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CHICAGO SECTION · IEEE · INSTITUTE OF ELECTRICAL & ELECTRONICS ENGINEERS MAY, 1972

*MAY 16: JOINT SECTION/ANTENNAS & PROPAGATION MEETING*

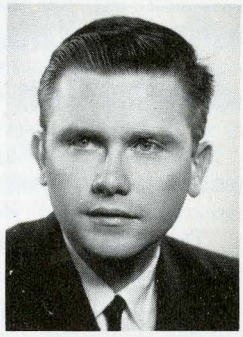
## TV SCATTERING FROM HIGH RISE BUILDINGS

During recent months there has been a growing controversy about how much television interference will be caused by the new Sears Tower now under construction in Chicago. An objective accounting of this story appeared in the April 1972 issue of *Chicago Guide* in an article by Souter. Stories have been printed in the newspapers with some based on news releases from the Chicago television broadcasters and Sears, Roebuck and Company. In all the reports made public to date, only marginal technical information has been released and no references have been given to the theory behind the efforts to reduce the interference.

Sears has retained AVCO Corporation of Lowell, Mass., and the Electro-Science Lab at Ohio State University to develop absorber material and low reflection glass for the upper walls of the tower in an effort to reduce ghost signals. Beyond this, the technical information appears to be restricted or classified to the public. This may be due in part to possible legal suits and to proprietary rights for the materials being developed.

Professor Thomas M. Smith, University of Illinois, Chicago Circle Campus, will discuss this problem at the May 16 joint meeting of the Chicago Section and the Group on Antennas and Propagation. Professor Smith will present a bistatic scattering model to describe the ghost type interference which the Sears Tower should produce in the northwest and southeast portions of the Chicago area. His analysis is based on the assumption that the distances between the transmitter, the scattering building, and the receiver sites are large compared to the height and width of the building and, further, that the building dimensions are large compared to the wavelength of the TV signal. He will show that, subject to these restrictions, for the delay time of the ghost signal, the reflection properties for an arbitrary impedance coating on the building walls, and the beam width of the ghost signal may be obtained from relatively simple expressions. He will also discuss methods used in the microwave spectrum (centimeter wavelengths) to reduce reflections from metal and glass surfaces, as well as the possibility of extending these techniques to the TV spectrum (wavelength to 6 meters).

Thomas M. Smith was born and raised in the Rogers Park area of Chicago. In 1960 and 1962 he received his BS and MS. in electrical engineering from Marquette University, Milwaukee. For six years he was a research engineer at the Plasma Research Lab of Aerospace Corp., Los Angeles and at the Radiation Lab of the University of Michigan, Ann Arbor, where he worked on reentry communications and plasma simulation, radar cross section analysis, and spherical antenna arrays. He has also worked for Warwick Electronics Inc. and the Zenith Radio Corp. in the areas of electroptics and quantum electronics. Professor Smith has



*(Please turn to page 2, col. 1)*

### IEEE – CHICAGO SECTION – CALENDAR

| MAY | | JUNE | |
|---|---|---|---|
| 1 | Student Papers | 5 | G-1 – Audio & Electroacoustics - Synthesis of Direct Loudspeaker Systems. Speaker: Richard H. Small, School of Electrical Engineering, U. of Sydney, Sydney, Australia. For information call: Malin Burkard, 439-3600. |
| 7 | Fox Valley Dinner – Ladies Night | | |
| 9 | Executive Committee – Black Steer | | |
| 12 | Zenith Tour – Bill Siekman - 232-0104 | 12-13 | Chicago Spring Conference on Broadcast and Television Receivers – Regency Hyatt House. |
| 16 | G-3 & Section Meeting – Black Steer | | |
| 17 | Joslyn H.V. Tour | 13 | Executive Committee Meeting – Black Steer |
| 22-24 | International Microwave Symposium | | |

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## Fox Valley Ladies Night May 7

"Pool's Paradise," with an all New-York cast, will be the featured play at the Shady Lane Theatre in Marengo, Ill., when Fox Valley members and their wives gather on Sunday, May 7. Dinner, featuring tenderloin tips, begins at 2:30 p.m. The play will run from 4:30 to 7:00 p.m., allowing you to have the evening free for meeting with friends afterwards.

Ticket cost including both dinner and play is only $7.00 per person. Send your check to Mike Musko, 6009 Blodgett, Downers Grove, Ill. 60515. Reservations may be made by phone by calling 263-3776.

## Joslyn High Voltage Laboratory Tour

The Northwest Subsection and the Insulation Group will tour the Joslyn Research Center in Woodstock on May 17. The Research Center is devoted to research into processes, materials, systems and equipment necessary for the distribution and transmission of electrical energy; and consists of a 25,000 square foot research building and an 18,000 square foot high voltage laboratory. Equipment in the high voltage laboratory includes a 3000kV impulse and switching surge generator, a 1050kV, 60 Hertz test set, a 400kV, dc test set, a cell for wet and contamination tests and an outdoor test area. Our host has promised a few "exciting" high voltage demonstrations as part of the tour.

Special arrangements have been made for transportation to and from Woodstock. Buses with a "box lunch and chaser" will leave Randhurst at 7:00 p.m. sharp. Reservations are a must! Cost of the tour will be $4.00. Contact Jim Beall, 982-3055, by Friday, May 12.

## May 16 Joint Meeting

taught at Marquette University, Loyola University at Los Angeles, and the University of Michigan. Presently he is teaching electrical engineering in the Information Engineering Department at the University of Illinois, Chicago Circle.

Smith is Chairman of the IEEE Chicago Chapter of GAP/MTT.

The meeting will be held at the Black Steer Restaurant, 6446 W. North Ave., Chicago, Ill. Cost of the steak dinner, including all fixings, is $5.00; for reservations, call 764-5000. Social hour, 5:30 p.m.; dinner, 6:30 p.m.; meeting 7:30 p.m. Election of Chicago section officers will also be held at this meeting.

## Audio Group to Tour Zenith Radio

On Friday, May 12, members and guests of the Group on Audio and Electroacoustics will tour the Zenith Radio Engineering Research Laboratory, 6101 W. Dickens Ave. Location is 2100 north and 6100 west, one block west of Austin. Enter at the third entrance west of Mead Avenue, on the south side of the street.

Please arrive by 5:30 p.m.; tour will begin at 5:45 p.m. *promptly.*

After the tour, the group will have dinner, at 7:30 p.m., at the Rustic Barn Dinner Theater, 1 mile west of Route 53 on Route 20 (Lake Street), Bloomingdale, Ill. The Play—"You Know I Can't Hear You When the Water's Running" — will start at 8:30 p.m. Cost for the entire evening only $6.95 per person, including dinner and the theater. Please confirm by mail before April 28 to Henry Karplus, Argonne Laboratories, 9700 S. Cass Ave., Argonne, Ill.; telephone, 739-7711, ext 2930.

## Computation Techniques For The Simulation of Control Systems

Professor C.K. Sanathanan, University of Illinois, Circle Campus, will speak on "Computation Techniques for the Simulation of Control Systems" at the May 4 meeting of the IEEE Control Systems Society.

Multivariable and distributed parameter systems are best analyzed by some new computational techniques developed by the application of functional analysis. Simulation problems from the areas of nuclear plants, nonlinear distributed parameter electronic circuits, and urban mass transportation will be discussed by Professor Sanathanan.

Dinner and meeting will be at the Black Steer Restaurant, 6447 W. North Avenue, Chicago, Ill. Social hour, 6 p.m.; dinner, 7 p.m.; meeting, 8 p.m. Coordinator for this meeting is Dr. Andrew Vacroux. For reservations, call 225-9600, ext. 1145.

## Election of Officers

Officers and Executive Committee for the 1972-73 season will be elected at the May 16 meeting of the Chicago Section, to be held at Menard's Black Steer Restaurant, 6446 W. North Ave., Chicago, Ill. Professor Tom Smith will be the featured speaker, discussing the interference likely to be caused by the Sears, Roebuck tower. (Details elsewhere in this issue.) For reservations, call 764-5000.

The nominating committee, consisting of Robert J. Nunamaker and George C. Spisak, both past chairmen of the Section, will present the following slate.

Chairman, Dean Henry A. Setton, University of Illinois, Chicago Circle Campus; vice chairman, Richard A. Bulley, Commonwealth Edison Company; secretary, James F. Ralston, Allen-Bradley Company; and treasurer, Daniel J. Veith, Argonne National Laboratory.

For the Executive Committee: Paul Jahns, Commonwealth Edison Company, Fox Valley representative; Charles J. Heermans, General Time Corporation, Northwest Subsection representative; William Arrott, Gardner, Jones & Cowell; Joseph Feitler, Automatic Electric Corp; Donald G. Haines, Zenith Radio Corp.; George J. Mack, Illinois Bell Telephone Co.; Ruth L. Oldfield, Gardner, Jones & Cowell; and Donald Owen, Motorola, Inc.

Additional nominations may be made from the floor by presenting a petition bearing the signatures of at least 10 IEEE members. For full details, call the Section chairman, Bill Kusner, 727-1972.

## U of I at Chicago Circle to Host Student Papers

The winners of the Student Papers Competition of the West, Central and East Division will compete against each other for the top prize at the Region IV competition hosted by the Student Branch of IEEE at the University of Illinois Chicago Circle. The meeting will take place at 3:00 p.m. on Monday, May 1, 1972, in the Student Center, Polk and Halsted Streets (800 south and 800 west). Room number will be posted on the bulletin board. All Chicago Section members, as well as members of all student chapters, are invited to attend.



# *Open Invitation to IEEE Members, Wives and Guests*

## Technology And National Goals

William M. Magruder, Special Consultant to the President, will discuss "Technology and National Goals" at the Microwave Symposium Banquet, Arlington Park Towers Hotel, 23 May 1972. Jointly sponsored by the Chicago Section IEEE and the Group on Microwave Theory and Techniques. Magruder's subject will interest all IEEE members, their wives, and guests.

The growth of technology-related industries and opportunities for engineers since 1950 was largely due to government investment in defense and space. The curtailment of support by Congress of defense and space activities has had a profound impact personally and professionally on all engineers. Is the Nixon Administration aware and concerned about the resulting decline in technological progress, and is it active in attempting to realign national goals to help restore the vitality of technological industries? Is the Administration concerned about the under-utilization of engineering and scientific capability in America today? Magruder is in a position to answer these questions and to speak authoritatively for the Administration. He will answer questions at the close of his talk.

William M. Magruder has had 28 years of program management, aeronautical engineering, design, flight test and piloting experience.

A native of Evanston, Magruder was the Department of Transportation director of the Sonic Transport Program when he accepted appointment September 13, 1972, as Special Consultant to the President. In this assignment Magruder acts as program manager to focus U.S. technology upon urgent national needs and/or new economic opportunities.

Prior to his government service, Magruder was with Lockheed Aircraft Company where he supervised the design and development of the L-1011 commercial jet transport and all the company's commercial advanced design concepts. Earlier he had served as chief advanced design engineer for the L-1011 development and was responsible for technical development of the Lockheed SST design, as assistant general manager of that project.

Social hour is at 6:00 p.m.; the banquet will start at 7:00 p.m., Tuesday, May 23, 1972. Guaranteed reservations to the hotel must be made by noon on May 22, 1972. Cost of tickets will be $8.00. Please phone early for reservations to Mrs. Lilian Whitney, Andrew Corporation, 349-3300, ext. 231; Chicago number, 779-4500.

## 1972 IEEE-GMTT International Microwave Symposium

In 1972, the Chicago Chapter of G-MTT, with the support of the IEEE Chicago Section, will host the International Microwave Symposium for the first time. Authors from the United States and ten foreign countries will present 83 papers on various aspects of Microwave Technology, 22-24 May 1972, at the Arlington Park Towers Hotel, Arlington Heights, Illinois. Engineers and scientists in the Chicago area, whose interests include microwave systems, devices or techniques, are afforded a convenient opportunity to appraise the latest developments in this field.

Technical sessions will cover the following microwave topics: low-noise receivers; measurement techniques; solid-state oscillators and control devices; new waveguide techniques; acoustics; computer-aided design; passive components; integrated circuits; ferrite devices; gigabit data-rate applications; and new industrial/commercial system applications. An evening panel session will feature reports by authorities from several foreign countries describing recent significant advances in microwave technology.

Also for the first time, product exhibits will be offered at the Microwave Symposium. Booths will be open during daytime hours throughout the Symposium, beginning at noon on 22 May.

The Symposium Banquet speaker will be William Magruder, Special Consultant to the President. Persons unable to register at the Symposium may attend the banquet.

Registration at the hotel will commence at 5:00 p.m. Sunday, 21 May, and at 7:30 a.m. each day of the Symposium. For advance registration information, or a copy of the Advance Program, contact Jim Huber, IIT Research Institute, 225-9630, extension 4087.

## EMC At The Crossroads . . .

. . . is the theme of the 1972 International Symposium on EMC to be held at Arlington Park Towers, Arlington Heights, on July 18-20, 1972. Thirteen sessions in three days promise to cover many aspects of EMC.

Dr. Richard Elder, director of the division of Electronic Products, Bureau of Radiological Health, will be the featured speaker at Wednesday nights banquet.

A special highlight of the Symposium will be the FCC Monitoring van. This Mobile Spectrum Monitoring Unit is a fully automated electromagnetic data acquisition system which was designed specifically for evaluating spectrum utilization in the land mobile communications bands. The system utilizes a digitally controlled receiving system via a 16-bit minicomputer. Data outputs are on magnetic tape which is IBM compatible for batch processing. The MSMU is fully selfcontained, including on-board power, heat, light, air-conditioning and electronics.

An important part of the Symposium will be the well-planned exhibits, covering instrumentation, services, and components for the EMC community. This total "symposium system" will appeal to management and technical personnel involved in EMC–from the expert researcher to the individual just becoming acquainted with electromagnetic compatability. Every engineer will soon be forced to confront the facts of life of EMC because of the impending FCC regulations on the rf noise that can be generated by any product – military, industrial, or consumer.

Keynote speaker at the opening session on Tuesday, July 18, will be J.J. O'Neil, chairman GEMC, US Army Electronics Command, Fort Monmouth, New Jersey. Two simultaneous sessions are planned for each morning and afternoon, with noon meetings of the Standards Committees.

Topics to be covered in the sessions include: spectrum utilization: cardiac pacemaker susceptibility; overall government spectrum management and policy; specifications and testing; digital systems; biological effects; systems EMC and shielding; systems susceptibility; EMC analysis; measurements and instrumentation; grounding; and antennas.

For further details, see the June issue of SCANFAX, or call Howard Wolfram 982-2240.

## IEEE Board Recommends Expansion Into Nontechnical Areas

Robert H. Tanner, the president of IEEE has announced that the IEEE Board of Directors has agreed in principle to recommend to the membership a change in its Constitution which would permit entry into nontechnical fields, while continuing its present scientific and educational functions. The action came after analysis by the Board of 57,000 replies to a questionnaire mailed to members in the United States early this year. The details of the questions and a tabulation of 47,000 replies appear in the March issue of IEEE SPECTRUM.

The U.S. members were asked whether they would favor IEEE becoming more active in political and economic matters of concern to the electrical engineering profession. The response was affirmative by a vote of better than 2 to 1. Other matters included in the questionnaire were the preparation by IEEE of position papers, recommendations on professional employment practices, pension plans, salary surveys, public relations, technological forecasting, continuing education and career guidance. With few exceptions the returns indicated a desire on the part of the U.S. membership to enter or enlarge programs in these areas. Tanner reported that some of these activities, such as technological forecasting and career guidance, are permitted under the present Constitution and the IEEE has active programs now under way in these areas. Professional activity in economic, social, legislative and ethical areas of the profession is, however, barred by the present Constitution. He reported to the Board a legal opinion that the proposed amendment to the Constitution would permit the Institute to enter all of the areas dealt with in the questionnaire. He noted that the proposed amendment would expressly bar IEEE from engaging in collective bargaining, customarily dealt with by labor unions.

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## Outstanding Students and Faculty Advisers Recognized

At the 1972 Chicago Section Recognition Dinner, April 8, 1972, the following outstanding students and their faculty advisors were recognized. Each student received a certificate from the Chicago section. Outstanding student: William Ooms, Illinois Institute of Technology; faculty advisor, Professor Ralph Armington. Outstanding student Henry Alder, University of Illinois at Chicago Circle; faculty advisor, Professor Henry A. Setton. Outstanding student: William E. Payne, Jr., Northwestern University; faculty advisor, Professor Elliott Bayley. Outstanding student: James Koller, De Vry Institute, Bell and Howell Schools; faculty advisor, Professor Pat J. O'Connor.

*Committee for the 1972 Spring Conference on Broadcast and TV Receivers: (Standing, left to right) Pete Dimitrios; John Aguilar, Memac Sales Co., Inc.; Mike Hammel, Memac Sales Co., Inc.; James Hornberger, Delco Radio; Christ Dumas, Apco Electronics; Terry Wiegand; Ron Schubert, Amperex Electronic Corp.; Erwin Dreiske, Warwick Electronics; and Robert Ziolkowski, RCA. (Seated, left to right) Charles Erickson, Victor Comptometer; Richard Sudges, Admiral Corp.; Robert DelCiello, Motorola, Inc.; Larry Poel, T.R.W.; George Miller, Apco Electronics; Hank Berti, Westinghouse Electric.*



# Spring Conference on Broadcast and Television Receivers

The 1972 Spring Conference on Broadcast and Television Receivers will be held at the Regency Hyatt House, Chicago, Ill., on June 12-13. The tentative program includes:

### MONDAY, JUNE 12, 1972
### A.M. Session I

**Product Safety Through Governmental Intervention – Past, Present & Future**
W. C. Morrison
RCA Corporation

**Now For Digital IC's in TV's**
N. Doyle, J. Nichols, & H. Hamaoui
Fairchild Semiconductor

**Monolithic TV IF System TBA 440**
E. Schatter
Siemens, A. G.

**A New Approach to IC Color Subcarrier Regeneration Employing Internal Monolithic Phasing Elements**
Jack O'Toole
Motorola, Inc.

**A Broadcasting Quality TV Sync Generator made Economical through LSI**
R. B. Johnson & E. H. Campbell
National Semiconductor

### IEEE LUNCHEON

*Guest Speaker:* An Assistant Secretary, Dept. of Health, Education & Welfare

### P.M. Session II

**Methods of Measurement of Impulse Noise Susceptibility of TV Receivers**
G. F. Rogers
RCA Corporation

**Application of Bandpass Filters to Color TV IF Amplifiers**
Ivan Mertes
The Heath Company

**Total Electronic Logic Tuning System for TV Receivers**
Y. Sakamoto & E. Ichinohe
Matsushita Electric

**Television LIne One Encoded Information and Its Impact On Receiver Design**
E. G. Breeze
Fairchild Semiconductor

**Small One-Frame Refresh Memory System**
H. Nabeyama, G. Miyazaki, T. Takezawa, M. Masuda & S. Narita
Hitachi, LTD.

**Television Receiver Requirements for CATV Systems**
Wilfred L. Hand
GTE-Sylvania

### TUESDAY, JUNE 13, 1972
### A.M. Session III

**Analysis of a Large Screen RGB System**
E. P. Surowiec
General Electric

**A New Horizontal Output Deflection Circuit**
Peter Wessel
Radionette

**New Developments in Toroidal Yokes for Color Picture Tubes**
C. E. Torsch & R. A. Budd
GTE - Sylvania

**A TV Horizontal IC**
M. E. Wilcox
Motorola, Inc.

**New RCA Color Picture Tube System for Portable TV Receivers**
R. L. Barvin & R. H. Hughes
RCA Corporation

### IEEE LUNCHEON

*Guest Speaker:* Anthony S. Zummer, Attorney
"Product Liability and the Individual Engineer"

### P.M. Session IV

**An Integrated Channel Selection System**
S. Makino, K. Sakuma & H. Tajiri
Tokyo Shibaura Electric Co.

**A Digital Tuning Indicator**
E. Fred Close & A. L. Kelsch
Magnavox

**An Integrated Two Watt Sound System For Television Receivers**
A. Bilotti & R. W. Lutz
University of Buenos Aires &
Sprague Electric Company

**New Audio IC's Reduce Components For Better System Economies**
J. E. Byerly
National Semiconductor

**An Internally Compensated Low Noise Monolithic Stereo Pre-Amplifier**
H. A. Gill
Raytheon

**An IC Operational Transconductance Amplifier (OTA) with Power Capability**
L. Kaplan & H. Wittlinger
RCA Corporation

## Workshop on Medical Image Processing

A Workshop on Medical Image Processing, sponsored by the Midwest Section of the IEEE Group on Information Theory, will be held May 4-5, 1972, at the Center for Continuing Education, University of Notre Dame, Notre Dame, Indiana. Topics include: "Analysis of Earth Resource Data Acquired from Space," "Economy of Description in Image Processing," "Image Coding," "Measuring the Motility of Living Cells, and X-Ray Image Analysis." A panel discussion of Friday afternoon will focus on "Directions of Medical Engineering." Registration fee is $5.00, and Friday's luncheon is $4.00. Further information may be obtained from Professor John J. Uhran, Jr., (219) 283-7531.

## Subsection To Elect Officers

The Northwest Subsection will elect its 1972-73 officers at the May 17 meeting. The Nominating Committee has submitted the following slate: Chairman, Charles Heermans; vice chairman, Robert Waghorne; secretary, Henry Pahl; and treasurer, Leo Aubel. Additional nominations may be made by signed petition in advance or at the meeting. For further information contact the chairman.

## Changes . . .

You can't help but notice – we look different. No doubt, some of you will say (and we hasten to agree) the old look was more professional. Others will allow that this format gets the job done just as well. But why the change at all? One primary reason: reduced lead time requirements – the typing, photo work, printing, and mailing will be handled at the same location.

No matter who does the job or how many hands help prepare the issue, lead time is required. We originally needed six weeks from the date the issue should have been closed for information (notice I said should have – see Bill Kusner's column in the April issue) to the first day of the month, the day the issue is due in your hands. Now we are going to live with four weeks. All information not in by the end of the first week of the month — well "sorry about that." The issue will be sent to the Post Office on the Tuesday of the last full week of the month, and you should see it on or before the first of the month. We at SCANFAX are interested in any and all thoughts you might have on the changes and receipt of the magazine.

GEORGE MACK






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