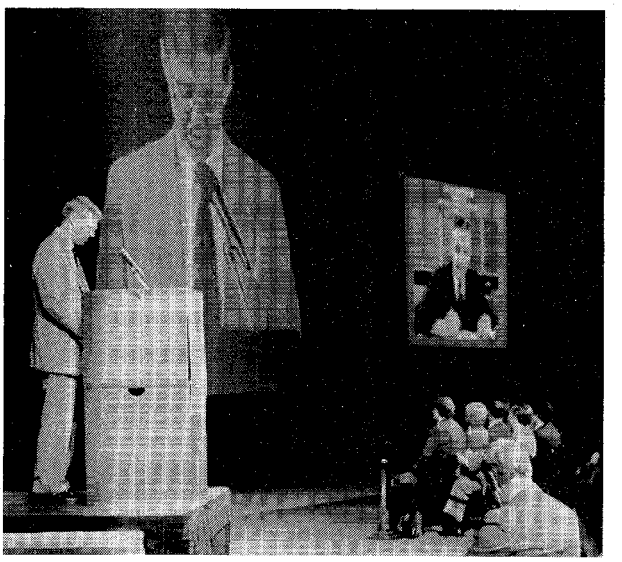
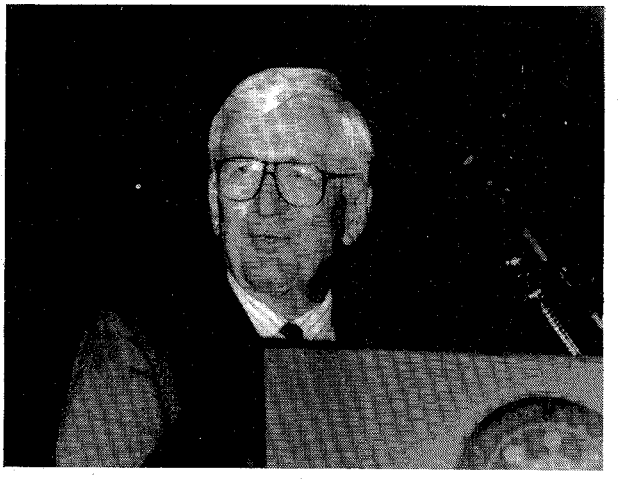
The 1991 IEEE MTT-S International Microwave Symposium

Peter Staecker, *Senior Member, IEEE*

THE SYMPOSIUM was held at the John B. Hynes Veterans Memorial Convention Center in Boston, June 10–14, 1991. Although the financial committee is still counting the money (and there is some left to count), we know that 1991 was a record year for total attendance (Table I) in spite of the economic uncertainty gripping some parts of the microwave community.



Peter Staecker reads introductory remarks of Lee A. DuBridge, Director of the MIT Radiation Laboratory, to the Plenary Session.



Norman F. Ramsey during his keynote address at the Plenary Session.

Microwave Week: Evolving with Changes in Microwave Technology

This year, as in past years, two additional meetings were held during microwave week, the Microwave and Millimeter-Wave Monolithic Circuits Symposium, and the Automatic RF Techniques Group Conference. From the attendance statistics of Table I it appears that the attendance at the monolithic meeting has been dropping since its peak year in 1989. The MMIC content of the MTT Symposium has been increasing steadily as the technology has matured, however, and today, solid state device and monolithic integration technology is more than ever a part of every microwave engineer's daily experience. In fact, a look at the ranking of sessions at the 1991 Symposium by attendance (Table II) shows five of the eight sessions with the highest attendance focused on monolithic IC technology. Indeed, with one of every four papers presented at the MTT Symposium related to solid state devices or monolithic integration, it is clear that MTT is growing as a strong applications base ofelectron device technology.

As an interesting historical note, at the first Boston Symposium held in 1959, ferrite technology accounted for fully one-third of all papers. In 1967, again in Boston, integrated circuits and microwave FET's were the featured new technologies. The 1983 Boston Symposium saw the emergence of monolithic microwave IC technology. Conscious efforts have been made by the MTT Technical Committees and the Administrative Committee to reshape the format of the Symposium to meet the needs of these new areas. As the MTT Society once felt the need to nurture monolithic technology, separating it into its own conference in 1982, we now look to emerging technologies which can benefit from similar treatment. Two candidates, high temperature microwave superconductivity (which attracted 17 papers to our 1991 meeting) and lightwave interactions, merit our attention.

MTT Symposium organizers are annually confronted with an increasing eagerness for technical participation in what presently is an annual five-day conference. This year an unprecedented 700 papers were submitted for technical review, resulting in a substantially lower acceptance rate than in previous years. At the same time, a record 14 workshops were proposed and organized, with record participation and high technical quality. Possible solutions include more parallel sessions, an issue discussed vigorously every time the Technical Program Committee meets, and the notion of additional (topical) conferences throughout the year, a plan which has worked for other

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TABLE I
MTT SYMPOSIUM STATISTICS

Registration	1991	1990	1989	1988	1987
Full	1430	1357	1762	1455	1697
Student	185	174	186	160	92
One-day	157	130	212	203	128
Code D (Exhibitor/MTT)	157	168	168	133	160
MIT Radiation Laboratory	187				
Total MTT	2116	1829	2328	1951	2077
Workshops	1140	857	862	948	767
Panels	754	569	1054	630	658
MMWMC	559	628	1084	800	950
ARFTG	101	86	121	82	149
Exhibitor:					
Code A (regular)	4371	3282	3996	3824	3226
MTT Digest	547	849	569	564	536
MMWMC Digest	340	488	410	454	382
ARFTG Digest	94	141	90	93	89
Members	1511	2088	1579	1543	1340
Non-members	7442	5469	6609	6538	5264
Total	8953	7557	8188	8081	6604
Guest Program	729	425	259	179	313
Banquet	552	472	636	476	703
MTT membership	11073	11597	11750	10686	9445
Technical Papers					
Long	126	99	97	100	110
Short	128	95	81	65	33
Open Forum	50	93	89	49	91
Total	304	287	267	214	234
Submitted	699	549	519	394	416
% accept	43	52	51	54	56

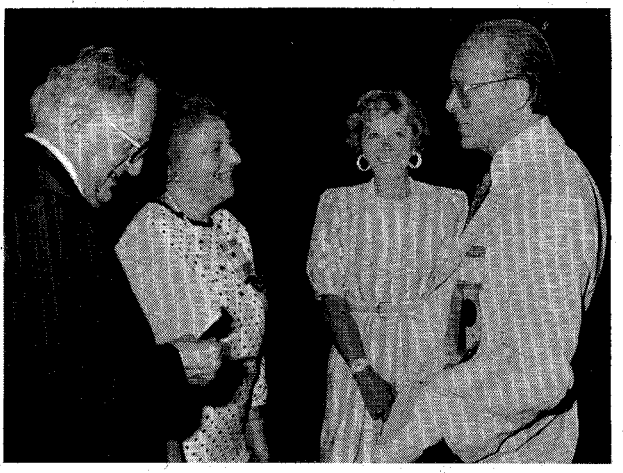
Societies.

An experiment tried this year at the Technical Program Committee meeting in January 1991 was a special secondary review of papers submitted to the Open Forum. The final selection process, although more rigorous than that of the regular sessions, has produced a session which has evolved from its introduction in the 1983 Boston Symposium to one of the significant technical features of current meetings.

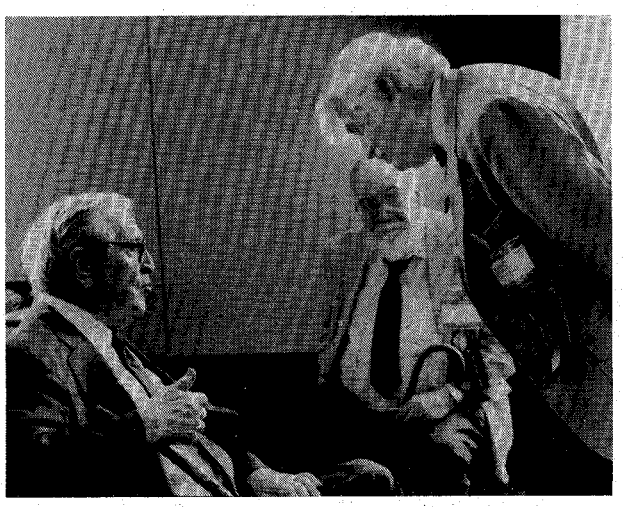
The guest program featured a well-planned set of tours to Boston and environs, and added to the choice of activities this year an evening at the Boston Pops, an event attended by 500. The awards banquet, attended by 550, was a marathon event this year, ending at a late hour, but with entertaining albeit provocative remarks by banquet speaker Daniel Schorr.

MIT RADIATION LABORATORY: 1941–1991

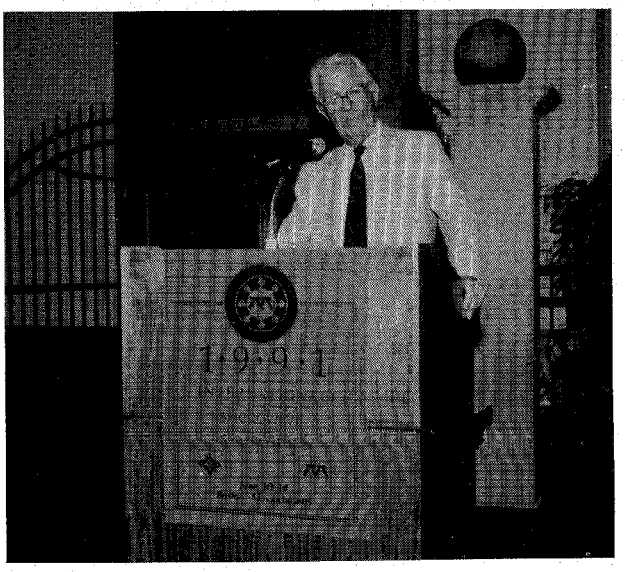
The historical content of the 1991 Symposium will be remembered because of the commemoration of the 50th anniversary of the founding of the MIT Radiation Laboratory. Just under 200 members of the Laboratory attended the technical and social events. The Plenary Session formally started the Symposium, and was attended by an audience of nearly 1000. The keynote address was given by Professor Norman F. Ramsey, Jr., who spoke of the legacy of the Radiation Laboratory and recounted some personal memories of his stay there. Robert Pound,



Ted Saad, Fi Saad, Edie Adam, and Nathan Marcuvitz at the Special Technical Session on the MIT Radiation Laboratory.

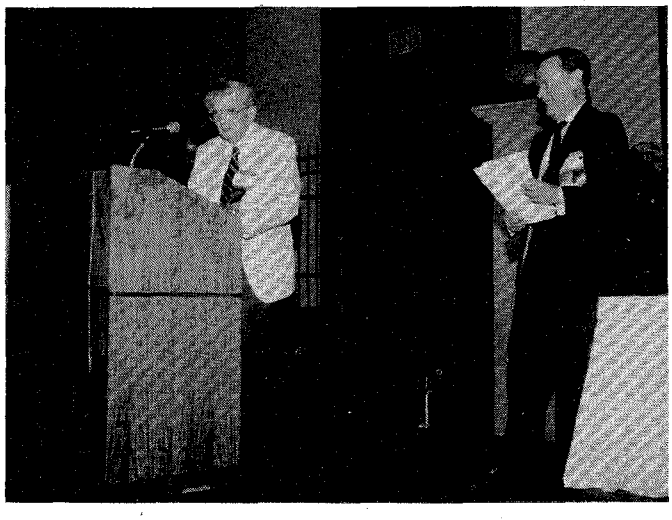


Jerry Wiesner, Al Hill, and Bob Pound at the Radiation Laboratory Reception.



Daniel Schorr during his talk at the Awards Banquet.

Sogo Okamura, recipient of the MTT Career Award.



Robert Dicke, recipient of the MTT Pioneer Award, with Ferdo Ivanek.

TABLE II
SESSION ATTENDANCE AT THE 1991 TECHNICAL SESSIONS

Session	Rank	Attendance	Topic
C	1	500	*MIT Radiation Laboratory*
A	2	450	Receiver Circuits I (joint w/MMWMC)
E	3	425	Receiver Circuits II (joint w/MMWMC)
I	4	400	Power Amplifiers (joint w/MMWMC)
B	5	350	Nonlinear Modeling
HH	6	350	μwave and mm-Wave Packaging
M	7	350	MMICs I
Q	8	350	MMICs II
U	9	350	FETs
L	10	310	*Microwave Radiometers*
CC	11	300	mm-Wave ICs and Technology I
G	12	300	*Multi-GHz Lightwave Systems*
Y	13	300	FET and HEMT Circuits
J	14	250	Adv Techniques of Numerical Electromagnetics
KK	15	250	Microwave System Applications
N	16	250	High Q Filters
NN	17	250	Superconducting μwave Components
R	18	250	Filters and Multiplexers
S	19	250	New Guided-wave Leakage Effects
EE	20	200	CAD modeling for Transmission Structures
GG	21	200	mm-Wave ICs and Technology II
I	22	200	3D EMT-based CAD
MM	23	200	CAD for yield and noise characterization
O	24	200	CPW and other discontinuities
PP	25	200	Solid State Devices & Circuits (non-FET) II
QQ	26	200	High Power Devices & Systems
F	27	180	MICs
OO	28	180	Phased and Active Array Techniques
LL	29	150	Solid State Devices & Circuits (non-FET) I
AA	30	125	Receiver Components
W	31	125	Planar Transmission Lines
FF	32	120	Measurement Technology
JJ	33	100	On-Wafer and Noise Measurements
K	34	100	*High Power Optical Switching*
RR	35	100	Superconducting Filters
T	36	100	μwave/Optical Circuits & Applications
V	37	100	Passive Components I
Z	38	100	Passive Components II
D	39	80	*Student Paper Competition*
BB	40	75	*Time-Resolved Spectroscopy ...*
P	41	75	μwave/Optical Devices & Circuits
X	42	75	Biological Effects
DD	43	70	Ferrites & Acoustics

Special Focused Sessions in Italics

Nathan Marcuvitz and Ivan Getting were invited speakers at a special technical session discussing components, theory, and systems, which were discovered, initiated, or manufactured at MIT Radiation Laboratory. That session drew an estimated 500 people (standing room only, the most heavily attended technical session in the entire Symposium) in spite of an air conditioning malfunction at the Hynes which sent temperatures over 80 degrees in the hall. Bob Dicke offered closing remarks at a second special session on microwave radiometers, a field which traces its roots to his invention made during his stay at the Laboratory. One shared anecdote related the time when I. I. Rabi visited Dicke's laboratory. While offering a liberal dose of skepticism about the operation of a thermal sensor, Rabi inadvertently waved a lighted cigar too near the sensing element, and pegged the meter. On Wednesday evening at the awards banquet, Dicke received the MTT Pioneer Award for the invention of the microwave radiometer, so vividly demonstrated by Rabi at the MIT Radiation Laboratory.

A reception for members and guests of the Radiation Laboratory drew over 200 people, among them President Emeritus Jerome Wiesner and Professor Emeritus Albert Hill of MIT, who was instrumental in helping plan the Radiation Laboratory events of the week.

ACKNOWLEDGMENT

From the PBS special NOVA program "Echoes of War," which aired in October 1989, to the recognition by IEEE of the MIT Radiation Laboratory as an Electrical

TABLE III
THE STEERING COMMITTEE OF THE 1991 IEEE MTT-S INTERNATIONAL MICROWAVE SYMPOSIUM

Chairman
Peter Staecker

Local Arrangements
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Tom Costas
Bob Donahue
Chiara Faiola
John Guenard
Frank Occhiuti
Larry Pihl

Technical Program
Dan Masse, Co-Chair
Glenn Thoren, Co-Chair
John Heaton
Dave Meharry

Symposium Digest
George Heiter, Chairman
Dick Laton
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Workshops
Larry Kushner

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Zvi Galani, Editor
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Open Forum
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Ted Saad, Chairman
Harlan Howe
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Roger Sudbury

Historical Exhibit
Roger Sudbury

Student Program
Peter Rizzi

Guest Program
Mikelle Carr
Susan Staecker

Chapter Liaison
Tom Perkins

Special Events
Joe White

Engineering Milestone in October 1990, and, of course, the planning and execution of all the "usual" details of the Symposium itself, the years of preparation for the 1991 meeting have been rigorous but gratifying. The success of the meeting is due to the teamwork of the Steering Committee operating as a unit, and, just as significantly, the efforts of Committee individuals who dug into the fine details, one of which may be that calendar on your office wall, now in its last month.

Peter Staecker (S'63–M'72–SM'87) received the B.S. degree from MIT in 1964 and the Ph.D. degree from the Polytechnic Institute of Brooklyn in 1970, both in electrical engineering.

From 1972 to 1986 he was a Staff Engineer at the MIT Lincoln Laboratory, where he worked on microwave device and circuit designs in support of Lincoln's Satellite Communications hardware efforts. In 1986, he joined M/A-COM's Subsystems Division, where he has been engaged in the management and technical direction of microwave and millimeter-wave programs.

Dr. Staecker has been a member of the Administrative Committee of the IEEE Microwave Theory and Techniques Society since 1985. Since 1983 he has been a member of the Technical Program Committee of the MTT-S International Microwave Symposium, and was General Chairman of the 1991 MTT-S International Microwave Symposium Steering Committee.