and should plan to resubmit their papers on the special sheets to be supplied no later than March 1, 1975.

### IEEE INTERNATIONAL SOLID-STATE CIRCUITS CONFERENCE PHILADELPHIA MARRIOTT FEBRUARY 12-14, 1975

The IEEE International Solid-State Circuits Conference, Philadelphia Marriott Motor Hotel, February 12-14, 1975, invites papers which have not been previously published or presented covering design, performance, testing or application of solid-state circuits and systems. Applications may be in a variety of fields, including computers, communications, medical government, consumer (automotive, receivers, etc.).

(continued on page 13, column 1)

Areas of Interest Include, But Are Not  
Restricted To:

INTEGRATED ELECTRONICS  
MICROPROCESSORS  
CIRCUIT TECHNIQUES  
NEW DEVICE APPLICATIONS  
OPTOELECTRONICS  
MICROWAVE ELECTRONICS  
MEMORIES  
MEDICAL ELECTRONICS  
CIRCUIT DESIGN AND TESTING

Summary/Abstract Format To Be  
Submitted:

Authors must submit both a 35 word program abstract and a 300 to 500 word review summary, preferably 15 copies of the latter, to facilitate screening by the program committee. Paper should be suitable for a 20-minute presentation.

The summary, which will be used to select papers for presentation at the conference, will not be published. (Authors of accepted papers will be asked to prepare a final version for publication in the Conference Digest). The summary must describe clearly what new and significant results - both theoretical and experimental - have been obtained, citing if development is based on an operational prototype, and should include illustrations such as circuit diagrams, photographs, and performance curves where applicable.

Summaries must be submitted in single-side, double-spaced typewritten form suitable for reproduction and review purposes. Author's name, affiliation, complete return address and telephone contact should appear on the first page, with author's name and paper title on each subsequent page.

The 35 word abstract adaptable for publication in an advance program, should be typed on a separate sheet, and include title of talk, author's name, affiliation, complete return address and telephone number. Abstracts longer than 35 words will be shortened arbitrarily by the Program Committee.

North American authors should send abstracts/summary to Program Committee Secretary:

D. P. Gaffney/G33/966-2  
IBM Burlington  
P. O. Box A.  
Essex Junction, Vt. 05452

The 1975 Meeting sponsored by the 1975 IEEE International Antennas and Propagation Symposium and the U. S. National Committee of URSI will be held jointly at the University of Illinois, Urbana. IEEE/AP-S and URSI technical programs will be arranged separately except for the appropriate coordination.

Authors are invited to submit papers on all topics of interest to the AP-S and URSI membership. The topics listed below are suggestions only and full consideration will be given to papers on other appropriate subjects as well. Inquiries for additional information may be directed to R. Mittra and S. W. Lee, Co-Chairmen, Technical Program Committee, Electromagnetics Laboratory, Electrical Engineering Department, University of Illinois, Urbana, Illinois 61801, (217) 333-1200.

Suggested topics for AP-S:

Antenna Design and optimization  
Phased arrays and adaptive arrays  
Special antenna applications  
Reflector antennas and large antenna systems  
Computer-aided antenna design  
Wave propagation  
Millimeter and quasi-optical waves  
Electromagnetic theory  
Scattering and diffraction  
Numerical and analytical techniques in electromagnetics  
Application of electromagnetics to environmental, biological and transportation problems  
Media effects on wave transmission  
Sensing and probing with electromagnetic waves

Proposals for special AP-S sessions will be welcomed by the Program Committee.

Prospective organizers are requested to contact R. Mittra or S.W. Lee.

Suggested topics for URSI:

Commission I: Radio measurement methods and standards  
II: Radio and Non-ionized Media  
III: Ionospheric Radio

IV: Magnetospheric Radio

V: Radio waves and Transmission of information

All summaries and abstracts for AP-S and URSI must be received by January 15, 1975; they should be submitted to:

R. Mittra  
Dept. of Elect. Engr.  
University of Illinois  
Urbana, Illinois 61801

Instructions for All Authors

The text should be typed with elite type, single spaced on white 8-1/2 x 11" paper. The title should be centered in capital letters one inch from the top of the first page. The authors and complete organization affiliation should be two lines below the title and the text should start three lines below this. Left and right hand margins should be 1-1/2 inches. A one-inch margin should be left at the top and bottom of all pages. Use a double space between paragraphs. An author will retain the right to submit his complete paper to a journal of his choice for formal publication.

If the author wishes his paper to be considered for both URSI and AP-S, he should provide both an abstract and a summary.

Additional Instructions for AP-S Authors

The Digest will be produced directly from the author's originals; therefore the typing and layout instructions must be followed closely. Failure to comply with the instructions could result in rejection of the summary.

The summary is to be limited to four pages including all text references, figures and photographs. The original and three copies of the summary must be submitted in final form. Since there will be a reduction of about 72% in linear dimensions, letters and symbols in all diagrams should be sufficiently large and clear. Figures and photographs (in glossy prints) should be of convenient size and affixed on 8-1/2 x 11" papers with captions typed in appropriate places. Footnotes should not be used except for credits to sponsoring agencies.

Additional Instructions for URSI Authors

Three copies of abstracts of 200 words maximum (no figures) should be submitted, stating Commission preference. Acknowledgment of financial support is not appropriate.

### WEDNESDAY EVENING SESSIONS AT THE BILTMORE



*The Panel Discussed GaAs Devices*



*Phased Array Technology Was Exposed*

### THURSDAY EVENING SESSIONS AT THE BILTMORE



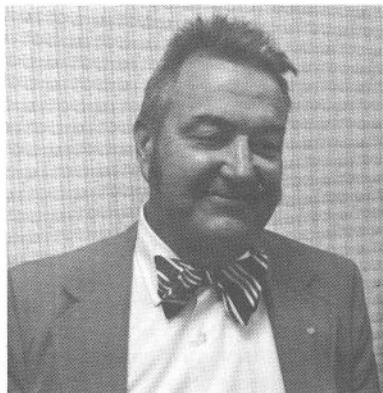
*Horton Receives Past President's Pin*



*Singh Receives Fellow Citation*

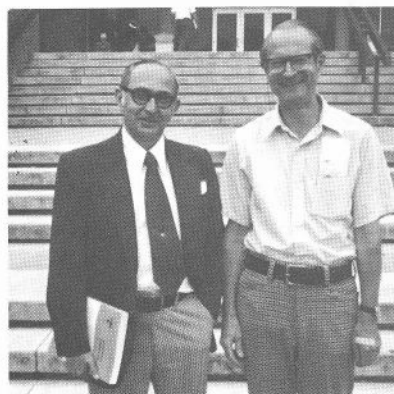


AROUND THE SYMPOSIUM —



*The administration looks happy --- but somebody's got to work!*

SOME FAMILIAR FACES



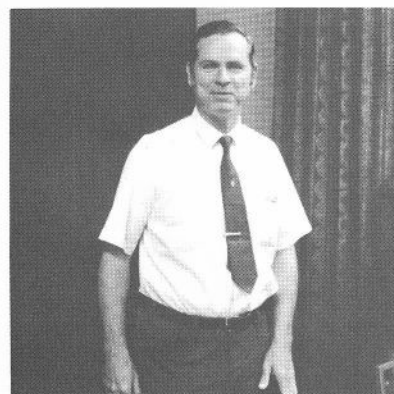
*Rudy Henning and Don King on  
Steps of Georgia Tech Student Center*



*Ted Saad Outside Meeting Hall*



*Al Clavin at the Other End of  
the Camera*



*Dick Sparks at ADCOM Meeting*



*Len Lewin Looks Apprehensive*



*Nat Pelter Looks Happy!*

## SHORT COURSES

Third Class

### FIBER AND INTEGRATED OPTICS SEPTEMBER 30-OCTOBER 4, 1974 GEORGE WASHINGTON UNIVERSITY, WASHINGTON, D.C.

The course is designed for technical personnel who need a better understanding of theoretical, experimental, and applications aspects of modern guided light technology. The purpose of this course is to acquaint the attendees with present capabilities, limitations, near term prospects, and current applications. Emphasis will be placed on recent technological advances.

The topics will include: Fiber Optics, Passive Integrated Optics, Active Integrated Optics, and Optical Communications. \$395.

For further information, please write to the Director, Continuing Engineering Education, The George Washington University, Washington, D. C. 20006, or call (202) 676-6106.

### SATELLITE COMMUNICATIONS SYSTEMS OCTOBER 9-11, 1974 GEORGE WASHINGTON UNIVERSITY, WASHINGTON, D.C.

This course is structured for communications engineers, scientists, managers and others who need the latest information concerning the use of satellites for communications. The emphasis will be on system design and analysis of communications satellites used for long haul telephone transmission. The presentation will cover the concepts unique to communications satellites, such as multiple access, and will place emphasis on the physical understanding of system design. \$300.

For further information, write to the Director, Continuing Engineering Education, George Washington University, Washington, D. C. 20006, or call (202) 676-6106.

### NUMERICAL AND RAY-OPTICAL TECHNIQUES FOR ELECTROMAGNETICS AND ANTENNAS UNIVERSITY OF ARIZONA, TUCSON, ARIZONA JANUARY 6-10, 1975

The course will consist of both tutorial and current state-of-the-art material with applications to antennas, scattering, radar, and diffraction. A special session will be included on time domain electromagnetic problems with applications to EMP.

A preliminary list of topics includes, wire and array antennas computational aspects of the moment method, stability and convergence of solutions, aperture coupling, time domain techniques, reflector antennas, ray-optical techniques, and scale modeling of transient scattering and coupling.

An important feature of the short course is the inclusion of an open session for the discussion of specific problems of interest to the course participants.

Lecturers for the course will include Dr. Donald Dudley, University of Arizona; Dr. Robert Kouyumjian, Ohio State University; Dr. Roger Harrington, Syracuse University; Dr. Edward Miller, Lawrence Radiation Laboratory; Dr. Raj Mittra, University of Illinois; Dr. Willard Rusch, University of Southern California; and Dr. William Imbriale, TRW Systems.

For further information, contact either of the co-directors:

Dr. D. G. Dudley  
Professor of Electrical Engineering  
The University of Arizona  
Tucson, Arizona 85721

Dr. Raj Mittra  
Electromagnetics Laboratory  
Electrical Engineering Department  
University of Illinois  
217-333-1200



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