IEEE SOCIETY ON MICROWAVE THEORY AND TECHNIQUES

NEWSLETTER

EDITOR: *S. L. March*

Compact Engineering Division, CGIS, 1106 Bobbie Lane, Garland, Texas 75042

Number 102, Winter 1982

NEW MTT-S PRESIDENT'S MESSAGE

by R. A. Sparks

During the past year your MTT-S Adcom has begun to focus on appropriate means of distributing a part of the Society's financial surplus that will provide optimum benefits to our members and to the microwave profession as a whole. This is a new responsibility and it is being given carefui study and deliberation. Providing opportunities for continuing education through the timely dissemination of technical information via Transactions, symposia, seminars, and speakers has been a major activity that may be broadened in the future to include video cassettes and teleconferences. The granting of scholarships and stipends to universities is also under consideration.

In all of these undertakings there is a tremendous need for inputs and new ideas from our members. Your support and comments are solicited to enhance the microwave profession in government, industry, and the universities of the world.

Biographical Sketch of Richard A. Sparks

Dick Sparks was born in Philadelphia, PA on December 16, 1931. He received the B.A. degree in physics from Temple University in 1958 and M.S. degree in physics from the University of Maryland in 1962.

In 1958 he joined the Johns Hopkins University Applied Physics Laboratory as an Associate Physicist assigned to the Microwave Receiver and Radar

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OUTGOING PRESIDENT'S REPORT

by Fred J. Rosenbaum

The Presidency of MTT-S Adcom is a one year term. That year has sped by for me. Several significant things have occurred for the Society in the last year that I wish to share with you. After much discussion between our Adcom, the Adcom of the Electron Device Society, and the leadership of the GaAs IC Symposium, an agreement has been reached regarding MTT-S activities in the semiconductor monolithic microwave integrated circuits (MMIC) area. Beginning with the just concluded 1981 GaAs IC Symposium, MTT-S is now a cooperating-sponsor of this ED-sponsored meeting. We have also instituted our own annual Microwave and Millimeter Wave Monolithic Circuits Symposium, the first one to be held in Dallas following the IEEE MTT-S International Microwave Symposium in June 1982. The purpose of this meeting is to bring together microwave device, circuits, and systems engineers to share and develop concepts which we believe will soon have a significant impact on the microwave field. ED-S is our cooperating-sponsor for this meeting. An arrangement to publish pertinent papers from both of these meetings and to bring them to the MTT-S membership is also being worked out. I wish to thank the ED-S Adcom and the leadership of the GaAs IC Symposium for their fine cooperation and consideration, and Barry Spielman, Walt Gelnovatch, and Paul Greiling of our Adcom for their massive efforts to bring about this important result.

This year we also initiated efforts to improve some of the operations of the Symposium and to

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OUTGOING PRESIDENT'S REPORT (from page 1)

provide options to the local Steering Committees, principally in the areas of registration and accounting. These duties have traditionally been the responsibility of the local Steering Committees, and have been carried out with great success. In recent years, however, the Symposium has been growing and has been putting an increasingly heavy burden on the volunteers. The Adcom Meetings and Symposia Committee, under the able guidance of Harlan Howe, has begun to examine the trade-offs involved in computer-aided registration and financial management. What we hope to accomplish is a smooth and trouble-free experience for the Symposium attendee, a reduced burden on the local volunteers, and prudent and efficient financial management for what has now become the major technical and trade event of our field. Hopefully, these efforts may bear fruit as early as the 1982 Symposium.

Another matter that has occupied us is the finances of MTT-S. During the October 1981 Adcom meeting, a full day was devoted to wide-ranging discussion regarding the matters described above, and about finances. I want to present to you, here, a look at our financial picture and share some thoughts regarding the use of our resources.

An important part of Adcom's responsibility is the management of MTT-S finances. At present we are in an enviable position among IEEE Societies. This has not always been the case and may not be so for all itme. At present, we can meet our expenses, explore new membership services, and still maintain a prudent reserve. A look at the 1981 budget (and actual results through 31 October 1981) will give us some insight into our situation and how we got here. The accompanying Table is a restatement of figures supplied by IEEE Headquarters. There are many pages of detailed computer print-out showing supporting data, monthly results, etc. However, the basic structure of our finances can be found in the summary statement.

MTT-S operates on a calendar year basis. For 1981 we expected a gross income of $359.5K and a gross expense of $315.3K leaving an expected surplus of $44.2K. At the end of 10 months, our income had already exceeded the budget expectation. Our expenses, while still not over budget, were running far ahead of the projection, with two light income but heavy spending months still to go. By years end, we will have more than doubled our budgeted surplus.

Let's examine the income and expense items. The big budget item is our periodicals, the Transactions and the Newsletter. Notice that these publishing activities run at a loss (compare actual income and expense). The primary reason that we can publish the Transactions is that non-member subscribers, i.e., company, university, and government libraries, pay a high fee to acquire the Transactions: ($142.8K/10 month). Voluntary page charges and charges for excess length papers brought in another $37.8K/10 month. It cost $175.4K to bring out 10 issues of the Transactions while we took in $180.6K. Thus, considering the Transactions as a separate entity, it is self supporting, and effectively supplied to the members at no cost. Without our corporate, government, and academic underwriters the cost of the Transactions to each member would be about $36/year. Our $8 annual dues is, in this sense, a bargain.

The other big line item is the IEEE MTT-S International Microwave Symposium. The local Symposium Steering Committee has its own budget (reviewed by Adcom) and makes its own decisions on what it wants to offer in the way of technical program, hospitality, the Awards Banquet, etc. Fees are set by estimating expenses and a break-even attendance figure. A major item for the Symposium is the income from the Microwave Exhibition which comes from the rental of exhibit space to interested companies. The income and expenses from the Symposium are reported to MTT-S and the surplus, if any, accrues to MTT-S. From the Table, note that the entire surplus for 1981 comprises the surplus from the Symposium (the Microwave Exhibition actually) and the interest income on our presently held reserves. Thus MTT-S is effectively a break-even operation. If we had no Exhibition and no interest on the reserves, we would have no annual surplus and, in fact, Symposium registration fees would probably be somewhat higher, as would our Society dues, in order to cover our actual expenses.

Now a word about reserves. Figure 1 shows the growth of our reserves for the past 4 years. During the early 70's, MTT-S had a severe budget problem. When I became Editor of the Transactions in 1971, I was faced with a reduction of allowable pages from 1200 in 1970 to 900 in 1971. (This year we are at 1400 pages). We even saved on small things such as supplying return postage for paper reviewers. We seriously debated reducing the quality of the Transactions by using author typed copy, as in the Symposium Digest. Finally, Adcom decided to permit a Microwave Exhibition to be a part of the annual Symposium. It is from this step that our healthy finances have come.

What then, is the state of our reserves? Our net worth on 1 January 1981 was $285.8K. Our projected net worth on 1 January 1982 is $342.3K which includes $22.4K in loans to Symposium Steering Committees for upcoming Symposia expenses. Thus, from one point of view, we now have about one year's operating expense in the bank. This is our reserve. Our surplus from the 1981 Symposium will add to it in 1982.

Since we have ongoing income (and expense items that nearly balance), we can now consider the prudent use of the resources represented by our reserves for the benefit of MTT-S members. We recently published a 28 year cumulative index of the MTT Transactions. We have initiated the Microwave and Millimeter Wave Monolithic Circuits Symposium. We have expanded the scope of our annual awards and prizes. We have kept our dues constant. We sponsor the National Lecturer. We

are cooperating in a film to explain microwaves and potential microwave hazards. We have established a collection of microwave artifacts which could ultimately lead to a Microwave Museum Exhibit. And we have begun serious and on-going discussions at Adcom on additional prudent use of our reserves.

Among possibilities suggested at the last Adcom meeting was the development of a scholarship program for graduate students in the microwave field. This generated considerable argument about the long-term stability of our field, the current manpower problem, low salaries for microwave engineers, the responsibility of the Society, and so on.

What I feel is needed now are some considered suggestions from you, the Society's members. Administrative Committees, over the years, have taken the responsibility of guiding and sustaining MTT in its role as the leading microwave technical forum in the world. We have recently been blessed with financial health as well. How we use this present resource can have an important influence on our future, and that of the microwave field as well. Give it some thought, make your ideas and feelings known through letters to the Newsletter, to me directly, or to any of your Adcom members.

In completing my term as President I should like to thank, publicly, the members of Adcom, past and present, for the hard work they have invested, and for the sincerity and professionalism they have displayed for the benefit of our Society. It has been a great honor and experience for me. I wish to extend my congratulations and best wishes to Dick Sparks on his election as President for 1982, to Charlie Rucker as Vice-President, and to our newly elected Adcom members. I'm sure they'll find their experiences well worth the effort.

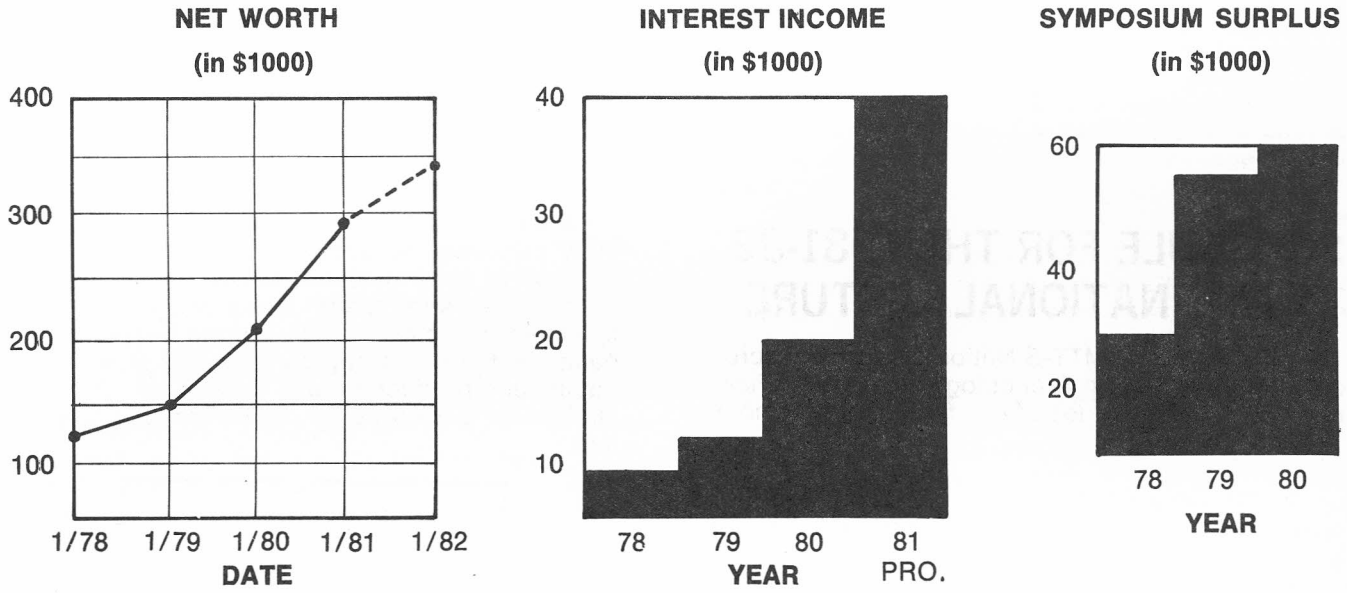


Figure 1. Net Worth, Interest Income, and Symposium Surplus Income

MTT OPERATING FINANCIAL STATEMENT FOR PERIOD ENDING 31 OCTOBER 1981

ITEM	INCOME			EXPENSE			NET SURPLUS (DEFICIT)		
	ANNUAL BUDGET	YEAR TO DATE		ANNUAL BUDGET	YEAR TO DATE		ANNUAL BUDGET	YEAR TO DATE	
		BUDGET	ACTUAL		BUDGET	ACTUAL		BUDGET	ACTUAL
Membership Fees	43.5	43.5	45.1				43.5	43.5	45.1
Interest Income	17.1	9.0	21.1				17.1	9.0	21.1
Periodicals	220.2	189.3	180.6	239.7	180.5	195.8	(19.5)	8.8	(15.2)
Non-Periodical Sales	7.7	5.8	9.0	25.0	8.4	21.3	(17.3)	(2.6)	(12.3)
Meetings	70.0	60.9	137.3	40.0	29.2	72.2	30.0	31.7	65.1
Administration				7.0	5.9	7.5	(7.0)	(5.9)	(7.5)
Other (Cumulative Rounding)	1.0	1.0	0.9	3.6	3.2	5.1	(2.6)	(2.2)	(4.2)
TOTAL	359.5	309.5	394.0	315.3	227.2	301.9	44.2	82.3	92.1

NEW PRESIDENT'S MESSAGE (from page 1)

Transmitter Department. In 1961, Dick joined the Emerson Research Laboratory, later the Amecom Division of Litton Industries, where he was responsible for the development of microwave acoustic delay lines and YIG devices.

For the past 15 years, Dick has been with the Missile Systems Division of Raytheon Corporation, Bedford, MA, having both staff and line management responsibilities in the Antenna/Microwave Systems Department. Currently he is a Member of the Technical Staff of the Radar Systems Laboratory.

Dick has been an active member of MTT-S since 1960. He served as an appointed member of the MTT-S Adcom for several years and was first elected to Adcom in 1974. Prior to his election as Vice President of Adcom in 1981, Dick was Chairman of the Membership Services Committee for 5 years.

SCHEDULE FOR THE 1981-82 MTT-S NATIONAL LECTURE

The 1981/1982 MTT-S National Lecture, Microdave Communication Technology, by Ferdo Ivanek, has been scheduled (as of the middle of November 1981) as follows:

Santa Clara Valley	Thursday, Jan. 14
Dallas	Wednesday, Jan. 20
Phoenix	Thursday, Jan. 21
San Diego	Thursday, Feb. 18
Florida/West Coast	Monday, Feb. 22
Canaveral	Thursday, Feb. 25
Baltimore	Monday, Mar. 15
Philadelphia	Tuesday, Mar. 16
Long Island	Wednesday, Mar. 17
Princeton	Thursday, Mar. 18
Milwaukee	Monday, Apr. 19
Atlanta	Tuesday, Apr. 20
Boston	Wednesday, Apr. 21
Schnectady	Thursday, Apr. 22
Chicago	Monday, May 24
Columbus	Tuesday, May 25
Ottawa	Wednesday, May 26
New Jersey Coast	Thursday, May 27

In addition, the lecture will be given in Syracuse, Los Angeles, and North Jersey. The MTT-S National Lecture will be presented at the International Circuits and Systems Conference in Rome, Italy and at the International Telecommunications Union Conference in Geneva, Switzerland.

MICROWAVE INDUSTRY FORECAST

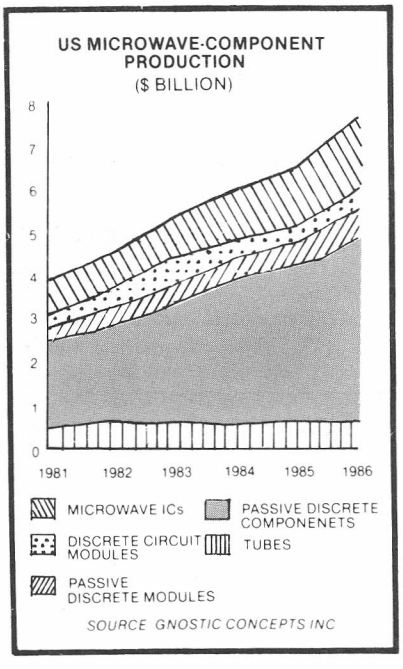
Led by 19.9% annual growth of microwave IC shipments, US microwave component production will surge at a 16.4% annual rate, rising from $2.89 billion in 1980 to $7.18 billion in 1986. Accounting for 16 per cent of the total component production in 1986, US manufacturers' microwave IC shipments will increase from $390 million in 1980 to $1.16 billion over the period, forecasts Gnostic Concepts, Inc.

Passive discrete components, however, including antennas, transmission lines, and connectors, will continue to constitute the majority of total US production, reaching a $4.39 billion level in 1986.

Constituting 63% of all US microwave component usage in 1980, government applications, primarily military, will retain their share during the period. Commercial communications systems will expand to a 15% share of the market, attaining a $1.05 billion figure by 1986.

As the FET share of microwave transistor production expands from 19% to 32% over the period, packaged FET shipments should grow at a 27.3% average annual rate.

Additionally, fiber optic technology will increasingly penetrate advanced equipment design, particularly in radar systems. Driven by missile-guidance radar and space communications needs, millimeter-wave devices will be the fastest growing equipment area. A rapidly growing share of US equipment production will consist of IC module subsystem packages for receivers and transmitters.



Reprinted, with minor changes, from the November 11, 1981 issue of ELECTRONIC DESIGN NEWS.

NEW ADCOM MEMBERS

At the October 1981 meeting of the Administrative Committee of the Microwave Theory and Techniques Society, new blood was once again transfused into Adcom. Two of the six elected members who will hold office from 1982 through 1985 had never previously been elected to Adcom. They are Dr. Tatsuo Itoh of the University of Texas at Austin and Mr. James M. Roe of the McDonnell Douglas Corp., St. Louis, MO. It is with great pleasure that we welcome them to the MTT-S Adcom.

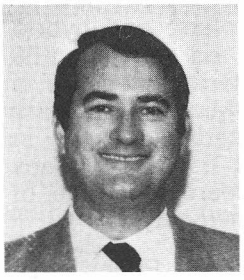
Tatsuo Itoh

Tatsuo Itoh (S'69 - M'69 -SM '74) was born in Tokyo, Japan, on May 5, 1940. He received the B.S. and M.S. degrees from the Yokohama National University, Yokohama, Japan, in 1964 and 1966, respectively, and the Ph.D. degree in electrical engineering from the University of Illinois, Urbana, in 1969.

From 1966 to 1977, he was with the Electrical Engineering Department of the University of Illinois as an Assistant Professor. During 1972-1973, he was appointed as a Fellow of the Center for Advanced Study at the same university. From 1976 to 1977, he was a Senior Research Engineer at the Radio Physics Laboratory, SRI International, Menlo Park, CA. He was an Associate Professor at the University of Kentucky, Lexington, KY from 1977 to 1978 and in July 1978 he joined the faculty at the University of Texas in Austin, where he is now a Professor of Electrical Engineering and Director of the Microwave Laboratory.

In addition to being a Senior Member of the IEEE, Dr. Itoh is a member of the IECE of Japan, Commissions B and C of USNC/URSI, and Sigma Xi. He served as Guest Editor of the September 1981 Special Issue of the MTT Transactions on Open Guided Wave Structures and is currently Chairman of the MTT-S Technical Committee on Microwave Field Theory (MTT-15).

James M. Roe



James M. Roe (M'69 - SM), was born in Little Rock, Arkansas on February 27, 1943. He received the B.S. degree in physics from the University of Oklahoma, Norman, OK, in 1964 and the M.S. degree in electrical engineering from Washington University, St. Louis, MO, in 1969.

He joined the U. S. Naval Weapons Laboratory, Dahlgren, VA, in 1964 where he worked on electromagnetic compatibility problems. Since 1965, Mr. Roe has been with the McDonnell Douglas Corp. in St. Louis, MO, where he has worked on millimeter-wave frequency multipliers, IMPATT, Gunn, and LSA oscillators, and high power RF effects on semiconductor devices. He is currently Chief of the Electromagnetics Section.

MTT-S ADCOM SECRETARY

Dr. George Jerinic of the Raytheon Research Division, Waltham, Massachusetts, has been elected to the position of Secretary/Treasurer of the Microwave Theory and Techniques Society for 1982.

Dr. Jerinic received the B.S., M.S., and Ph.D. degrees in electrical engineering from the University of Wisconsin in Madison in 1963, 1966, and 1971, respectively. His Ph.D. research, in the area of IMPATT diode modeling for solid-state power generation, was underwritten by a Raytheon scholarship.

He joined the Raytheon Missile Systems Division in 1968, where he designed microwave components and subsystems including missile seekers, antennas, and IMPATT diode transmitters. Since late 1980, Dr. Jerinic has been with the Raytheon Research Division, where he is pursuing research and development of active microwave circuits.

Dr. Jerinic is a member of Sigma Xi, Tau Beta Pi, Eta Kappa Nu, Phi Kappa Phi, Phi Eta Sigma, and the IEEE. He has been a member of the MTT-S since 1962.

SYMPOSIUM WORKSHOP

Sponsored by the IEEE MTT-S Technical Committee MTT-10 and the IEEE Committee on Man and Radiation (COMAR), a one-day workshop on Medical Applications of Electromagnetic Energy is planned for Monday, June 14, 1982, the day preceding the 1982 IEEE MTT-S International Microwave Symposium. The workshop will be held at the site of the symposium, the Hyatt Regency Hotel in Dallas, Texas.

The morning will be devoted to invited papers and a panel discussion; the afternoon to contributed presentations. Contributed papers are solicited on hypothermia, radiometry, blood and organ thawing, NMR and electromagnetic imaging, etc.

Prospective authors are requested to submit five copies of both a 35-word abstract and a 500 to 1000 word summary (up to six illustrations), clearly explaining their contribution, its originality and relative importance by January 8, 1982.

Submission should be addressed to either Dr. J. Gordon Short, BSD Medical Corporation, 420 Chipeta Way, Salt Lake City, Utah 84108, (801) 582-5550 or Dr. Gideon Kantor, HFX-240, Department of Health and Human Services, Public Health Service, Food and Drug Administration, 12721 Twinbrook Parkway, Rockville, MD 20857, (301) 443-3840, the workshop co-chairman. Additional information is obtainable from either individual.

MTT AWARDS

by Hal Sobol

The Awards Committee of the Microwave Theory and Technique Society is pleased to report that the MTT-S Adcom at its October 1981 meeting approved the Society's major awards for 1982. This year, there were two recipients of the Microwave Career Award.

The 1982 Microwave Career Awards have been bestowed upon **Dr. Arthur A. Oliner** of the Polytechnic Institute of New York and **Dr. Akio Matsumoto** of the Institute of Technology, Kitami, Japan "for a career of meritorious achievement and outstanding technical contribution in the field of microwave theory and techniques."

Arthur A. Oliner (M'47 - SM'52 - F'61) was born in Shanghai, China on March 5, 1921. He received the B.A. degree from Brooklyn College, Brooklyn, NY, and the Ph.D. degree from Cornell University, Ithaca, NY, both in Physics, in 1941 and 1946, respectively.

Dr. Oliner joined the Microwave Research Institute of the Polytechnic Institute of Brooklyn in 1946 and was made Professor in 1957. From 1966 to 1971 he was Head of the Electrophysics Department; he then became Head of the combined Department of Electrical Engineering and Electrophysics from 1971 through 1974. He is presently the Director of the Microwave Research Institute; a position he has held since 1967.

Dr. Oliner has been engaged in research in a wide variety of topics in the microwave field, including network representations of microwave structures, precision measurement methods, periodic structure theory, obstacles in waveguides, Cerenkov radiation, plasmas, acoustic waves, optical phenomena, and guiding and radiating structures for the millimeter and near-millimeter ranges. He is the author or co-author of over 100 papers and co-author or co-editor of three books. In addition, his contributions have resulted in over 120 technical presentations. He has served on the Editorial Boards of Electronic Letters and the Advances in Microwaves Series of books published by Academic Press.

Dr. Oliner is a Fellow of the AAS, the British IEE, and the IEEE. He served as the First MTT-S National Lecturer in 1967. He was named an Outstanding Educator in America in 1973, and in 1974 he received a Sigma Xi Citation for Distinguished Research. He has received prizes for two of his papers: the IEEE Microwave Prize in 1967 and the British IEE Institution Premium in 1964. Dr. Oliner was Chairman of the MTT Adcom in 1959-60 and a member of Adcom from 1955 to 1971. In 1977, he was elected an Honorary Life Member of the MTT Society.

Akio Matsumoto (SM'62 - F'74) was born in Hokkaido, Japan on October 13, 1908. He received the B.E. degree from Hokkaido University, Sapporo, Hokkaido, Japan in 1931 and the Ph.D. degree in engineering from Tohoku University, Sendai, Japan, in 1942.

From 1931 to 1935 and from 1938 to 1939, he was with the Ministry of Communications in Japan. From 1935 to 1938, Dr. Matsumoto was employed by the Furukawa Electric Co. From 1939 to 1947 he was with the International Telecommunications Company (Kokusai Denki Tsushin Company), as its Chief Engineer and later as the Director of the Research Laboratory. Dr. Matsumoto was Professor at the Research Institute for Applied Electricity, Hokkaido University from 1947 to 1970 and its Director from 1963 to 1970. From 1961 to 1962 he was a Visiting Research Associate at the Polytechnic Institute of Brooklyn, Brooklyn, NY, where he performed research on microwave networks. From 1970 to 1978, he was President of Kitami Institute of Technology, Kitami, Hokkaido, Japan. Dr. Motsumoto is currently Professor Emeritus and President Emeritus of Kitami Institute of Technology.

Dr. Matsumoto has made outstanding contributions in the field of microwave engineering, especially in electrical networks and microwave filters. His contributions on the theory and design of distributed-constant networks and filters have included synthesis of lossless multiport networks with multiwire lines, impedance transformers, baluns, power dividers, directional couplers, and hybrid rings. Dr. Matsumoto has published more than 30 papers and has had five patents awarded. He is the Editor and chief author of "Microwave Filters and Circuits," published by Academic Press in 1970. He has also edited and published many "Monograph Series of the Research Institute of Applied Electricity, Hokkaido University."

Dr. Matsumoto was awarded the Paper Prize of the IECE of Japan in 1941 and the Culture Prize of the Hokkaido Newspaper Company for his contributions to science and technology in 1967. Akio Matsumoto received the Medal of Honor of the IECE of Japan in 1972, and in 1930 was awarded the 2nd Grade National Medal by the Emperor of Japan. He has served on the Japanese Governmental Committee of Radio Technology since 1949.

Charles R. Boyd, Jr., (S'52 - M'58 - SM'63) has been selected as the recipient of the **1982 Microwave Applications Award** "for advancing the state-of-the-art of microwave ferrite devices and the application of these devices to ferrite control elements." Dr. Boyd is cited for having made many significant device contributions that have led to the wide application of ferrite devices in microwave systems. His major contribution has been the development of practical microwave ferrite phase-shifters for use in large, fast-scanning arrays. This contribution includes the development of the dual-mode phase-shifter and the discovery and development of the rotary-field phase-shifter. His contributions have resulted in significant improvements in the performance to cost ratio and the size and weight of ferrite phase-shifters, making possible the practical realization of many of the phased array radar systems that are currently operational.

Dr. Boyd was born in Pittsburgh, PA on October 21, 1932. He received the B.S.E.E. degree from Carnegie Institute of Technology, Pittsburgh, PA in 1953 and the M.E.E. and Ph.D. degrees in electrical engineering from Syracuse University, Syracuse, NY in 1962 and 1964, respectively.

From 1953 to 1956 he was employed by Westinghouse Electric Co. From 1956 to 1961 and from 1962 to 1965, Dr. Boyd was with General Electric Co. in Utica, NY and Syracuse, NY. In 1965, he joined Rantec Corporation, Calabasas, CA where he managed an engineering group engaged in development and design of microwave solid-state components. Dr. Boyd was on the faculty of the University of California, Los Angeles, from 1967 to 1970. He is a co-founder of Microwave Applications Group, Santa Maria, CA and serves as its President and Technical Director.

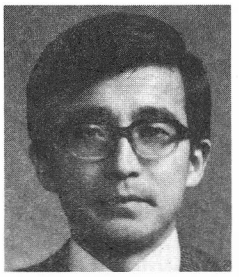
Dr. Boyd is a member of Eta Kappa Nu and is Chairman of MTT-S Technical Committee MTT-13 on Microwave Ferrites.

The Microwave Prize is awarded annually to the paper making the most significant contribution in the field of interest to the Microwave Theory and Techniques Society among those published in an official IEEE publication during the year ending June 30.

The 1982 Microwave Prize has been awarded to **Kuroda's Identity for Mixed Lumped and Distributed Circuits and Their Application to Nonuniform Transmission Lines,** by Mr. Kunikatsu Kobayashi, Dr. Yoshiaki Nemoto, and Dr. Risaburo Sato. Their paper appeared in the February 1981 issue of the IEEE Transactions on Microwave Theory and Techniques (MTT-29, Number 2, pp. 81-86).

This paper develops an extension of Kuroda's identities, which are used for analysis and synthesis of distributed line circuits, to mixed lumped and distributed circuits. It is shown that circuits consisting of cascade connections of lumped reactances and uniform lines are equivalent to circuits consisting of a cascade of nonuniform lines, lumped reactances and ideal transformers. By using these equivalent transformations, network functions of certain nonuniform lines which previously could not be derived in exact form can now be found exactly. Characteristics of particular nonuniform lines have been shown to yield broader band performance than exponential lines. This work should have a significant impact on microstrip or stripline circuits where nonuniform lines can be fabricated very simply.

Kunikatsu Kobayashi was born in Yamagata, Japan on December 22, 1943. He received the B.E. and M.E. degrees from Yamagata University, Yonezawa, Japan in 1966 and 1971, respectively.

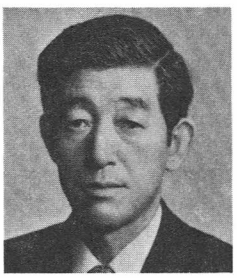


From 1971 to 1975, he was a Research Associate with the Faculty of Engineering, Yamagata University and in 1975 he became a Lecturer at the same university. Mr. Kobayashi has been engaged in research in mixed lumped and distributed networks. He is a member of the IECE of Japan.

Yoshiaki Nemoto (S'72 - M'73) was born in Sendai City, Miyagiken, Japan on December 2, 1945. He received the B.E., M.E., and Ph.D. degrees from Tohoku University, Sendai, Japan in 1968, 1970, and 1973, respectively.

Since 1973, Dr. Nemoto has been a Research Associate with the Faculty of Engineering, Tohoku University. He has been engaged in research in the areas of distributed networks and satellite computer networks. Dr. Nemoto is a member of the IECE of Japan.

Risaburo Sato (SM'62 - F'77) was born in Furukawa City, Miyagiken, Japan on September 23, 1921. He received the B.E. and Ph.D. degrees from Tohoku University, Sendai, Japan in 1944 and 1952, respectively.



From 1949 to 1961, he was an Assistant Professor at Tohoku University, and in 1961 he became a Professor in the Department of Electrical Communications at the same university. Since 1973 he

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has been a Professor in the Department of Information Science at Tohoku University. From 1969 to 1970, he was an International Research Fellow at Stanford Research Institute, Menlo Park, CA.

His research activities include studies of multiconductor and distributed transmission circuits and electromagnetic compatibility. Dr. Sato was Vice President of the IECE of Japan from 1974 to 1976 and has been a member of the Science Council of Japan since 1978. He is a member of the IECE of Japan, the IEE of Japan, and the Information Processing Society of Japan.

In 1980, Dr. Sato received the Paper Award from the Institute of Electronics and Communication Engineers of Japan.

CONGRATULATIONS TO ALL!

NEW ADCOM VICE PRESIDENT

At the October 1981 MTT-S Adcom meeting, Charlie Rucker was elected Vice President of Adcom for 1982.

Charles T. Rucker (S'56 - M'69 - SM'79) was born in Augusta, GA on June 30, 1931. He received the B.E.E. degree from Georgia Institute of Technology, Atlanta, in 1957 and has completed additional studies in mathematics and microwaves through the Extension Division of the University of Florida, Gainesville.

From 1957 to 1971 he was employed by the Sperry Microwave Electronics Division of Sperry Rand where he progressed to the level of Engineering Staff Consultant. His responsibilities during this period included development of ferrite components, parametric amplifiers, semiconductor switching components, and solid-state signal sources and amplifiers.

In 1971, Charlie transferred to the Sperry Electronic Tube Division where he continued work on various active solid-state devices including Gunn, BARITT, and TRAPATT, and on unique power combining techniques for such devices.

In 1973, Mr. Rucker joined the staff of the Engineering Experimental Station, Georgia Institute of Technology, Atlanta, where he is presently a Senior Research Engineer in the Solid-State Sciences Division of the Electromagnetics Laboratory. His duties presently include responsibilities for various microwave solid-state research tasks with emphasis on power combining at the device-chip level.

Charlie has four patents granted or pending and has authored or co-authored numerous papers and reports in the area of microwave solid-state circuits. He served as co-vice chairman for the 1974 IEEE MTT-S International Microwave Symposium and as Guest Editor for the December 1974 IEEE Transactions on Microwave Theory and Techniques.

Mr. Rucker is a member of Eta Kappa Nu.

NEW IEEE AWARD HONORS FAYE YOUNG

The IEEE's U.S. Activities Board (USAB) has approved in principle the establishment of the Faye Young Citation of Honor. The award recognizes the many contributions to the IEEE made by pension expert Faye L. Young, who died unexpectedly on May 14.

Mrs. Young was the wife of former IEEE President and MTT-S President Leo Young. She co-authored, with Dr. Young, the book Everything You Should Know About Pension Plans and answered the questions of the IEEE's members in a series of columns on pensions in the IEEE INSTITUTE.

The new USAB award is to be given "for outstanding contributions in the area of pension improvements benefiting the members of the IEEE." One award is to be made annually, if there is a suitable candidate. For nomination information, contact the IEEE Washington Office, 1111 19th Street, N.W., Washington, D.C. 20036; phone (202) 785-0017.

NBS GRANTS

The National Bureau of Standards will award $30,000 to as many as four successful applicants, to support precision measurements of physical quantities, or the determination of fundamental constants.

The program, which is co-sponsored by the National Science Foundation, isn't intended to fund new research startups. It will, however, give a research project supported by other sources a last necessary boost.

Scientists and academians are the usual recipients of the grants, but the only real proviso is that the project be aimed at extending measurement science. Each grant runs for one year and can be renewed twice, for a total of three years.

Applicants should prepare a five-page, double-spaced summary of the project including its objectives, technical approach, the amount and sources of other funding, a biography of the researcher, and the researcher's significant publications. Ten copies of this summary should be submitted by February 1, 1982 to Dr. Barry Taylor, Bldg. 220, Rm. B258, National Bureau of Standards, Washington, DC 20234.

Four to eight applicants will be selected on the basis of the summaries, and will be asked to submit full proposals. The final grants will be announced by August 1, 1982, and will begin in October.

1982/83 MTT-S NATIONAL LECTURER

Dr. Joseph A. Giordmaine, the Director of the Solid State Electronics Research Laboratory at Bell Telephone Laboratories, Murray Hill, N.J., has been selected as the Microwave Theory and Techniques Society National Lecturer for 1982-1983. The theme of his presentation will be Integrated Optics. A synopsis of his lecture follows.

Integrated Optics

Lightwave transmission is already in place in many intercity, metropolitan, and on-premises data communication applications. Optical circuits today are almost entirely combinations of discrete components—lasers, LEDs, fibers, and photodetectors —comparable to early electronic circuits of discrete transistors, capacitors and resistors. The emerging technology of integrated optics, providing combinations of optical components interconnected by waveguides on thin film microcircuits, will allow for the first time the capability of signal processing in photonic form without intermediate conversion to electronic form as required at present. This talk will explain the techniques for interconnecting optical components, the fabrication processes for hybrid and monolithic integrated optical circuits, and the principles of electrooptic waveguide switching. The lecture will present some highlights of the achievements and most recent work in integrated optics including laser and LED arrays, optical switching matrices, integrated detectors for multi-wavelength channels, wavelength multiplexing filters, high speed integrated laser modulators, integrated optical repeater structures, and the integration of optical and electronic components. In conclusion, approaches to optical gates and logic and the prospects for on-chip digital signal processing will be discussed.

Dr. Joseph A. Giordmaine

Dr. Giordmaine (SM'70-F'78) received his Ph.D. in physics from Columbia University, New York, NY, taught for two years at the same university, and joined Bell Telephone Laboratories as a Member of the Technical Staff in 1961.

His research has been on lasers, quantum electronics, and nonlinear optics. His contributions to the field include the optical parametric oscillator and the introduction of new optical correlation techniques. At Bell Laboratories, Dr. Giordmaine has been the Head of the Solid State Spectroscopy Research Department and Director of the Chemical Physics Research Laboratory. He is currently Director of the Solid State Electronics Research Laboratory.

Dr. Giordmaine has been a member of the IEEE Joint Council on Quantum Electronics since 1974 and has been involved with numerous International Quantum Electronics Conferences including Chairman of the Program Committee (1974) and General Chairman (1978). He has also served the Conference on Laser Engineering and Applications in various capacities.

He is a Fellow of the IEEE, the American Physical Society, the Optical Society of America, and the New York Academy of Sciences. He is also a member of the European Physical Society, the American Astronomical Society, and Sigma Xi.

FELLOWSHIP AVAILABLE

The Marconi International Fellowship invites nomination of individuals whose work in the fields of communication science and technology exemplifies the technical creativity and concern for human welfare of Guglielmo Marconi.

The ninth Fellowship award of $35,000 will be presented in 1983. Deadline for nominations is April 15, 1982. Final selection of the recipient will be made in October 1982.

The Marconi Council wishes the Fellowship to be anticipatory rather than a retrospective award. The Fellowship Selection Committee will give special attention to the identification of emerging fields of communications science and technology that are likely to be in the forefront of future applications for the benefit of society.

Address all inquiries regarding the Fellowship to Dr. Walter Orr Roberts, Marconi International Fellowship, Academy Conservatory, 970 Aurora, Campus Box 64, Boulder, Colorado 80309, telephone (303) 492-7436.

NEED CONGRESSIONAL ACTION?

Want to know to whom to write to support or protest legislative initiatives in Washington?

Congressional Action Kits can help IEEE members become active in the Institute's efforts to contact Congress on critical professional or technical issues. The kits contain maps showing the correlation among the six IEEE U.S. Regions, U.S. Congressional districts, and state and county lines.

The kits are available on request from the IEEE Washington Office, 1111 19th Street, N.W., Washington, D.C. 20036.

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The kits are available on request from the IEEE Washington Office, 1111 19th Street, N.W., Washington, D.C. 20036.

FELLOW NOMINATIONS

The IEEE bylaws define the Fellow grade as one of unusual professional distinction. It is conferred only by invitation of the IEEE Board of Directors upon a person of outstanding qualifications, extraordinary experience, and individual contributions in the fields of electrical engineering, electronics, computer engineering and sciences, allied branches of engineering, and related arts and sciences. A nominee must be a Senior Member of the Institute and have been a member in any grade for at least five years prior to January 1 of the election year.

The deadline for Fellow grade nominations to be considered by the Fellow Committee is April 30, 1982. Although the deadline seems far off, remember that the process requires considerable time, corresponding with prospective sponsors, assembling material, and approaching Section and Society committees.

The first step is to secure a kit of forms. The nomination form has been revised; only the new form having the year code "1982" will be accepted by the Fellow Committee. The nomination kit may be used for new submissions as well as for re-submissions. The new kits are available upon request from the Staff Secretary, IEEE Fellow Committee, 345 East 47th Street, New York, NY 10017, (212) 644-7750, or from Dr. Harold Sobol, Rockwell International, M/S 402-100, P.O. Box 10462, Dallas, TX 75207, (214) 996-5881.

The kits also include detailed guidelines to assist the nominator in the effective preparation of the required forms. When completed, all of the information should be returned to the IEEE Fellow Committee and a copy sent to Hal Sobol. Remember, nominations are due April 30, 1982.

IEEE FELLOW LIST

There are currently 241 members of the Microwave Theory and Techniques Society who have attained the grade of Fellow of the IEEE. Unfortunately, space does not permit publishing their affiliations and telephone numbers. Alphabetically, they are:

S. F. Adam
R. J. Adams
M. Akiyama
A. Alford
J. L. Allen
D. A. Alsberg
H. A. Altschuler
J. M. Anderson
D. J. Angelakos
F. R. Arams
E. A. Ash
M. P. Bachynski
A. D. Ballato
J. W. Bandler
F. S. Barnes
R. H. T. Bates
A. C. Beck
A. H. W. Beck
N. A. Begovich
V. Belevitch
P. A. Bello
E. F. Belohoubek
A. B. Bereskin
J. R. Biard
E. F. Bolinger
E. M. Bradburd
F. A. Brand
A. D. Bresler
W. B. Bridges
J. Brown
W. C. Brown
J. H. Bryant
H. J. Carlin
M. Caulton
W. S. C. Chang
K. M. Chen
R. A. Chipman
M. Chodorow
P. J. B. Clarricoats
A. Clavin
M. Cohn
S. B. Cohn
P. D. Coleman
R. E. Collin
A. A. Collins
J. H. Collins
H. W. Cooper
H. V. Cottony
E. G. Cristal
J. A. Cronvich
A. L. Cullen
T. F. Curry
C. C. Cutler
L. J. Cutrona
R. W. Damon
G. A. Deschamps
L. E. Dickens
S. H. M. Dodington
M. R. Donaldson
A. A. Dougal
R. H. Duhamel
J. W. Duncan
J. O. Dyson
L. F. Eastman
H. A. Ecker
W. A. Edson
R. M. Emberson
M. K. Enns
R. G. Fellers
A. Fong
A. G. Fox
C. L. Frederick, Sr.
O. P. Gandhi
R. V. Garver
A. Gelb
W. J. Getsinger
A. B. Giordano
J. E. Goell
J. Granlund
P. A. Grivet
R. W. Grow
A. W. Guy
G. I. Haddad
M. Hamid
P. W. Hannan
R. C. Hansen
C. O. Hardin
R. F. Harrington
J. H. Harris
G. R. Harrison
G. S. Heller
R. E. Henning
W. D. Hershberger
A. Hessel
R. E. Hiatt
M. E. Hines
H. Howe, Jr.
M. Ibuka
A. Ishimaru
H. Jacobs
R. C. Johnson
E. M. Jones
H. S. Jones, Jr.
W. K. Kahn
D. D. King
R. W. P. King
W. Kleen
R. H. Knerr
H. J. Kuno
K. Kurokawa
E. Labin
P. D. Lacy
R. E. Lafferty
P. M. Lapostolle
V. Learned
M. T. Lebenbaum
R. Levy
L. Lewin
C. A. Liechti
A. W. Love
J. A .M. Lyon
A. B. MacNee
R. J. Mailloux
N. Marchand
A. Matsumoto
G. L. Matthaei
P. E. Mayes
K. K. Mei
T. G. Mihran
S. E. Miller
F. Minozuma
R. Mittra
S. Miyairi
K. Morita
A. E-S. Mostafa
G. Mourier
C. A. Muller
J. H. Mulligan, Jr.
W. W. Mumford
Y. Mushiake
K. Ohashi
S. Okamura
H. H. Okean
S. Okwit
A. A. Oliner
M. Olyphant, Jr.
Y. Oono
J. M. Osepchuk
D. T. Paris
W. T. Patton
P. Penfield, Jr.
L. Peters, Jr.
J. E. Pippin
L. Pollack
W. L. Pritchard
O. T. Purl
J. F. Ramsey
H. J. Reich

I. Reingold
D. K. Reynolds
J. D. Rhodes
H. J. Riblet
L. J. Ricardi
D. Richman
R. A. Rivers
P. N. Robson
G. P. Rodrigue
L. Rohde
H. A. Rosen
F. J. Rosenbaum
W. Rotman
E. Roubine
J. E. Rowe
R. M. Ryder
T. S. Saad
R. Saal
C. T. Sah
S. Saito
E. W. Sard
R. Sato
A. C. Schell
E. F. Schloemann
R. J. Schmidt-Tiedemann
M. V. Schneider
M. R. Schroeder
H. Schutz
H. Seidel
S. Sensiper
G. Shapiro
W. M. Sharpless
W. C. Shen
J. E. Shepherd
N. H. Shepherd
W. Sichak
A. J. Simmons
D. B. Sinclair
G. Sinclair
P. H. Smith
S. T. Smith
A. K. Smolinski
H. Sobol
F. Sterzer
G. Strull
M. Strutt
Y. Suematsu
R. S. Symons
C-T Tai
T. Tamir
I. Tanaka
J. J. Taub
T. E. Tice
F. J. Tischer
K. Tomiyasu
E. N. Torgow
C. T. Townes
M. Uenohara
A. Uhlir, Jr.
F. T. Ulaby
T. Umezu
H. G. Unger
J. G. Van Bladel
D. L. Waidelich
J. R. Wait
C. H. Walter
C. C. Wang
S. Wang
H. E. Webber
E. Weber
S. Weinreb
B. O. Weinschel
M. T. Weiss
J. C. Weldon
H. A. Wheeler
J. R. Whinnery
C. E. White
E. L. White
J. F. White
J. C. Wiltse, Jr.
E. A. Wolff
L. Young
L. T. Zitelli

WANT TO VISIT CHINA?

IEEE members who wish to be considered as potential delegates to the Chinese Institute of Electronics, visiting the People's Republic of China, in the latter part of 1982, should send letters indicating their interest, accompanied by resumes, to their Society or Council President by February 1, 1982.

Copies should also be sent to Dr. Stanley Winkler, Chairman, Transnational Relations Committee, c/o Mrs. Audrey R. Bickel, TRC Administrator, IEEE Headquarters, 345 East 47th Street, New York, NY 10017.

The TRC bases its selections on the recommendations from the Presidents. Funding is the responsibility of the individual delegate. In the past, spouses have been invited to join the delegation.

1982 IEEE MICROWAVE AND MILLIMETER WAVE MONOLITHIC CIRCUITS SYMPOSIUM

Sponsored by MTT-S and cooperatively sponsored by ED-S, the **1982 IEEE Microwave and Millimeter Wave Monolithic Circuits Symposium** will be held in Dallas, Texas at the Hyatt Regency Hotel on June 18, 1982, the day after the conclusion of the 1982 IEEE MTT-S International Microwave Symposium, which will be held in the same location. This symposium will be held annually at a time adjacent to the IEEE MTT-S International Microwave Symposium.

As its name implies, the symposium is concerned with the fields of microwaves and millimeter-waves where technology is employed to process circuits and devices on semiconductor substrates. For this symposium, microwaves and millimeter-waves are intended to encompass technologies with current or potential applicability to the 1 GHz to 300 GHz frequency range.

A Symposium Digest, separate from the Digest of Technical Papers for the IEEE MTT-S International Microwave Symposium, will be published. The program listing, however, will be included in the Advance Program for the Microwave Symposium.

MILLIMETER WAVE COMMUNICATIONS

A special issue of the IEEE Transactions on Communications will be dedicated to all aspects of millimeter wave (at least 20 GHz) communications. The issue is currently scheduled for late 1983 publication and will contain papers dealing with applications to satellite or line-of-sight communications, spread spectrum communications, radar applications, propagation characteristics and measurements, systems analysis and simulations, modulator and demodulator implementations, devices, and systems.

Prospective authors should prepare a 500-word summary of their proposed paper by March 1, 1982, and forward it to one of the editors listed below:

Roger E. Ziemer, Electrical Engineering Dept., University of Missouri-Rolla, Rolla, MO 65401

William H. Tranter, Electrical Engineering Dept., University of Missouri-Rolla, Rolla, MO 65401

Carl R. Ryan, Motorola Government Electronics Division, Communications Research Facility, P.O. Box 1295, Gilbert, AZ 85234

Authors whose papers are selected for possible publication in the special issue will be notified by May 1, 1982 and asked to submit their complete manuscript by June 1, 1982.

UTAH CHAPTER ESTABLISHED

A Joint Chapter of the Microwave Theory and Techniques/Antennas and Propagation/Electron Devices Societies has been established in the Utah Section of the IEEE.

The first Chairman of this new Chapter is Dr. Om P. Gandhi, Chairman of MTT-10 Technical Committee on Microwave Biological Effects and the MTT-S representative to COMAR (Committee on Man and Radiation). His address and telephone number are: Department of Electrical Engineering, University of Utah, Salt Lake City, UT 84112, (201) 581-7743.

ADCOM HIGHLIGHTS

by R. A. Sparks

The Fall meeting of Adcom was held at the Hyatt Regency Hotel in Baltimore, MD on 19, 20, and 21 October 1981, the planned site of the 1986 IEEE MTT-S International Microwave Symposium. The regular meeting session began at 7:45 PM and, after adopting the agenda, proceeded with the election of Adcom members and new officers for calendar year 1982. The election results were:

President:	Dick Sparks
Vice President:	Charles Rucker
3-year Adcom Members:	J. Degenford
	R. Hicks
	H. Howe, Jr.
	T. Itoh (New)
	S. March
	J. Roe (New)

Bert Berson was also elected to Adcom for a 1-year term to fill the vacancy created by the resignation of Lamar Allen.

The Adcom voted to contribute a sum of money toward a memorial fund which has been established to honor Faye Young, wife of Leo Young, former MTT-S President and IEEE President. (See New IEEE Award Honors Faye Young elsewhere in this issue — Ed.)

A motion was adopted to make the historical exhibit a budget item in all future symposia; all costs for the 1981 display were accepted for payment. A special certificate of recognition was approved for presentation to Bob Puttre for his concept of the MTT-S logo that is widely used on the Society's publications. A motion was also adopted for the MTT-S to serve as a cooperating sponsor of the 1982 Military Microwave Conference and Exhibition to be held in London, England. The Monday evening session recessed at 11:00 PM.

Upon reconvening at 8:15 AM on Tuesday, the bulk of the day's business was set aside to address two matters pertaining to long range planning. The role of professional management in the operation of the annual Symposium was the first item that occupied a major part of the morning with presentations by Horizon House and LRW Associates. Items discussed included the handling of registration, digest printing, advance program distribution, and social programs. Cost estimates for performing these additional services were given by both companies. IEEE Executive Director, Eric Herz, provided some illuminating insights into the operation of symposia. Follow-up action was assigned to H. Howe's Meetings and Symposia Committee to report on recommendations at the next Adcom meeting. This standing committee will be strengthened with additional members to support its added future responsibilities.

The second major long range planning item addressed was the Society's financial surplus. Subsequent meetings will review our income and expenses in greater detail.

A brief report of the Ad Hoc Education Committee covered interaction with schools, colleges, and universities, as well as support for continuing education of our members. The Membership Services Committee was charged with the responsibility of developing a proposal for dispensing grants of money to each MTT-S Chapter to support its technical activities. The related matter of scholarships to microwave engineers and/or students was presented through submittal of a detailed report by the Ad Hoc Scholarship Committee. Specific recommendations and guidelines were given for implementing an MTT-S scholarship program. Final action will be taken at the January Adcom meeting in order to award the first grants in time for the September 1983 school year. The breadth and overlap of the education and scholarship issues led to a motion that was adopted to combine the study efforts under one committee that will be chaired by Fred Rosenbaum. **Continued inputs from all interested members are solicited until these matters are finally resolved.**

On Wednesday morning, business returned to the formal meeting agenda. A new Chapter has been formed in Salt Lake City, Utah with Dr. Om Gandhi serving as Interim Chairman. ARFTG's affiliation with MTT-S has been formalized; they will function as Technical Committee MTT-12. The future symposia reports were accepted with Baltimore approved as the 1986 host city.

The National Lecturer for 1981-82 was selected to be Dr. J. A. Giordmaine, who will talk on Integrated Optics. The proposal to video teleconference Ferdo Ivanek's Microwave Communication Technology lecture to ten Chapters in the Eastern United States was discussed but a decision to proceed was postponed until the January meeting.

A number of important new tasks have been noted in these highlights which will require further discussion and decision making during subsequent Adcom meetings. The issues of the 80's appear exciting and critical to the direction that our Society will take in the future.

CALL FOR NOMINATIONS TO ADMINISTRATIVE COMMITTEE

by R. B. Hicks

All MTT-S members should note that they may assist the Nominations Subcommittee in obtaining nominees for the 1983 Adcom election. MTT members may enter an MTT Society member's name as a nominee by mailing a petition for that nominee with 25 Society members' signatures to me or the Adcom President prior to 1 September 1982.

The bylaws of MTT-S state that the Nominations Subcommittee should select a slate of at least two members of the Society for each vacancy which occurs on the Administrative Committee on January 1 of the next year. Each nominee is contacted to assure his willingness to serve and his ability to attend Adcom meetings. Nominees by the Nominations Subcommittee are selected by the principles of efficiency, geographical, and organization distribution. Elections of the nominees are made by members of the Adcom not eligible for re-election at that time.

This year we will elect six (6) members for a term of three years. The holdover members will be geographically divided as follows: East (5), Central (4), and West (3).

Incumbents who may stand for re-election are geographically located as follows: East (2) and West (3).

It may also be of interest to consider that the present Adcom is composed of fourteen (14) members from industry, two (2) members from universities and non-profit organizations and two (2) from government agencies. Members whose terms expire are distributed as follows: industry (4), universities and non-profit organizations (1) and government agencies (1).

MTT-S CHAPTER AWARD

The Administrative Committee of the MTT Society has initiated an Annual Chapter Membership Recognition for the Chapter with the greatest MTT-S membership increase on a percentage basis. The award will consist of $200 plus a plaque to be presented to the Chapter Chairman or his designated representative at the IEEE MTT-S International Microwave Symposium banquet. Due to the availability of data and other considerations, the membership statistics will be calculated for the period July 31, 1981 through March 31, 1982 for the initial award. Now is an excellent time to increase your Chapter membership.

NEW BOOKS

Five new books of interest to MTT-S members have recently been published. These include: **Solid-State Microwave Amplifier Design,** T. T. Ha, John Wiley and Sons, Inc., One Wiley Drive, Somerset, NJ 08873. (ISBN 0-471-08971-0, 326 pp., $37.50); **Microwave Semiconductor Engineering,** Joseph F. White, Van Nostrand Reinhold, 135 West 50th Street, New York, NY 10020 (ISBN 0-442-29144-2, 558 pp., $28.50); **Foundations for Microstrip Circuit Design,** T. C. Edwards, Wiley-Interscience, P.O. Box 092, Somerset, NJ 08873 (approximately 304 pp., $38.90 tentative); **Computer-Aided Design of Microwave Circuits,** K. C. Gupta, Artech House, 610 Washington Street, Dedham, MA 02026 (ISBN 0-106-89006-8, approximately 350 pp., $45.00); **Microwave Engineering and Applications,** Om P. Gandhi, Pergamon Press, Inc., Maxwell House, Fairview Park, Elmsford, NY 10523 (ISBN 0-08-025588-4, $24.00, softcover; ISBN 0-08-025589-2, $60.00, hardcover; 544 pp.).

MICROWAVE AUDIOTAPE COURSE

Understanding Microwave Equipment is a six-session audiotape course being offered by E W Communications, Inc., Dept. UME, P.O. Box 50249, Palo Alto, CA 94303. Each session consists of a 60- to 90-minute cassette tape plus a set of cross-referenced tables, graphs, drawings, and photographs that illustrate the taped material. All of the material is furnished in a three-ring binder.

The six sessions are divided as follows:

Session 1—Survey of Microwave Systems and Devices
Session 2—Microwave Transmission Lines and Components
Session 3—Microwave Solid State Sources
Session 4—Microwave Tubes
Session 5—Low Noise Receivers and Microwave Antennas
Session 6—Microwave Systems

System and device operation is explained in physical terms without detailed mathematics. Performance limits and typical products are described. The course instructor is Allan W. Scott, Senior Scientist of Varian Associates, who has over 25 years experience in microwave systems and devices.

The price, postpaid, is $125 (plus California tax if applicable) with a 10 per cent discount for prepaid orders.

Understanding Microwave Equipment courses are fully guaranteed. Money will be refunded if you are not completely satisfied. **NOTE**—this listing in the MTT-S Newsletter should not be considered an endorsement by the MTT Society.

MTT-S BY-LAWS

The following is the second installment of the text of the By-laws of the Microwave Theory and Techniques Society. Part I appeared in the last MTT-S Newsletter, Fall 1981, Number 101. The next issue of this Newsletter will contain the final portion of the MTT-S By-laws.

BY-LAWS OF THE IEEE MICROWAVE THEORY AND TECHNIQUES SOCIETY

(Continued from Fall 1981 Newsletter)

SECTION III — COMMITTEES

A. Standing Committee

The following Standing Committees shall be appointed by the President as soon as possible after election as President and such committees shall hold office for one year coextensive with the term of office of the President except as otherwise noted in these By-laws. It will be discretionary with the Administrative Committee President to appoint any part or all of any Standing Committee, or to appoint the Chairman only of each committee and request the latter to appoint additional committee members.

1. MEETINGS AND SYMPOSIUM COMMITTEE

The Meetings and Symposium Committee shall, as required, assist the respective program committees in planning and selecting programs within the field of interest of the Society for the technical conferences of the Institute and Society. Upon instruction of the Administrative Committee, the Meetings and Symposium Committee also cooperates with the committees responsible for other meetings, conventions, and symposia.

The Meetings and Symposium Committee Chairman shall take office immediately upon appointment and shall continue for one year, plus such time as is necessary to bring to a termination all activities in connection with any meetings managed by said committees. Such an extension of the term of a Meetings and Symposium Committee for the completion of a given task shall not preclude the appointment of a new committee at the designated time for the succeeding year.

2. PUBLICATIONS COMMITTEE

The Publications Committee shall be responsible for publications and dissemination of technical information of interest to the Society. The Committee shall be responsible for publishing the TRANSACTIONS and for notifying the technical community of meetings, special publications, and other information of interest to the Society.

(a) Transactions Editor

The TRANSACTIONS Editor is responsible for the technical editorial content of the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. The Editor is also responsible for coordination with the IEEE facilities for publication. The TRANSACTIONS Editor shall appoint and be Chairman of the TRANSACTIONS Editorial Board. The TRANSACTIONS Editor will continue to serve until such time as a successor is named by the President of the Administrative Committee, and for such time thereafter as may be necessary for a successor to assume the duties of Editor.

(b) Associate Editor of the Transactions

An Associate Editor of the TRANSACTIONS shall carry out the duties assigned by the TRANSACTIONS Editor.

3. SCHOLARSHIPS COMMITTEE

The Scholarships Committee shall be responsible for instituting and administering education-aid programs to be wholly or partially sponsored by the Society.

4. OPERATIONS COMMITTEE

The Operations Committee shall be responsible for the operational conduct and advisory administration of the Society and the Administrative Committee. It shall be responsible for maintaining the Constitution, the By-laws, and the Procedures Handbook; for ensuring the proper conduct of business meetings; for providing nominations for offices; and for maintaining historical records.

(a) By-laws and Procedures Subcommittee

The By-laws and Procedures Subcommittee is responsible for the preparation of constitutional amendments and changes to the By-laws for Administrative Committee action, when such amendments or changes either appear necessary or are so directed by the Administrative Committee. The Subcommittee is also responsible for examining Society actions to determine whether these are in accordance with the Constitution and By-laws of the Society and the Constitution and By-laws of the IEEE.

The Subcommittee shall also maintain a Handbook of Procedures for the Administrative Committee as a guide for officers and committee members of the Administrative Committee. This Handbook shall be in accordance with these By-laws, the Society Constitution and the Constitution and By-laws of the IEEE. Within this framework, the Handbook shall define the specific duties, actions, and responsibilities of the officers and committee chairmen.

(b) Nominations Subcommittee

The Nominations Subcommittee shall nominate candidates for Elected Members of the Administrative Committee in accordance with Section I of these By-laws; and shall be responsible for recommending to the Administrative Committee nominees for all IEEE positions for which the Society can nominate, in accordance with Section I of these By-laws.

5. FINANCE COMMITTEE

The Finance Committee shall be responsible for planning, establishing, and administering budgetary control, and disbursing of finances for the Society in accordance with the Constitution and the rules of the IEEE. The Committee shall also be responsible for planning and soliciting Society incomes such as from Institutional Listings in the IEEE TRANSACTIONS ON MICROWAVE THEORY AND TECHNIQUES. The Chairman of the Finance Committee shall be a member of the Administrative Committee.

6. STANDARDS COORDINATING COMMITTEE

The Standards Coordinating Committee shall be responsible for establishing and/or reviewing IEEE standards within the scope of interest of the Society. The Committee shall periodically upgrade existing standards and shall initiate standards in new areas when they have become sufficiently established. The Chairman of the Standards Coordinating Committee shall appoint Ad Hoc Standards Committees to deal with specific areas requiring standardization.

7. LONG-RANGE PLANNING COMMITTEE

The Long-Range Planning Committee shall be responsible for review of advanced goals and policies of the Society and shall submit recommendations to the Administrative Committee President and to the Operations Committee Chairman for inclusion in the Constitution, the By-laws, or the Procedures Handbook.

8. TECHNICAL COORDINATING COMMITTEE

The Technical Coordinating Committee shall investigate, evaluate, and in some instances, promulgate new or peripheral technologies of interest to the Society. The Technical Coordinating Committee shall coordinate with the Meetings and Symposium Committee to afford the latest technical coverage in all meetings of interest to the Society. The Chairman of the Technical Coordinating Committee shall appoint Ad Hoc Technical Committees to deal with specific areas requiring technology emphasis. The Chairman of the Technical Coordinating Committee will be an advisory member of all Technical Committees. The Chairman of each Technical Committee shall report to the Chairman of the Technical Coordinating Committee any significant developments (such as special sessions that Technical Committee is helping to arrange and organize at the MTT/S Symposium, special issues of the TRANSACTIONS that are being planned, etc.) for possible inclusion in the minutes of the Administrative Committee. The Chairman of each Technical Committee should report to and advise the Chairman of the Technical Coordinating Committee each year, prior to the December Administrative Committee meeting, as to the continuation of that Technical Committee during the next year.

9. MEMBERSHIP SERVICES COMMITTEE

The Membership Services Committee shall encourage membership in the Society and shall maintain records of Society membership. The Committee is responsible for the promotion of the Society's area of interest within the formation of new Society Chapters, shall maintain liaison among the IEEE, Society Chapters, and the Administrative Committee, and shall disseminate publicity and information of interest to the IEEE, to the Chapters, and to the Society membership.

(a) The Newsletter Editor

The Newsletter Editor is responsible for the publication of an information bulletin called "Newsletter".

(b) Chapter Activities Subcommittee

The Chapter Activities Subcommittee shall be responsible for promoting and maintaining close liaison between the Chapters and the Administrative Committee.

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MTT-S BY-LAWS (from page 15)

(1) National Lecturer

The National Lecturer shall be nominated by the Membership Services Committee and shall be approved by the Administrative Committee during their annual September meeting.

(2) Membership Drive Subcommittee

The Membership Drive Subcommittee shall be responsible for promoting increased membership for the purpose of improved welfare of the Society and IEEE.

10. AWARDS COMMITTEE

The term of office of the Awards Committee Chairman shall normally begin on October 1 of the year in which that Chairman is appointed. The term of office shall normally be more than 1 year.

The Chairman of the Awards Committee shall hold the grade of Fellow of the IEEE. This Committee shall cooperate with the IEEE in recommending members of the Society for IEEE awards, shall select for the Administrative Committee the recipient of the Microwave Prize, and shall suggest the recipient of the Microwave Career and Microwave Application Awards.

The Chairman of the Awards Committee is empowered to submit to IEEE Headquarters the names of the candidates for IEEE Awards with approval of the President of the Administrative Committee.

B. Ad Hoc Committees

The President of the Administrative Committee shall create Ad Hoc Committees when in the President's judgment, such committees are required. The President may appoint a Chairman of an Ad Hoc Committee, who shall be a member of the Society and request the Chairman to appoint additional members, or the President may name any part of all members of an Ad Hoc Committee. Ad Hoc Committees shall serve until they are disbanded by the President of the Administrative Committee.

REPORT OF THE DIRECTOR, DIVISION IV

by Allan C. Schell

Money Matters

At the last meetings of the Technical Activities Board Operations Committee (TAB OpCom) and the Board of Directors there was some action on the topic of administrative and accounting charges for the Groups and Societies. The TAB Directors agreed to an amount of $170K for 1982, with the proviso that $40K be returned to TAB, for support of the Membership Development Committee activities. This does not constitute a very large portion of the total charges (estimated at $675K) nor was there agreement on the method of allocation, either by item or by Society. However, it is the next step of a process that will affect Society finances. The 1982 impact on each Division IV Society will be in the range of $3K to $7K.

The Board of Directors voted to increase I.E.E.E. dues by $2, and to increase the assessment of U.S. members by $1 for United States Activities Board, USAB, activities. The dues for U.S. student members were increased by $3 to cover the cost of publication of a new student journal. Another financial change that affects student members of Societies is that the cost to a student member for any of the optional Society publications is 75% of the member price.

Membership Matters

Membership in the IEEE Societies is changing. The Computer Society is enjoying rapid growth, but the other twenty-nine Societies have increased their membership on the average by less than one percent over last year; fourteen Societies actually lost membership. Division IV is 3% larger than last year, but the variance and the low growth indicate that recruitment needs more attention. One of the best opportunities for membership promotion is a symposium or conference. A successful technique is to offer a year's free membership in the Society to individuals who sign up at the meeting. Each of us needs to be a recruiter, to maintain and increase the member base for our technical activities.

At the annual meetings and symposia you can expect to see and hear more about the recent winners of major IEEE awards. The Board of Directors approved a procedural change by which the Societies will announce at their meetings the receipt of major IEEE awards by their members.

The IEEE Educational Activities Board, EAB, has spent considerable time wrestling with the formulation of a position on engineering technology. There is confusion about these four year programs, the job market for their graduates, and what further educational opportunities are available after graduation. For example, a graduate of a technology program cannot, in general, enroll

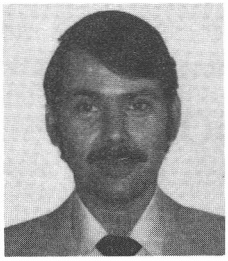
for an advanced engineering degree, because of a lack of science-based courses in the undergraduate program.

At the August meeting, the Board of Directors adopted a position that supports efforts to reduce the confusion between engineering and technology programs, and recommends that technology programs not be accredited if they create the impression that they are equivalent to engineering programs. A series of procedures were adopted to implement this position.

The Institute position is not intended to deprecate technology programs or the recipients of technology degrees. The IEEE welcomes and supports a membership encompassing a wide range of academic training. Trying to rule on whose degree is "better" is a futile exercise, as an examination of the educational backgrounds of the major contributors to electrical engineering progress will show. However, reducing the confusion with respect to alternative programs is a worthy goal, especially for students who may be misled in their career paths.

Centennial

The IEEE will celebrate its Centennial in 1984, and a series of special activities are planned for that year. All Societies are encouraged to prepare a special Centennial issue of their Transactions, and to develop a Centennial program for their major conference. This will be an opportunity to gain a perspective of where we have come from, a view of who we currently are, and a vision of where we are going.



EDITOR'S NOTES

by S. L. March

This issue of the MTT-S Newsletter contains a lot of information which I hope will prove helpful, beneficial, and enlightening to you, the members of the Microwave Theory and Techniques Society. Owing to the size of this issue (probably the largest MTT-S Newsletter published to date) and my responsibilities as Co-Chairman of the Technical Program Committee for the 1982 IEEE MTT-S International Microwave Symposium, which is now only five months away, I have not had the time to compose a formal Editor's Note.

While tthe next issue of the MTT-S Newsletter will be primarily devoted to our annual Symposium, most of the regular Newsletter features will continue. In order for the next Newsletter to reach you by May 1st, **I am imposing a strict deadline of March 1st for all Newsletter material.** I apologize for any inconvenience this deadline may cause any of you.

TAX LAW CHANGES

With the signing of the tax bill by President Reagan on August 13th, all workers in the U.S. are now permitted to save money in tax-deferred accounts to supplement their Social Security and other pension benefits.

The significant change in the tax law allows workers who are participants, or even vested, in a company- or Government-sponsored pension plan to deposit money into individual retirement accounts (IRAs). In the past, IRAs were available only to those who were not enrolled in company or Government pension plans.

The new tax law also increased to $2000 the amount of money working individuals can deposit into an IRA. Married couples with only one working spouse may place $2250 into such an account. Neither the money deposited nor the interest accrued is taxable until the money is withdrawn from the IRA.

Changes were also made in the tax laws pertaining to the retirement savings of self-employed individuals. These individuals can save money in Keogh accounts, which, similar to IRAs, are tax-deferred. Under the new law, the limits on annual deposits have been increased from the lesser of $7500 or 15 percent of income to the lesser of $15,000 or 15 percent of income.

The changes in the tax law regarding retirement savings accounts take effect in the 1982 tax year.

INVENTOR'S "BILL OF RIGHTS"

A bill to benefit employed inventors, expanding their rights to acquire patents for inventions not related to their work, has been introduced in the U.S. House of Representatives. The bill (H.R. 4732, October 13, 1981) is sponsored by Representative Robert Kastenmeier (Democrat, Wisconsin), chairman of a Judiciary Committee panel with jurisdiction over patent legislation. The bill was drafted by the IEEE United States Activities Board (USAB) West Coast Patent Subcommittee headed by Brad McMillan and the Patent Task Force led by Robert Frank.

The legislation would establish Federal standard limitations on pre-invention assignment agreements that employers often require their employees to sign, and it would extend safeguards for employees' patent rights after termination of employment.

Representative Kastenmeier hopes to schedule hearings this year. Meanwhile, the legislation has been forwarded to the Commerce Department for comment.

CALL FOR PAPERS

First Annual Military Communications Conference MILCOM '82

Place: Boston, Massachusetts
Date: October 17-20, 1982
Deadline: March 1, 1982
Submission: 5 double-spaced copies of the manuscript plus a one-page abstract.
Submit to: Dr. Fred W. Ellersick
Communications Division
MITRE Corporation
Bedford, MA 01730
(617) 271-3343
Theme: Progress in Spread Spectrum Communications

The Mediterranean Electrotechnical Conference '83 — MELECON '83

Place: Athens, Greece
Date: May 24-26, 1983
Deadline: September 30, 1982
Submission: Title plus 200 word summary in English
Submit to: Prof. E. N. Protonotarios
National Technical University
42, October 28th Street
Athens (147), Greece

1983 IEEE International Symposium on Circuits and Systems

Place: Newport Beach, California
Date: May 2-4, 1983
Deadline: October 1, 1982
Submission: Four copies of the full text
Submit to: Dr. Sanjit K. Mitra
Dept. of Electrical & Computer Engineering
University of California
Santa Barbara, CA 93106

1982 Microwave Power Tube Conference

Place: Monterey, California
Date: April 26-28, 1982
Deadline: January 22, 1982
Submission: Ten copies of abstract suitable for 20 minute presentation
Submit to: Mr. Leonard H. Klein
1982 Microwave Power Tube Conference
Palisades Institute for Research Services
201 Varick Street, 11th Floor,
New York, NY 10014
(212) 620-3377

Radar '82

Place: London, England
Date: October 18-20, 1982
Deadline: January 29, 1982
Submission: Synopsis on not more than one side of a sheet of A4 paper
Submit to: Secretariat, Conference Dept.
Institution of Electrical Engineers
Savoy Place
London, WC2R OBL, England

1982 Applied Superconductivity Conference

Place: Knoxville, Tennessee
Date: November 30 - December 3, 1982
Deadline: May 10, 1982
Submission: Original plus five copies of abstract and summary
Submit to: David C. Larbalestier
University of Wisconsin
1105 Engineering Research Building
1500 Johnson Drive
Madison, WI 53706
(608) 263-2194

12th European Microwave Conference

Place: Helsinki, Finland
Date: September 13-17, 1982
Deadline: March 12, 1982
Submission: 5 typed copies of two page summary
Submit to: Prof. M. Tiuri
Helsinki University of Technology
Radio Laboratory
Otakaari 5A
02150 Espoo 15, Finland

MORE NEW BOOKS

The IEEE has recently published a book of selected reprints, sponsored by the Antennas and Propagation Society and edited by Robert C. Hansen, on the geometric theory of diffraction. In addition, the IEEE is selling oll of the 12 volumes comprising the British Institution of Electrical Engineers (IEE) series on Electromagnetic Waves.

Geometric Theory of Diffraction is a 416 page volume of 51 reprinted papers. The book is a collection of papers entirely devoted to this sophisticated analysis and design tool. The reprints are grouped by subject into four parts: Early Papers; Cannonical Problems; Applications; Geometric Theory of Diffraction and Moment Method. Each section is preceded by a brief introduction by the editor and a list of references. The book is available from the IEEE Service Center, 445 Hoes Lane, Piscataway, N.J. 08854. The clothbound version (ISBN 0-87942-149-5), IEEE Number PC 01446, is available at $30.70 for members and $40.95 for

(continued on next page)

MORE NEW BOOKS (from page 18)

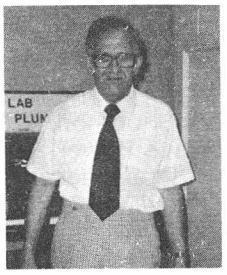
nonmembers. A paper bound version (ISBN 0-87942-150-9), IEEE Number PPO1453, is available to IEEE members for $20.45.

The twelve volumes of the IEE Electromagnetic Waves series were published between 1977 and 1981. They are:

- Volume 1, **Geometrical Theory of Diffraction for Electromagnetic Waves,** G. L. James, ISBN 0-906048-34-6, 261 pages, revised 1980, $29.00
- Volume 2, **Electromagnetic Waves and Curved Structures,** L. Lewin, D. C. Chang and E. F. Kuester, ISBN 0-901223-96-4, 206 pages, 1977, $36.00
- Volume 3, **Microwave Homodyne Systems,** R. J. King, ISBN 0-901223-52-2, 378 pages, 1977, $45.00
- Volume 4, **Radio Direction Finding,** P. J. D. Gething, ISBN 0-901223-71-9, 253 pages, 1978, $43.50
- Volume 5, **E. L. F. Communication Antennas,** M. L. Burrows, ISBN 0-906048-00-1, 343 pages, 1978, $37.00
- Volume 6, **Waveguide Tapers, Transitions, and Couplers,** F. Sporleder and H. G. Unger, ISBN 0-906048-16-8, 320 pages, 1979, $43.50
- Volume 7, **Reflector Antenna Analysis and Design,** P. J. Wood, ISBN 0-906048-21-4, 256 pages, 1980, $40.00
- Volume 8, **Effects of the Troposphere on Radio Communication,** M. P. M. Hall, ISBN 0-906048-25-7, 220 pages, 1980, $43.00
- Volume 9, **Schumann Resonances in the Earth-ionosphere Cavity,** P. V. Bliokh, et. al., ISBN 0-906048-33-8, 176 pages, 1980, $62.00
- Volume 10, **Aperture Antennas and Diffraction Theory,** E. V. Jull, ISBN 0-906048-52-4, 192 pages, 1981, $62.00
- Volume 11, **Adaptive Array Principles,** J. E. Hudson, ISBN 0-906048-55-9, 288 pages, 1981, $70.00
- Volume 12, **Microstrip Antenna Theory and Design,** R. James, P. S. Hall and C. Wood, ISBN 0-906048-57-5, 336 pages, 1981, $70.00

Only Volume 1 is paperback; all others are cloth-bound.

In addition, two other IEE books are being offered. **Microwave Solid-State Devices and Applications** is edited by M. J. Howes and D. V. Morgan. At $40.00, the 1980 book contains 256 pages and 300 diagrams. (ISBN 0-906048-39-7). IEE Conference Publication 195, **Antennas and Propagation,** is a 1981 two volume set, 920 pages, available for $144.00. (ISBN 0-8529662-34-7). Both publications are softbound. Order from the IEEE Service Center at the above address.



History of MTT

by Ted Saad

ADCOM XIV
JULY 1, 1965 THROUGH JUNE 30, 1966

Administrative Committee: E. N. Torgow, Chairman
S. W. Rosenthal, Vice Chairman
P. A. Rizzi, Secretary-Treasurer

H. E. M. Barlow
A. C. Beck
J. H. Bryant
M. Cohn
R. C. Hansen
R. E. Henning
I. Kaufman
T. Moreno
J. Pippin
R. A. Rivers
T. S. Saad
G. Shapiro
K. Tomiyasu
F. G. R. Warren
J. C. Wiltse
L. Young

Honorary Life Members: A. G. Clavier
W. W. Mumford
G. C. Southworth

Ex Officio Members: H. M. Altschuler
R. W. Beatty
S. B. Cohn
D. D. King

The Chairman of the fourteenth Adcom was Gene Torgow; the Vice-Chairman was Saul Rosenthal. Bob Beatty was Editor of the Transactions through January 9, 1966; he was succeeded by Sy Okwit. Gus Shapiro continued as Editor of the Newsletter. Towards the end of the Adcom year, Jim Wiltse resigned due to the pressure of work, and was replaced by Frank Arams.

The various committees and functions within Adcom were headed as follows: Pete Rizzi, Secretary-Treasurer; Al Beck, Awards; Ross Warren, Chapter Activities; John Pippin, Constitution and By-Laws; Rudy Henning, Meetings; Ted Saad, Membership and Affiliates; Kiyo Tomiyasu, Associate Transactions Editor for Abstracts; Walter Kahn, Associate Transactions Editor for Lasers; Bob Rivers, Advertising Editor; Frank Arams, MTT Representative to JCQE; Saul Rosenthal, Liaison Representative to the Safety Committee; and Don King, IEEE Technical Activities Board (TAB) Operations Committee.

The Adcom held five meetings during the year. The first two meetings were held at IEEE Headquarters in New York City. The third meeting was held in Palo Alto, the site of the 1966 Symposium. The fourth meeting was held in New York City during the IEEE Convention, and the fifth meeting was held in Palo Alto during the Symposium.

An area of some concern for MTT was the proliferation of journals in related and overlapping technologies. By this time the Journal of Quantum Electronics appeared to be a success. New jour-

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HISTORY OF MTT (from page 19)

nals were being proposed, including one on Solid State Circuits and one on Microwave Power Engineering. Although the Adcom was opposed to the Journal of Solid State Circuits, they were not as concerned about the proposed Journal of Microwave Power Engineering, since they felt it would be unable to support itself.

To battle the proliferation of meetings and journals, a motion was passed by the Adcom which read as follows: "The G-MTT Administrative Committee goes on record to TAB as being vigorously opposed to the formation and publication of a Journal on Solid State Circuits, and further that, G-MTT Adcom is planning to take the step of formation of a technical committee on the microwave aspects of solid state circuits and to publish special issues of the Transactions on the subject." A second motion was also passed, which reads as follows: "In view of the incipient journal proliferation problem and the IEEE Group financial limitations, it is urged that the IEEE proceed with caution in the matter of initiating new journals, but rather investigate alternative mechanisms, such as special issues or joint issues of existing Transactions for publishing material on new technology." Finally, a motion was made that the Chair establish an Adhoc Committee on Technical Committees and that this committee be directed to recommend to the next Adcom those technical committees which should be established by the G-MTT.

Despite the strenuous objections of MTT, the Journal of Solid State Circuits was indeed formed. MTT was invited to make arrangements whereby Group members would be able to receive the new journal. It was decided that MTT would participate on the advisory board of the Journal of Solid State Circuits. However, MTT made it clear that participation did not imply financial commitment. MTT went on record, stating that the MTT Transactions would continue to publish papers on microwave integrated circuits. Also, it was reiterated to TAB that the technical areas of microwave solid state circuits and integrated circuits was within the scope of interest of the MTT Group and Transactions as evidenced by publication and meeting history, and it would continue to be so in the future. Finally, a motion was passed that no privileges would be extended to MTT members to substitute the new Journal of Solid State Circuits for the MTT Transactions.

The Transactions, despite its growth and popularity, was faced with budget restrictions. Nevertheless, at the November Adcom meeting, it was decided that in the best interests of the Group and of the IEEE, the MTT Transactions should be published monthly starting January 1966. To help defray the cost, it was decided to increase Group dues to $5. The Adcom felt that monthly publication would help expedite the publication of papers. Finally, E. K. Gannett, in a letter to the Adcom supporting the monthly approach, convinced the Adcom to adopt the policy. In his letter, he pointed out that by going monthly, the Transactions would become a primary journal and that the net additional cost would be about $2,700 per year, about 8½% of the Group budget.

As a culmination of the work that Seymour Cohn had done in the prior Adcom on filter papers, a special issue of the Transactions on microwave filters was published in September 1965. However, there was continuing concern that with the availability of computers in more laboratories, more tables were going to be published and papers were going to get longer.

Due to the financial situation in IEEE, its Executive Committee, on December 1, 1965, adopted a policy of asking for voluntary page charges, on a permissive basis, for papers published in all of the Transactions of the IEEE. The voluntary page charge formula that was adopted was $50 per page for offset (Headquarters typed) and $15 per page for offset (author typed).

Bob Beatty terminated his service as Editor of the Transactions on January 9, 1966 and was succeeded by Sy Okwit. For calendar year 1965, 928 pages were published at a cost of $50,247. In 1965, the number of papers submitted to the Transactions rose to 154. Acceptance of papers continued at a 50% rate. Not only were the papers that appeared in the MTT Transactions on average a page longer than those that appeared in other Transactions, but the number of pages per paper had increased from 6.6 to 8.4 from 1960 to 1965.

Foreign abstracts appearing in the Transactions included papers from Japan, the U.K., and the Scandinavian countries. Contacts were also made to include abstracts from Italy, Germany, and Australia.

In an effort to help the financial situation, Bob Rivers sent out 145 solicitation letters asking for institutional listings. At the beginning of the Adcom term, there were 20 institutional listings appearing each month. During the year, it was voted to increase the fee for institutional listings to $50 for a one-time insertion and $360 for a 12-time insertion. Although the listings dropped to 16 by the end of the year, the number of renewals on an annual basis was encouraging.

Only one copy of the Newsletter was published during Adcom XIII. However, a regular quarterly schedule was resumed for Adcom XIV. The new format was well received by the membership. It featured an Editor's Note, the Chairman's Viewpoint, and a report by the Vice Chairman on Adcom activities. It also had Chapter reports and reports of meetings of interest to the members of the Group. Because of the quarterly schedule, the Newsletters were perhaps a bit longer than was desirable. During the March meeting of the Adcom, it was voted to increase the number of issues per year to five and to tie the issuance of the Newsletter to the Adcom meeting schedule.

The Journal of Quantum Electronics was dis-

cussed in depth during the Adcom year. The great concern was that MTT was not getting equal coverage in the JQE when compared with ED. The Journal was a success from the very beginning. Starting in July, the number of subscribers was 2,124; 339 of whom were from MTT. By March, there were 3400 subscribers; 643 of whom were MTT members. To help alleviate concern, the Adcom charged the Chairman to establish with ED and the Editor of JQE clear lines of responsibility for the management of JQE.

The fourth International Conference on Quantum Electronics was held in Phoenix, AZ during April 1966. Attendance was 1200 paid; 215 technical papers were presented. The fifth International Quantum Electronics Conference was scheduled to be held in 1968. There was some discussion about the possibility of holding meetings in the off year, emphasizing devices and applications, engineering design of Quantum Electronic Devices, etc.

Ross Warren spent a good portion of the Adcom year trying to improve Chapter-Group relations. He sent a comprehensive letter to each of the Chapter Chairmen, explaining the relationship and how it could be enhanced. In addition, a questionnaire was sent out to all of the Chapter Chairmen. It appeared that many of them were apathetic, since they failed to respond to the questionnaire. However, those who did respond, indicated that their ties were equally split between the Group and the Sections. They also noted that the most important work of the Group from their vantage point was the publication of the Transactions. Most of them saw no advantage in attending Adcom meetings. One good suggestion, to set up a speaker's bureau, was eventually acted upon. However, the concern for involving the Chapters with Adcom remained an important agenda item through the years.

At the last Adcom meeting Ross Warren made the suggestion that funds be made available to establish a National Lectureship. The proposal was received with enthusiasm by Adcom.

In an effort to stimulate membership in MTT, a poster campaign was initiated. A poster was designed to hold a Newsletter, a Transactions issue, a Symposium Digest, and a number of special reply cards. These were to be displayed at each Chapter meeting, the National Symposium, and at cooperating companies. The posters were mailed out towards the end of 1965 and by May 1966 it appeared that there was a small but encouraging improvement in membership.

Most of the activity in Constitution and By-Laws was concerned with housekeeping matters, clarifying details relative to the Transactions Editor, the problem of publishing with other Groups, and the matter of adopting changes in the by-laws.

A task force, including representatives of MTT and AP, was established to determine an effective method for handling antenna and waveguide standards. An interim merger agreement between MTT and AP was proposed, finalized, and accepted. Separate standards committees on antennas and on waveguides were to be formed, each reporting to the appropriate Group within whose scope the work lay. Initially the committees consisted of the Chairmen of the Technical Committees on Antennas and Waveguides and the liaison representatives to the Standards Committees from AP and MTT.

MTT participation in the IEEE International Convention continued to be a problem. Although two sessions had been allocated to MTT, there were not enough submitted papers, and as a consequence, several invited papers had to be included. The two sessions were Recent Advances in Microwave Theory and Techniques and Microwave Integrated Circuits. The attendance averaged about 160 at each of the sessions. It was suggested that the sessions for the next year should consist of invited papers only.

An adhoc Committee on Meetings was formed, due to the increase in MTT participation at a variety of meetings with other Groups, both within and outside the IEEE. The adhoc committee presented a report to Adcom on May 15th, outlining the problems, the types of possible relationships, and some of the solutions to impending proposals. The report was referred to the adhoc Committee on Organization.

The 1966 International Microwave Symposium was held in Palo Alto, CA. Pete Lacey was Chairman of the Steering Committee. Leo Young was Chairman of the Technical Program Committee. It was a four-day program with 44 contributed papers and 17 invited papers. Ten of the invited papers were from abroad. The keynote speaker was Dr. Hubert Heffner, who spoke on "While You're Up, Get Me a Grant." The Microwave Prize was awarded to Hendrik Bosma of Phillips Research Labs in Eindhoven, The Netherlands. His paper, "On Stripline Y-Circulation at UHF", was published in the MTT Transactions of January 1964. The banquet speaker was Professor John Brown of the University College of London, England. Attendance at the Symposium was a record setting 758. The net surplus was $2,829.

At the September 1965 meeting of Adcom, it was voted to hold the 1967 Symposium in Boston. It was also proposed that the word "International" should be used in the title of the meeting, beginning in 1966.

Although the estimated budget for calendar year 1966 indicated a possible breakeven condition for the year, it was clear from other financial results that there would be a slow but steady attrition of our balance. For example, the opening balance on January 1, 1965 was $31,418 compared with a closing balance on December 31, 1965 of $25,891.

The annual election for Adcom members was held at the March meeting. Members elected for a three year term, starting July 1, 1966, were Bob

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HISTORY OF MTT (from page 21)

Beatty, John Bryant, Seymour Cohn, Art Oliner, Pete Rizzi, and Ted Saad. Saul Rosenthal was elected Chairman of the Adcom and Bob Beatty was elected Vice Chairman. The highlight of that meeting was the announcement by the Chairman that Al Beck had been unanimously elected an Honorary Life Member to join Dr. Clavier, Dr. Southworth, and Bill Mumford.

It was an interesting year for MTT. What had started out as a simple, straightforward organization was, with the passage of time, becoming more and more complex. The interactions with TAB, the potential proliferation of journals and meetings, the involvement with JQE, the work on standards, and other activities and obligations were adding to the complexity of the organization.

NBS ANTENNA MONOGRAPH

Microwave antenna engineers will be interested in a monograph published by the National Bureau of Standards (NBS) which contains significant advances in antenna theory.

Titled **Plane-Wave Scattering-Matrix Theory of Antennas and Antenna-Antenna Interactions,** the monograph provides new ways of analyzing antenna-antenna interactions. It also serves as a foundation for important new antenna measurement techniques, which have been implemented with major new testing facilities by NBS and other organizations.

The monograph was written by Dr. David M. Kerns, Senior Research Scientist in NBS' Electromagnetic Fields Division in Boulder, CO. Dr. Kerns has received wide recognition for his theoretical work in support of antenna measurements. Much of his work applies to sophisticated antennas such as those used for satellite communications.

"The primary objective of this monograph is to facilitate the critical acceptance and proper application of antenna and field measurement techniques deriving more or less directly from the plane-wave scattering-matrix theory of antennas and antenna-antenna interactions. A secondary objective is to present some recent and some new theoretical results based on this theory," Kerns writes.

Dr. Ramon C. Baird, chief of the NBS antenna systems metrology program, notes that the monograph "combines an excellent introduction to microwave network analysis with a comprehensive treatment of the principles and applications of the plane-wave scattering-matrix theory of antennas."

The monograph draws upon more than 20 years' experience in the field of antenna measurements. During the late 1950s and early 1960s Kerns developed the first theory of sufficient scope to enable accurate near-field measurements of broad classes of antennas, thus achieving antenna engineers' long-time goal of making accurate antenna measurements at reduced distances.

Kerns has been awarded silver and gold medals from the Department of Commerce for his scientific achievements. In 1978 he received the Harry Diamond Memorial Award from the IEEE.

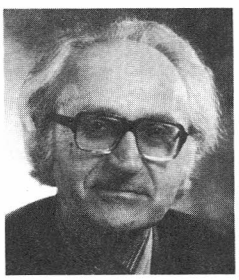
Copies of **Plane-Wave Scattering-Matrix Theory of Antennas and Antenna-Antenna Interactions,** (Monograph 162), are available for $11 prepaid from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Order by title and stock no. 003-003-01995-0.

From the October, 1981 Antennas and Propagation Society Newsletter

IEEE FIELD AWARDS

Two of the IEEE's most prestigious awards for 1981 were bestowed by the IEEE Board of Directors upon individuals whose achievements have been in microwave-related technology.

Dr. Cyril Hilsum



The 1981 David Sarnoff Award has been bestowed upon Dr. Cyril Hilsum (SM) "for contributions in the fields of III-V compound semiconductors, solid-state microwave components, and display devices." Dr. Hilsum has worked in a number of British government laboratories, but has been in the Physics Group at the Royal Signals and Radar Establishment (RSRE) in Malvern, England since 1964. He is also a visiting Professor in the applied physics and electronics department at Durham University. Dr. Hilsum is a member of Royal Society, the author of more than 100 technical papers, and the holder of over thirty patents.

The award was presented to Dr. Hilsum at the International Electron Devices Meeting, which was held last month in Washington, D.C.

Dr. Dean A. Watkins

The Frederick Phillips Award for 1981 went to Dr. Dean A. Watkins (F), "for managerial leadership in the research and development of traveling-wave tubes." The award was presented to Dr. Watkins at Wescon in San Francisco on Sept. 14, 1981.

Dr. Watkins is Chairman of the Board of the Watkins-Johnson Co., which he co-founded in 1957. He previously worked at the Hughes Aircraft Co. Research Laboratories, Collins Radio Company, and the Los Alamos Scientific Laboratory. Dr. Watkins was associated with Stanford University from 1953 until 1963.

Dr. Watkins is a member of the National Academy of Engineering and from 1955 to 1966 was a consultant on electron devices to the Director of Defense Research and Engineering.

SCENES FROM RECENT ADCOM MEETING

BALTIMORE, MD — OCTOBER 19-21, 1981

Don Parker, new MTT-S President Dick Sparks, Harlan Howe, past MTT-S President Fred Rosenbaum, and Jim Roe.

Walt Gelnovatch, George Oltman, and Division IV Director Allan Schell.

Bob Hicks, Steve Adam, IEEE General Manager Eric Herz, John Kuno, and Bert Berson.

Dave McQuiddy, Barry Spielman, Kiyo Tomiyasu, and Paul Greiling.

MTT-S CHAPTER MEETINGS YEARLY REPORT (1980-1981)

DATE	ATTENDANCE	SPEAKER	TOPIC
I. Albuquerque, New Mexico			
02/27/80	10	Dr. J. Wiltse	"Millimeter - Waves for the 80's"
03/18,19/80	55	Dr. J. Wiltse	Mini-Symposium on Electromagnetic Topology
03/27/80	12	Dr. J. Hesse	Electricity from the Sun for Fun and Profit
04/23/80	23	Dr. R. Bevensee	Computer Codes for Electromagnetic Problems
05/13,14,15/80	99		Mini-Symposium on EMP Criteria, Simulation, Extrapolation and Trailing Wire Response
06/24/80	21	Dr. C. E. Baum	Measurement of Electromagnetic Properties of Lightning with Ten Nanosecond Resolution
09/02/80	13	Dr. D. V. Giri	The Insulated Antenna
12/17/80	9	Dr. B. K. Singaraju	Equivalent Circuits in Electromagnetic Boundary Value Problems
II. Atlanta, Georgia			
09/07/80	45	Dr. R. A. Pucel (National Lecturer)	Monolithic Microwave Circuits
11/11/80	25	Mr. Lloyd W. Root	Atmospheric Propagation and Backscatter Model
12/02/80	21	Mr. Harlan Howe, Jr.	Dielectric Material Choices for Planar Microwave Circuits
02/03/81	27	Dr. W. F. Gabriel	Adaptive Array Super Resolution Techniques
03/03/81	24	Dr. W. M. Boerner	Inverse Scattering
04/07/81	23	Dr. Chalmers M. Butler	Aperture Theory
05/05/81	25	Dr. R. C. Johnson	Travel in China
III. Baltimore, Maryland			
06/14/80	66	Dr. Leo Young	Membership Drive Crab Feast
10/08/80	38	W. Pole and H. B. Balsham	High Power Microwave Transistors and Amplifiers
12/11/80	27	R. J. Maillous (AP Distinguished Lecturer)	Antenna Techniques for Future Systems
12/10/80	14	L. E. Larsen	Active Medical Imaging and Therapeutics with Microwave Radiation
03/11/81	220	Dr. L. Eastman	GaAs Lecture, "Device Physics"
03/18/81	192	Dr. A. Podell	GaAs Lecture, "Microwave and Digital GaAs Monolithic Circuits"
03/25/81	165	Dr. M. Driver and Dr. N. Thomas	GaAs Lecture, "Materials and Device Fabrication"
04/15/81	32	W. F. Gabriel (AP Distinguished Lecturer)	Adaptive Array Super Resolution Techniques

DATE	ATTENDANCE	SPEAKER	TOPIC
IV. Chicago, Illinois			
05/19/80	27	Dr. Wolfgang M. Boerner	Impacts of Solar and Geomagnetic Disturbances on Electric Power Systems
09/08/80	30	Dr. A. Taflove	The IITRI RF Technology for In-Situ Processing of Tar, Sand & Oil Shale
10/14/80	25	Dr. R. Mailloux	Antenna Techniques for Future Systems Application
11/10/80	35	Dr. F. J. Rosenbaum	Large Signal Operation of Microwave FET's
02/25/81	84	Dr. B. Briley	Optical Fiber; Transmission Medium of the Future
03/16/81	16	Dr. S. Laxpati	Theory and Prediction of Null Synthesis Technology
04/13/81	23	Dr. F. Ulaby	Satellite-Borne Radars for Monitoring Earth's Environment
05/13/81	29	Dr. R. A. Pucel (National Lecturer)	Monolithic Microwave Circuits
06/08/81	16	Dr. G. Schaffner	IMPATT Oscillators for Doppler Radars
V. Dallas, Texas			
09/25/80	47	F. E. Reisch	Low Noise Amplifier Design Techniques
10/23/80	24	Dr. G. Schaffner	IMPATT Transmitter for Doppler Radars
12/03/80	31	W. H. Lavery	GaAs FET Amplifier Direction at Watkins/Johnson
01/21/81	54	Dr. R. A. Pucel (National Lecturer)	Monolithic Microwave Circuits
02/26/81	57	R. Logan	An Assessment of Technology for Airborne Radar
03/28/81	71	J. Fitzpatrick	Automated RF Testing
03/28/81	71	R. Wenzel	Microwave Filter Technology
03/28/81	71	D. T. Bell, Jr.	Signal Processing Using SWD's
03/28/81	71	Dr. D. N. McQuiddy, Jr.	Microwave Monolithic GaAs Technology
04/23/81	33	Dr. J. White	Writing Successfully
05/21/81	20	R. Potter	SAW Filter Technology and Applications
VI. Los Angeles, California			
10/30/80	—	Dr. R. A. Pucel (National Lecturer)	Monolithic Microwave Circuits
12/09/80	—	J. Grant	Microwave Power for the 80's
02/19/81	—	Dr. G. Ransford	A Visit to the Planets with Voyager
04/16/81	—	Dr. C. Krumm	GaAs Integrated Circuit Technology
05/11/81	—	G. Levy	NASA/JPL Deep Space Network

DATE	ATTENDANCE	SPEAKER	TOPIC
VII. Phoenix, Arizona			
09/23/80	22	Dr. K. Carver	Recent Advances in Microstrip Antenna Technology
10/30/80	57	Dr. W. Howard	The Future of VLSI
11/18/80	16	Dr. H. Nathanson	GaAs Monolithic Power Amplifiers at X-Band
12/09/81	48	T. Phinney	What Are They?
01/20/81	38	Dr. R. A. Pucel (National Lecturer)	Monolithic Microwave Circuits
02/10/81	12	R. Wallace	Color Cathode Ray Tubes
03/23/81	24	Dr. R. Wood	Laser Processing of Semiconductor Devices
VIII. Princeton, New Jersey			
01/15/81	25	Mr. M. Ettenberg	Solar Power Satellite
02/26/81	9	Mr. W. T. Patton	Low Sidelobe Phase Array Antennas for Tactical Radar
03/19/81	38	Mr. J. E. Keigler	Domestic Communication Satellite Systems
04/16/81	27	Dr. R. A. Pucel (National Lecturer)	Monolithic Microwave Circuits
04/30/81	86		Tour of RCA - Astro Electronics
IX. Santa Clara Valley, California			
07/18/80	37	Mr. R. Stancliff	K-Band Dual-Gate GaAs FET Frequency Doubler
10/23/80	128	Dr. R. A. Pucel (National Lecturer)	Monolithic Microwave Circuits
11/20/80	101	Mr. W. Vavken	Satellite-Earth Stations for Individual Subscribers — Technical Requirements and Economics for 1981
01/22/81	59	Mr. D. P. Hornbuckle	Monolithic GaAs Direct-Coupled Amplifiers
02/19/81	31	Dr. C. Holmes	Techniques of Microwave Circuit Design Using CAD
03/28/81	198	One Day Short Course	Advanced Microwave Techniques for Commercial Applications
		Mr. R. Tamura	Advanced Microwave Integrated Device Developments and Applications
		Dr. M. Fukuta	GaAs Power Amplifiers and Miniaturized Modules for Commercial Application
		Dr. R. Posner	Design for Modern TVRO Stations
		Mr. L. Cuccia	Synergism of System Trade-Offs and Microwave Technologies of TV Broadcast Satellite Application
		Mr. E. Strid	Design of Low-Noise FET Amplifiers for Satellite Application
04/23/81	17	Mr. R. M. Phillips	Is There a Unified Field Theory for TWT's?
05/21/81	39	Dr. M. Bernard	Communications for the 1980's - "The French Connection"
06/11/81	82	Dr. Y. Satoda	An Integrated Front-End of 4 GHz TVRO

DATE	ATTENDANCE	SPEAKER	TOPIC
X. San Diego, California			
03/03/80	25	Mr. R. McIntyre	Low Sidelobe Antenna
04/23/80	28	Mr. W. Scott	Multiple Beam Satellite Antenna for Communication Frequency Reuse
05/21/80	34	Dr. J. Wiltse (National Lecturer)	Millimeter-Waves for 80's
06/18/80	35	Mr. N. Weinhouse	Satellite Transmission of Telemetry to Cable System
09/17/80	19	Dr. A. W. Love	Concerto of the Horn Antenna
10/28/80	26	Dr. R. A. Pucel (National Lecturer)	Monolithic Microwave Circuits
11/12/80	23	Dr. D. Hess	Minicomputer Based Spherical Near Field Measurement
01/28/81	28	Mr. S. L. Johnson	Millimeter Wave Radar
03/25/81	19	Mr. David Rubin	Low Noise Solid State Amplifier
05/27/81	40	Mr. A. Hislop	Two and Three Dimensional Radar Imaging Using Stepped Frequency Techniques
06/25/81	20	Dr. William Chang	Signal Processing in Optical Waveguide
XI. Tokyo, Japan			
01/23/80	105	Mr. E. D. Cohen	Status of Solid-State Devices and Analogue Circuits in the United States
06/26/80	32	Dr. K. Suetake et al	Reports on 1980 International Microwave Symposium
10/24/80	32	Dr. L. Young	Meander Line Polarizer
XII. Washington, D. C.			
10/14/80	130	Prof. S. Y. Liao	Overview of Microwave Devices with Passive Components
11/11/80	88	Mr. L. Besser	SUPER-COMPACT, New Computer Aided Design Tool for the 1980's
12/09/80	60	Dr. J. Mark Baird	Conventional Microwave Tubes (TWT, etc.)
01/13/81	58	Dr. J. Hirshfield	Slow-wave Gain Mechanisms for Wideband Gyroamplifiers
02/10/81	70	Mr. A. Rosen	One-Port Active Devices and Circuits (IMPATT and TRAPATT)
03/10/81	56	Mr. R. Gilson	Two-Port Active Devices and Circuits
04/14/81	70	Dr. R. A. Pucel (National Lecturer)	Monolithic Microwave Circuits

ELECTED TO IEEE BOARD OF DIRECTORS

Recently, the IEEE elected nine people to the 1982 Board of Directors. The election, held at the Assembly meeting on December 4, 1981 in Savannah, Georgia, completed the election of the thirty-three member Board for 1982.

Included in the list of new officers elected for one year terms is **Dr. George P. Rodrigue,** Regents Professor, School of Electrical Engineering, Georgia Institute of Technology, Atlanta, Georgia. In 1981, Dr. Rodrigue served on the Long Range Planning Committee and the Nominations and Appointments Committee of the IEEE. For 1982, he was elected IEEE Vice President for Publication Activities.

Dr. Rodrigue is also a past President of the Microwave Theory and Techniques Society.

SHORT COURSE BY SATELLITE

A one-day short course in Project Management was selected as the subject of the first satellite broadcast by the IEEE, aired on January 12th.

Dr. Joseph Biedenbach, Chairman of the IEEE Educational Activities Board (EAB) Committee for New Resources, in stressing the importance of such an undertaking, stated that "satellites are a technology that we as electrical and electronics engineers have developed, so we should use it for the benefit of our members."

The program had been designed for the originating telecast to be transmitted through SatCom I and Westar from 10 a.m. to noon and from 2 to 4 p.m. EST. Signals were routed through antennas at universities, cable television stations, and publice broadcasting stations to reception sites at approximately 100 locations throughout the United States.

Merrill W. Buckley, Jr., a member of the IEEE Board of Directors and an Administrator for Planning and Management at RCA Corporation, was the course instructor. Mr. Buckley broadcasted from station WRLK in Columbia, S.C.

Each of the classroom sites was provided with course materials and a local IEEE coordinator who ran a workshop during the two-hour intermission. In order to increase the effectiveness of the program, arrangements had been made to have a telephone hook-up at each site, enabling course participants to forward questions to the instructor in South Carolina, via a toll-free 800 number.

COMAR POSITION PAPER

The following is the August 1981 **draft** of a proposed IEEE Position Paper prepared by the IEEE Committee on Man and Radiation (COMAR). IEEE Policy 14 (1979) states that "An IEEE Position Paper is a document, issued in the name of the Institute, developed to express a formal opinion, by an IEEE Entity on a specific topic."

The cover sheet to the Position Paper contains an additional paragraph, which reads:

The IEEE recognizes the public concern regarding the possible health hazards from the pervasive and ever-expanding use of devices that emit microwaves and other radio frequency electromagnetic (EM) fields. Safety guidelines such as those recently proposed by the American National Standards Committee C 95 appear quite adequate on the basis of our present understanding of the biological effects of EM fields. Because of the many current and promising beneficial applications of this technology and several identified gaps in our knowledge, the IEEE also recognizes the need for continuing research on EM bioeffects to insure the safe use of such devices.

HUMAN EXPOSURE TO MICROWAVES AND OTHER RADIOFREQUENCY ELECTROMAGNETIC FIELDS

Modern man has learned to utilize and, indeed, to depend for his personal, social, economic, and political well-being on devices that generate microwaves and other radiofrequency (300 kHz-300 GHz) electromagnetic (EM) fields. Applications of EM fields in radio and television broadcasting, communications (long-distance telephony, commercial and personal use of amateur and citizen bands), navigation (ships, aircraft), and radar (military and civilian uses for detection and guidance, flight surveillance around airports, weather surveillance and prediction) are readily recognized. Applications of these fields in the home (cooking), industry (sealing, drying), and medicine (diagnosis, treatment) are burgeoning rapidly.

The prevalence of these man-made fields and their relatively recent introduction to the human environment has led to public concern over their possible health implications. The answer to this question must lie in rigorous research and dispassionate assessment of laboratory and epidemiological data. Present knowledge is not complete enough to supply final answers, but what is known is reassuring for the general population. The strengths of fields to which 99 percent of the North American population is exposed are hundreds of times below current U.S. guidelines of maximum permissible intensity levels for safe exposure and, indeed, are below the most restrictive limits imposed by any government, worldwide. With the exception of individuals in some occupational situations, the intensities, to which the remaining one percent of the population is exposed, are also well below the current U.S. guidelines. Clearly the known benefits of EM technology out-

weigh even the most speculative risks to the general population.

Because prolonged whole-body or part-body exposure to EM fields at very high field strengths may result in physical insult, the IEEE has a vested concern for the engineer, technician, or industrial worker who works in proximity to emitters of high intensity EM fields. Sound hygienic-engineering practices in the work place can prevent excessive exposure. While readily implemented, these practices require surveillance by technically competent specialists to insure safe operation of such emitters.

The IEEE recognizes that the perception of risk is an important aspect of public well being, since even the belief that a benign agent poses a danger may have a negative influence on the believer.

One of the more detrimental of unfounded beliefs is that nonionizing EM fields have the same destructive effect on biological tissues as X-rays and other ionizing radiations. In fact, their effect is vastly different. Cumulative irreversible damage can occur in tissues that are continuously or repeatedly exposed to ionizing radiations at low levels, but there is no scientific consensus to support the proposition that continuous exposure to low-level (less than 1 mW/cm^2) EM fields results in damage, irreversible or otherwise, to biological molecules.

A large body of data exists on the biological effects of exposure to EM fields [1-4]. The data indicate that moderate levels of EM fields (average power densities of 1 to 5 mW/cm^2) are easily tolerated by human beings, at least for short periods, while prolonged whole-body exposure at high intensities (above 100 mW/cm^2) is dangerous at frequencies for which significant energy is coupled to the human body. These data have been judiciously applied by the American National Standards Institute Committee C95 in proposing a revision of the current guidelines of safe exposure to EM fields which were issued in 1974. However, the data base is not complete. Specifically, continuing interdisciplinary research, involving life scientists, physicists, and engineers, is needed toward the following objectives:

1. An understanding of the mechanisms of interaction of EM fields with biological systems.
2. An understanding of the comparative biological effects of exposure to continuous wave, modulated, and pulsed EM fields at equivalent power densities and exposure durations.
3. Assessment of biological effects of intermittent or continuous exposure to weak EM fields (<1 mW/cm^2) over the long term (months to years).
4. Determination from measured values of EM fields both the total energy and the internal distribution of energy that would be absorbed by mammals exposed to those EM fields, and prediction of the biological effects that would be produced by that absorbed energy.

In summary, the position of the IEEE is that there is no cause for public concern regarding the environmental levels of EM fields to which the general population is exposed. In addition, based on our present knowledge, prolonged exposure to levels lower than those recommended recently by the American National Standards Institute Committee C95 is not likely to be hazardous to human health. Continuing research on the biological effects of EM fields is, however, needed to ensure that these guidelines or any revisions thereof are soundly based. On the other hand, prolonged exposure to high-intensity EM fields can be harmful, except under proper supervision in medical usage. There is consequently an unquestioned need for continued surveillance to ensure that, with the ever-increasing uses of EM fields for their obvious benefits, neither environmental nor occupational levels of exposure exceed prevalent safety standards.

Bibliography

Some recent overview references are:

1. W. D. Sharpe, Editor, "Proceedings of the Symposium on Health Aspects of Nonionization Radiation", **Bulletin of the New York Academy of Medicine,** Vol. 55, December 1979, pp. 973-1310.
2. O. P. Gandhi, Editor, "Special Issue on Biological Effects and Medical Applications of Electromagnetic Energy", **Proceedings of the IEEE,** Vol. 68, January 1980, pp. 1-192.
3. D. R. Justesen and A. W. Guy, "Special Issue: Biological Effects of Electromagnetic Radiation", **Radio Science,** Vol. 12, No. 6(S), November-December 1977, pp. 1-293.
4. D. R. Justesen and R. C. Baird, "Biological Effects of Electromagnetic Waves", **Radio Science,** Vol. 14, No. 6(S), November-December 1979, pp. 1-350.

SHORT COURSES

Millimeter Wave Systems and Technology is a Georgia Institute of Technology short course which will be presented January 26-28, 1982. The registration fee is $420. The academic administrators will be Dr. Albert P. Sheppard and Dr. James C. Wiltse. Senior instructors will include James Gallagher, Robert McMillan, Jerry Eaves, and James Schuchardt. For more details, contact the Department of Continuing Education, Georgia Institute of Technology, Atlanta, GA 30332, (404) 894-2400.

Millimeter-Wave Technology is an intensive three day course being offered by the Palisades Institute for Research Services. Two separate dates and locations are offered; February 1-3, 1982 at the Sheraton Harbor Island Hotel in San Diego, California and March 29-31, 1982 at the Holiday Inn-National Airport in Washington, D.C. The course fee is $600. Instructors include Mr. I. Reingold, Dr. H. Hieslmair, Dr. H. J. Kuno, Mr. J. Heney, Mr. R. S. Symons, Dr. H. Jacobs, and Dr. J. E. Pippin. More information is available from Palisades Institute, 201 Varick Street, New York, NY 10014, (212) 620-3377.

(continued on page 30)

SHORT COURSES (from page 29)

Microwave Circuits: Theory and Applications will be presented February 8-12, 1982 at the Hyatt Rickey's Hotel, Palo Alto, California and March 15-19, 1982 at the Sheraton Potomac Inn, Rockville, Maryland. The course is being offered by the Continuing Education Institute at a fee of $850 per student. The instructors are Les Besser, Robert Wenzel, and Steven March. For further information, contact Continuing Education Institute, 10889 Wilshire Boulevard, Suite 1030, Los Angeles, CA 90024, (213) 824-9545 or at (301) 596-0111.

Georgia Institute of Technology is offering **Microwave Stripline Design** from February 16-17, 1982 for a cost of $295. The course will be taught by experienced members of the Georgia Tech staff. For more information, contact the Department of Continuing Education, Georgia Institute of Technology, Atlanta, GA 30332, (404) 894-2400.

A companion course, **Modern Microwave Solid State Devices and Sources,** will be presented February 18-19, 1982 by the Department of Continuing Education, Georgia Institute of Technology. The course fee is $295. For more details, call (404) 894-2400.

Microwave Solid-State Devices and Circuits is being offered by U.C.L.A. from February 22-26, 1982 for a fee of $795 per student. The course will be held on the campus at the University of California in Los Angeles. The lecturers will include George I. Haddad, Paul T. Greiling, Lester Eastman, Douglas Maki, and Dean Peterson. Contact U.C.L.A. Short Courses Program Office, 6266 Boelter Hall, Los Angeles, CA, (213) 825-1295 or 825-3344 for more information.

Modern Microwave Techniques is a 3½ day, intensive short course being offered by Technology Service Corporation. The course will be held February 23-26, 1982 at the Plaza International Hotel, San Diego, California for a $590 per pupil fee. The instructor is Dr. Stephen F. Adam. Contact Technology Service Corporation, 8555 Sixteenth Street, Silver Spring, Maryland 20910, (301) 565-2970 for additional information.

The U.C.L.A. Continuing Education in Engineering and Mathematics Office is offering **ECM/ECCM/ESM,** Course No. Engineering 867.48, March 1-5, 1982 in Los Angeles, CA. The course is being coordinated by Dr. Cornelius T. Leondes of U.C.L.A. The course fee is $795 per pupil. More information is available from the Short Course Program Office, U.C.L.A., 6266 Boelter Hall, Los Angeles, CA 90024; (213) 825-1295 or 825-3344.

Willis De Hart, President of De Hart Consulting Company, is the instructor for **Fundamentals of Communication Satellite Systems,** course number 503DC, being offered March 8-12, 1982 by the George Washington University Continuing Engineering Education Program. The fee for the course is $760. For more information, contact the school in Washington, D.C. at (800) 424-9773, (202) 676-6106, or Telex 64374 (International).

Technology Service Corporation is offering **Low Sidelobe Antennas,** a 3½ day intensive short course at the Plaza International Hotel, San Diego, California, March 9-11, 1982. The course instructors are Dr. J. Frank and Mr. Helmut E. Schrank. The fee is $590 per pupil. For more information, contact Technology Service Corporation, 8555 Sixteenth Street, Suite 300, Silver Spring, MD 20910, (301) 565-2970.

The University of Mississippi is offering a one week course on **Fundamentals of Numerical Solution Methods in Electromagnetics.** The course will be presented March 15-19, 1982 and the fee will be $500. For additional details, contact Prof. Mark Tew, Department of Electrical Engineering, University of Mississippi, University, MS 38677, (601) 232-7231.

Modern Antennas is a short course being offered April 20-23, 1982 by the Technology Service Corporation for a fee of $590 per pupil. The course instructors are Dr. J. Frank, Mr. Helmut E. Schrank and Dr. Edward B. Joy. The course will be held at the Holiday Inn, Bethesda, Maryland. More information can be obtained from Technology Service Corporation, 8555 Sixteenth Street, Suite 300, Silver Spring, MD 20910, (301) 565-2970.

Radar Systems Engineering: Detection, Tracking, and Signal Processing will be offered by the Continuing Education Institute, April 26-30, 1982 at the Columbia Inn, Columbia, Maryland. The course instructors are: Dr. P. N. Robinson, Hughes Aircraft Company; Dr. P. Grieve, Grumman Aerospace Corporation; and Dr. D. M. Stuart, a private consultant. The course fee is $850. For further details, contact Continuing Education Institute at (213) 824-9545 or (301) 596-0111.

Other future short courses of interest include: **Infrared Technology and Application,** Georgia Institute of Technology, March 10-12, 1982; **Laser Technology and Systems Applications,** Georgia Institute of Technology, March 8-9, 1982; **Microwave Systems Planning,** George Washington University, April 12-16, 1982; **Communications Satellite Engineering,** George Washington University, April 19-23, 1982; **Digital Communications and Satellite Systems,** U.C.L.A., May 17-21, 1982; **Microwave Circuit Design,** U.C.L.A., May 24-28, 1982. For information on the U.C.L.A. courses, contact the Short Course Program Office, Los Angeles, California, (213) 825-1295 or (213) 825-3344.

BOOK REVIEW

Advanced Antenna Technology

Edited by Peter J. B. Clarricoats

Microwave antenna technology has made exceptional progress in the last seven years. **Advanced Antenna Technology**, published in May, 1981, is a 450-page reprint volume containing 76 selected papers. They have been carefully selected from the Proceedings of the European Microwave Conference from 1975 through 1980 and the Military Microwave Conferences of 1978 and 1980. These European-based conferences have proved to be an important focus for reports on antenna research and development. This new volume makes this material readily available to both the antenna specialist and the systems designer.

The text of Advanced Antenna Technology is divided into five sections:

1. Array Antennas
2. Conformal and Microstrip Antennas
3. Feeds and Reflectors
4. Radomes
5. Antenna Analysis

Most of the reprints are drawn from conferences held between 1976 and 1980, but key articles from the 1974 and 1975 European Microwave Conferences are included.

Orders can be placed with:

Publications Sales Department
Microwave Exhibitions and Publishers, Ltd.
Temple House, 36 High Street,
Sevenoaks, Kent, TN131JG, England

The soft-cover volume is priced at £18, which includes packaging and postage via surface mail.

NEW IEEE SOCIETY

The Executive Committee of the IEEE has approved the formation of the Society on Social Implications of Technology (S-SIT). The Society will supersede the Committee on Social Implications of Technology. It will work with the other Societies of the IEEE with the objective of providing:

- An open forum for the interchange of ideas related to the technology/society interface
- Means to encourage and support social responsibility and a professional approach to the practice of engineering

The Society will:

- Develop programs to explain technology to society through its publication and through its Chapter and national level meetings
- Foster communication among engineers and between engineers and society on needs and concerns of society and responsibility of technology
- Encourage and publish articles related to the social implications of technology
- Recognize service in the public interest in the profession by the establishment of appropriate awards
- Publish scholarly articles on the subject of engineering ethics

You can join the new IEEE Society by enrolling with your 1982 dues payment; the S-SIT fee is six dollars. If you would like more information, please write and send your name, address, and telephone number to IEEE Technical Activities, Attention: S-SIT Interim Adcom, 345 East 47th Street, New York, NY 10017.

MEETINGS OF INTEREST

The following list of meetings of potential interest to MTT-S members covers a period of approximately ten months. All efforts will be made to maintain a complete compilation. Any additions should be sent to the MTT-S Newsletter Editor.

- **The Sixth Topical Meeting on Integrated and Guided-Wave Optics** will be held at the Asilomar Conference Center, Pacific Grove, California on January 6-8, 1982. More details are available from Dr. Jarus W. Quinn, Optical Society of America, Integrated Optics Meeting, 1816 Jefferson Place, N.W., Washington, D.C. 20036 at (202) 223-8130.
- The University of Colorado, Boulder, Colorado, is the site of the January 13-15, 1982 **National Radio Science Meeting.** Further details are available from S. W. Maley, Dept. of Electrical Engineering, University of Colorado, Boulder, Colorado 80309.
- **WINCON — The Aerospace and Electronic Systems Winter Convention** will be held February 9-11, 1982 at the Sheraton Universal Hotel in Los Angeles, California. Contact Lou Damiani, P. O. Box 99, Atwood, CA 92601, (714) 632-5658 for more details.
- **The 1982 IEEE International Solid State Circuits Conference** will be held February 10-12, 1982 at the Hilton Hotel in San Francisco, California. Contact Lewis Winner, 301 Almeria Avenue, P.O. Box 343788, Coral Gables, FL 33134 at (305) 446-8193 for more information.

(continued on page 32)

MEETINGS OF INTEREST (from page 31)

- The Expo Center in Orlando, Florida is the site for **Southcon.** For more information on this March 23-25, 1982 meeting, contact Dale Litherland, Electronic Conventions, Inc., 999 N. Sepulveda Blvd., El Segundo, CA 90245, (213) 772-2965.

- **The 1982 International Reliability Physics Symposium** will be held March 30 - April 1, 1982 at the Town and County Hotel, San Diego, California. Contact Dr. Murray H. Woods, Intel Corp., 3065 Bowers Avenue, Santa Clara, CA 95051 at (408) 987-8802 for further details.

- **Southeastcon '82,** the IEEE Region 3 Conference, will be held April 4-7, 1982 at the Sandestin Convention and Resort Center, Destin, Florida. More information is available from Carolyn C. Schauble, University of Florida Graduate Engineering Center, P.O. Box 1918, Eglin Air Force Base, FL 32542, (904) 882-5614.

- April 12-14, 1982 are the dates for **The Fifth Topical Meeting on Optical Fiber Communication,** which will be held at the Phoenix Civic Plaza Convention Center, Phoenix, Arizona. Further details can be obtained from Dr. Jarus W. Quinn, Optical Society of America, 1816 Jefferson Plaza, N.W., Washington, D.C. 20036, (202) 223-8130.

- **The Second Conference on Lasers and Electro-Optics (CLEO '82)** will also be held at the Phoenix Civic Plaza Convention Center, Phoenix, Arizona. Contact Dr. Jarus W. Quinn, Optical Society of America, 1816 Jefferson Plaza, N.W., Washington, D.C. 20036 at (202) 223-8130 for more details on the April 14-16, 1982 meeting.

- **The 1982 Microwave Power Tube Conference** will be held April 26-28, 1982 at the Naval Postgraduate School in Monterey, California. Attendance will be by invitation only and current U. S. Department of Defense Secret clearance is required. Contact Mr. William Linn, General Chairman, 960 Industrial Road, San Carlos, CA 94070 at (415) 591-8411, ext. 222 for more details.

- May 3-5, 1982 are the dates for the **1982 IEEE International Conference on Acoustics, Speech, and Signal Processing.** For the first time, the conference will be held in Europe at the Palais Des Congres, Paris. Contact M. Bellanger, T.R.T., 5 Avenue Reaumur, F92350 Plessis-Robinson, France, telephone (1) 630-23-23, ext. 516 for further details.

- The Four Seasons Motor Inn, Colorado Springs, Colorado is the site of the **1982 IEEE Region 5 Conference and Exposition.** More information is available on the May 3-7, 1982 meeting from Dr. Clayton V. Stewart, Dept. of Electrical Engineering, U. S. Air Force Academy, Colorado Springs, CO 80840, (303) 472-3190.

- **The 1982 IEEE International Symposium on Circuits and Systems** will be held at the University of Rome, Rome, Italy, May 10-12, 1982. Contact Prof. V. Cimagalli, Instituto di Roma, Via Endussiana, 00184, Roma, Italy, (396) 474-0234 for further details.

- San Diego, California is the site of the **32nd Electronics Components Conference.** The Sheraton Harbor Island Hotel is the May 10-12, 1982 conference site. Further details are available from G. H. Donaldson, Sandia Laboratories, Division 2154, P. O. Box 5800, Albuquerque, NM 87185, (505) 264-8538.

- The Americana Hotel in Rochester, New York is the site for the **IEEE Custom Integrated Circuits Conference.** Contact Mr. David Lewis, Conference Chairman, Eastman Kodak Company, Research Laboratories, Rochester, NY at (716) 477-7558 for more information on the May 17-19, 1982 meeting.

- May 18-20, 1982 are the dates for the **IEEE National Aerospace and Electronics Conference (NAECON)** to be held at the Dayton Convention Center, Dayton, Ohio. Contact NAECON, 140 East Monument Avenue, Dayton, Ohio 45402, (513) 223-6266 for additional information.

- **The Sixth International Defense Electronics Exposition** will be held at the Hanover Fair Grounds in Hanover, West Germany, May 18-20, 1982. Further information is available from Dr. Fred Morritz, Cahners Exposition Group, 222 West Adams Street, Chicago, IL 60606, (312) 263-4866.

- **The 1982 Joint International IEEE/AP-S Symposium, National Radio Science Meeting, and Nuclear Electromagnetic Pulse Meeting** will be held in Albuquerque, New Mexico on May 24-28, 1982. Contact Dr. Kendall F. Casey, The Dirkwood Corp., 1613 University Blvd., N.E., Albuquerque, NM 87102 for more information.

- **Electro 1982** will be held May 25-27, 1982 at the Boston Sheraton Hotel and the Hynes Auditorium in Boston, Massachusetts. Further information can be obtained from Dale Litherland, Electronic Conventions, Inc., 999 N. Sepulveda Blvd., El Segundo, CA 90245, (213) 772-2965.

- The Promise of Remote Sensing is the theme of the **1982 International Geoscience and Remote Sensing Symposium (IGARSS '82),** which will be held June 1-4, 1982 at the University of Munich, Munich, West Germany. For more information contact either Prof. K. Carver, NASA HQ - Office of Space and Terrestrial Applications (Code ER), Washington, D.C. 20546 or Dr. A. Sieber, Institute for Radio Frequency Technology, Oberpfaffenhofen, D-8031 Wessling, Federal Republic of Germany, phone (08153) 28305.

- The Marriott Hotel in Philadelphia, Pennsylvania is the site of the **1982 IEEE International Symposium on Electrical Insulation.** Contact Thomas Tucker, Philadelphia Electric Co., N 3-1, 2301

Market Street, Philadelphia, PA 19101 for more information on the June 7-9, 1982 meeting.

- **The Fifth European Conference on Electrotechnics** will be held June 14-18, 1982 in Copenhagen, Denmark. The theme will be "Reliability in Electrical and Electronic Components and Systems." A technical exhibition will be included. Further information is available from Dr. Peter W. Becker, Electronics Laboratory, The Technical University of Denmark, DK-2800 Lyngby, Denmark. Telephone 45(0) 288 2300.

- **The 1982 IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM** will be in Dallas, Texas, at the Hyatt Regency Hotel, June 15-17, 1982. More information is available from Dr. David N. McQuiddy, Jr., Texas Instruments, Inc., Mail Stop 255, P.O. Box 226015, Dallas, TX 75266, (214) 995-2808.

- June 21-25, 1982 are the dates for the **1982 IEEE International Symposium on Information Theory,** which will be held at Les Arcs, an alpine resort near Bourg St.-Maurice, France. Contact Prof. Carl W. Helstrom, Dept. of Electrical Engineering & Computer Science, C-014, University of California at San Diego, La Jolla, CA 92093, (714) 452-3816 or Prof. Bernard Picinbono, Labo des Signaux & Systemes, Ecole Superieure d' Electricite, Plateau de Moulon, F 91190 Gif-sur-Yvette, France for more information.

- **The XII International Quantum Electronics Conference** will take place June 22-25, 1982 in Munich, West Germany. Further details can be obtained from B. Bolger, Philips Research Laboratories, Eindhoven, The Netherlands or Dr. P. F. Liao, Bell Telephone Laboratories, Crawfords Corner Road, Holmdel, NJ 07733, (201) 949-3000.

- The University of Colorado, Boulder, Colorado is the site of the June 28 - July 1, 1982 **Conference on Precision Electromagnetic Measurements.** For more information, contact Robert Kamper, National Bureau of Standards, Boulder, CO 80303, (303) 499-1000.

- July 20-23, 1982 are the dates for the **Joint Intermag and Magnetism and Magnetic Materials Conference,** which will be held in Montreal, Quebec, Canada, at the Hotel Sheraton - Mt. Royal. This meeting combines the 28th Annual Conference on Magnetism and Magnetic Materials and the Intermag Conference. Prof. Arthur Yelon, Ecole Polytechnique, University of Montreal, Montreal, Quebec, Canada H 3C 3A7 can supply more information.

- **The Seventh Colloquium on Microwave Communication** will be held in Budapest, Hungary, Sept. 6-10, 1982. Contact the Secretariat of the Seventh Microwave Colloquium, H-1525 Budapest, 114 POB 15. Hungary for more details.

- Helsinki, Finland is the site of the **12th European Microwave Conference.** Held at Finlandia Hall, the conference will take place September 13-17, 1982. For additional details, contact Prof. M. Tiuri, Helsinki University of Technology, Radio Laboratory, Otakaari 5A, 02150 Espoo 15, Finland.

- **The 1982 Western Electronic Show and Convention (WESCON)** will be held September 14-16, 1982 in Los Angeles, California. Contact Dale Litherland, Electronic Conventions, Inc., 999 N. Sepulveda Blvd., El Segundo, CA 90245, (213) 772-2965 for further details.

- September 20-22, 1982 are the dates for the **1982 Electronic and Aerospace Systems Convention (EASCON),** which will be held in Washington, D.C. at the Sheraton Hotel. More details are available from Mr. S. J. Campanella, Comsat Laboratories, Washington, D.C., (202) 428-4258.

- **The 1982 International Conference on Circuits and Computers** will be held September 29 - October 1, 1982 at the New York Hilton, New York, New York. For more information, contact Charles W. Gwyn, Sandia National Laboratories, Department 2110, Albuquerque, NM 87185.

- **The First Annual Military Communications Conference** will be held October 17-20, 1982 in Boston, Massachusetts. The conference theme is "Progress in Spread Spectrum Communications." More information can be obtained from Dr. Fred W. Ellersick, Communications Division, MITRE Corp., Bedford, MA 01730, (617) 271-3343.

- **Radar '82** will be held at the Borough of Kensington and Chelsea Town Hall, London, England, October 18-20, 1982. More information is available from the Secretariat, Conference Department, Institution of Electrical Engineers, Savoy Place, London WC 2R OBL, England.

- Overlapping **Radar '82** will be **Military Microwaves '82** at the Cunard International Hotel in London, England. The exhibition will be held October 19-22, 1982, while the Conference will open on October 20, 1982 with the first day devoted to papers on electro-optics. For more details, contact Mr. Roger Marriott, Microwave Exhibitions and Publishers Ltd., Temple House, 36 High Street, Sevenoaks, Kent, TN13 1JG. England, (0732) 59533.

- **The 1982 IEEE Ultrasonics Symposium** will be held at the Town and Country Hotel, San Diego, California, October 27-29, 1982. Contact Dr. John De Klerk, Westinghouse Research Laboratories, Beulah Road, Pittsburgh, PA 15235, (412) 256-7267 for more details.

- The Hyatt Regency Hotel in Knoxville, Tennessee is the site of the **1982 Applied Superconductivity Conference.** The conference will be held November 30 to December 3, 1982. For more information, contact Richard D. Blaugher, Westinghouse Electric Corp., Research and Development Center, 1310 Beulah Road, Pittsburgh, PA 15235, (412) 256-3561.

EVEN MORE NEW BOOKS

A few additional new books, which may be of interest to readers of the MTT Newsletter, include the following:

- **Radar Transmitters,** George W. Ewell, 338 pages, McGraw-Hill Book Company, $24.50. The book covers the following areas: Radar Transmitter Requirements, Microwave Sources, Modulators, Pulse - Transformer Design and Fabrication, Pulse-Forming Networks, Design of Charging Chokes, Switches, Specification of Transmitters, and Sample Designs.

- **Parametric Electronics. An Introduction,** K.-H Locherer and C. D. Brandt, approximately 345 pages, Springer-Verlag New York, Inc., Dept. S4110, P.O. Box 2485, Secaucus, NJ 07094; ISBN 0-387-10514-X; $39.00. Contents includes Lumped Nonlinear Reactances, Distributed nonlinear Reactances, Basic Relations for Parametric Circuits, Fundamentals of Electronic Noise, Noise Performance of Single-Varactor Parametric Circuits, Multiple Controlled-Reactance Parametric Circuits, Applications.

- **Design of Amplifiers and Oscillators** by the S-Parameter Method, George D. Vendelin, approximately 256 pages, due January 1982 from Wiley-Interscience, P.O. Box 092, Somerset, NJ 08873. The book describes the design tools, problems, and data required for various types of amplifiers and oscillators including low noise, high power, and wideband designs.

- **Coherent Spread Spectrum Systems,** Jack K. Holmes, 656 pages, November 1981, from Wiley-Interscience, P.O. Box 092, Somerset, NJ 08873, $62.50. This book is the first analytical text on synchronization of pseudo-noise coded spread spectrum systems. It covers various systems aspects, PN code acquisition and tracking, and residual and suppressed carrier tracking. Also includes PCM spectra, Gold codes, and Bit Error Rate performance.

- **Digital Communications by Satellite,** V. K. Bhargava, et. al., 592 pages, November 1981, $45.00, published by Wiley-Interscience, P.O. Box 092, Somerset, NJ 08873. This book brings together theories, tradeoffs, and implications for systems design. It presents modulation, multiple access, and coding techniques that can be directly applied to the development of digital satellite communications systems. The book features new material, including over-all digital satellite system design equations and a complete survey of TDMA satellite systems.

- **Compendium of Communication and Broadcast Satellites: 1958 to 1980** was assembled by the Communication and Broadcast Satellite Systems Committee of the IEEE Aerospace and Electronics Systems Society, edited by Martin P. Brown, Jr., and published by the IEEE Press. The book is available in hard cover only and is priced at $26.20 for members and $34.95 for non-members. The 392 page volume can be ordered from the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. Payment should accompany orders.

- **Low-Noise Microwave Transistors and Amplifiers,** a book of selected reprints, has been published by the IEEE Press. The Editor is Dr. H. Fukui of Bell Telephone Laboratories. The book is a collection of sixty papers divided into five subject areas: Noise Characterization and Measurements, Noise Properties of Bipolar Transistors, Noise Properties of Field-Effect Transistors, Low-Noise Amplifier Design, and Practical Amplifier Techniques. The 472-page volume is priced at $16.95 for the paperbound member edition. A clothbound edition is available for $25.45 for IEEE members and $33.95 for non-members. Order from the IEEE Service Department, 445 Hoes Lane, Piscataway, NJ 08854.

1982 ARFTG MEETINGS

At its October 1981 meeting in Princeton, N.J., ARFTG announced its meeting schedule for 1982. The next ARFTG meeting will be held following the 1982 IEEE MTT-S International Microwave Symposium, June 18 and 19, in Dallas at the Hyatt Regency Hotel. Prospective papers for this meeting should be sent to: Richard Dolbec, MIT Lincoln Laboratories, CD-277, P.O. Box 73, Lexington, MA 02173, (617) 862-5500, Ext. 5860.

Next November, ARFTG will mark its tenth anniversary with a meeting, tentatively scheduled for November 4 and 5, at the National Bureau of Standards in Boulder, Colorado. The meeting will focus on the six-port network analyzer and its applications. Papers for the Fall meeting should be sent to Dr. H. George Oltman, Jr., Hughes Aircraft Co., Building 268, Mail Stop A-55, Canoga Park, California 91304, (213) 702-2293.

ARFTG AFFILIATES WITH MTT SOCIETY

The Automated RF Techniques Group (ARFTG) and the Microwave Theory and Techniques Society have forged the basis for affiliation. This announcement was made at the October 1981 ARFTG meeting in Princeton, NJ after agreement was reached at the October MTT-S Adcom meeting.

The protracted discussions had centered on accommodating the desires of both organizations. While MTT-S wanted an arrangement to coincide with its present structure, ARFTG wished to retain the better part of its autonomy. According to the agreement, ARFTG's Executive Committee will provide the link between the two organizations. ARFTG will remain an independent group, but its Executive Committee will become a Technical Committee, MTT-12, of the MTT-S.

Some of the other features of the agreement include:

- ARFTG will retain its Constitution, but will review it with the IEEE and MTT-S and will resolve any conflicts.
- ARFTG will maintain its own membership list which does and will continue to include non-IEEE and non-MTT members. However, ARFTG will actively encourage its members to personally affiliate with and support the IEEE and MTT-S.
- ARFTG will retain its bank accounts and funds to service its members and maintain its software library and its traveling standards laboratory.
- ARFTG will continue to hold its Spring meeting in conjunction with the IEEE MTT-S International Microwave Symposium as long as mutually agreeable.
- ARFTG will continue to hold its Fall meeting in a city of its choice using sponsorship of its local members.

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