IEEE ELECTROMAGNETIC COMPATIBILITY GROUP

NEWSLETTER

ISSUE NO. 91 FALL 1976 EDITOR: ROBERT D. GOLDBLUM

PROFESSIONAL COMPETENCY OF ENGINEERS

IEEE reported that the Sperry Corporation has filed an affidavit in an action before the New York State Division of Human Rights in essential agreement with a basic premise of IEEE concerning the professional competency of engineers. The position held by IEEE is that an engineer's professional competency does not necessarily decline during the years after graduation from engineering school. Therefore, this elapsed time is not to be a permissible factor in decisions to hire or discharge engineers.

Responding to a letter of recommendation from the Long Island Section to the Board of Directors, IEEE had sought permission to file a brief as a "friend of the court" in the case involving the discharge of certain Sperry engineers. As a result of the Sperry filing, IEEE has achieved the point it was trying to make and has consented to the denial of its application for leave to file an "amicus curiae" in this matter.

IEEE still has the right to seek to enter the case after reviewing the briefs which were filed in late July. IEEE is empowered by its Board of Directors to file an amicus curiae statement if the president and executive committee deem such action advisable.

LIFE INSURANCE PLAN BENEFIT

Dr. Herbert A. Schulke, Jr., General Manager and Executive Director of IEEE, has announced a substantial improvement in the Life Insurance Plan held by Institute members. The change was effective September 1 and consisted of a 20% increase in member benefits with no extra charge for everyone under the age of 61 except for residents of Texas and Wisconsin. This means that coverage will be available to members under 61 years of age in multiples of $12,000. There will also be an increase in maximum member coverage from $100,000 to $120,000 except for residents in Wisconsin.

In addition, a technical adjustment to conform with modern actuarial tables will further reduce the cost of coverage for members under age 45, except in Texas and Wisconsin. Another benefit is that maximum coverage for spouses in all states except Wisconsin will be increased to $35,000 in multiples of $5,000.

Members who wish to obtain additional information about the Life Insurance Plan or any of the other coverages available as part of the IEEE Group Insurance Program should get in touch with the IEEE Administrator, 1707 L St., N.W., Suite 700, Washington, DC 20036; Tel.: 202-296-8030.

IEEE ELECTROMAGNETIC COMPATIBILITY GROUP NEWSLETTER is published quarterly by the EMC Group of the Institute of Electrical and Electronics Engineers, Inc., 345 East 47th Street, New York, N.Y. 10017. Sent automatically and without additional cost to each member of the EMC Group.

Second class postage paid at New York, N.Y., and additional mailing offices.

UPGRADE YOUR MEMBERSHIP

Here are a number of reasons for you to upgrade your membership in the IEEE.

1. The higher grade is a badge of achievement.
2. The member may become eligible for IEEE offices. (Most IEEE offices specify a minimum grade for candidates to that office.)
3. Some grades are nonvoting grades, so an upgrading may confer voting rights on the member.
4. Certificates are available for Members and Senior Members which can be displayed on the office wall.
5. There is a sense of personal satisfaction involved in occupying a higher grade of membership.
6. In some instances, there may be enhanced professional opportunity when the biography of a member indicates a higher grade.
7. There is an increase of prestige which accompanies an increase in grade.

The importance of each of these items will vary with the individual; but, it is obvious that each member should occupy the highest grade for which he is eligible.

For additional information, contact your local IEEE section office or IEEE, 345 East 47th St., New York, NY 10017.

AUTHORITATIVE IEEE/ASTM STANDARD ON METRIC SYSTEM

The IEEE has just published the authoritative United States source book on the metric system of measurement. Developed at the request of the American National Standards Institute, the new document is expected to receive approval as an American National Standard in the near future. The new standard incorporates material from the previous ASTM E380-74, IEEE Std 268-1973, and IEEE Std 322-1971. Among significant additions to the new standard are recently adopted prefixes and letter symbols for very large multiples of units, peta (10^{15},P) and exa (10^{18},E), and SI units used in connection with radio-activity (becquerel and gray).

Copies of IEEE Std 268-1976 are obtainable from IEEE, 345 East 47th Street, New York, NY 10017. ASTM E380-76 may be ordered from ASTM, 1916 Race Street, Philadelphia, PA 19103. Price of either document is $4.00, postpaid.

DWCI SEEKS BOOK REVIEWERS

Don White Consultants, Inc. (DWCI) is in the process of publishing a multivolume encyclopedia on EMC and related subjects. Approximately 10 volumes of 150 pages in length are scheduled for publication late this year or early in 1977. They are seeking qualified individuals to form an editorial review board and to review these books prior to their publication.

Members of the review board will be requested to review draft manuscripts on subject matter related to their areas of expertise. A set of guidelines will be provided. The subjects of books currently in preparation include: EMP, lightning, digital modulation techniques, international EMC standards, ambients and man-made noise, aerospace EMC, optical isolators and fiber optics, grounding, and medical electronics EMC.

If you would like to participate as a reviewer, or desire additional information on this program, contact Robert D. Goldblum, DWCI, P.O. Box 325, Plymouth Meeting, PA 19462; Tel.: 215-825-6585.

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MEETINGS & EVENTS

IEEE GROUP CORRESPONDENCE
STATUS OF G-EMC SPONSORED COMSOC CONFERENCE SESSIONS

Before the start of 1976, the G-EMC Group participated in a total of two technical sessions at previous Communications Society conferences. The COMSOC conferences are held in the spring (International Conference on Communications) and fall (National Telecommunications Conference). With the establishment in 1975 of an intersociety relations committee as part of the vice president area for Professional Services of the G-EMC AdCom, the Group has sponsored two technical sessions at ICC '76. There will be three EMC-sponsored sessions at NTC '76 and two more planned for ICC '77, which is the most future COMSOC conference being planned now.

The G-EMC participation is intended to provide to our COMSOC colleagues a practical awareness and understanding of EMC principles that they can use in solving their EM compatibility, susceptibility, and emission problems. This exchange of technical information will help the non-military communicator as well as the military communicator. These sessions also provide the G-EMC Group the needed technical exposure to a broader community of interest. This exposure can not help but make our Group prosper and grow in acceptance as a discipline which has interdisciplinary contributions to technology.

The subject session status report is as follows:

A. ICC '76 - Philadelphia (June 1976)

Our two sessions were held on Wednesday, 16 June 1976. The session chaired by Bob Goldblum on "EMC-Fact or Fantasy" was attended by over 70 conferees which was greater than the average session attendance. The afternoon session, chaired by Paul Major, was a panel discussion on the "Impact of FCC Rules and Regulations." Even with the usual rush to leave by noon the last day of any conference, the session attracted a respectable 20 attendees. Both sessions were well received which indicates the growing interest in the need for EMC/EMI problem solutions by our COMSOC colleagues who predominantly work on non-military projects.

B. NTC '76 - Dallas (November/December 1976)

The plans for the EMC-sponsored sessions are being finalized. The first session, chaired by Neal Pike, FCC, is titled "Planning Land Mobile Aspects for the World Administrative Radio Conference." The papers and titles are as follows:

1. "Wither Telecommunications"

   Harold Staras
   RCA Laboratories
   Princeton, NJ 08540

2. "A User Accommodation Measure of Spectral Efficiency"

   George H. Hagn
   Stanford Research Institute
   Arlington, VA

3. "Ultimate Use of the Radio Spectrum"

   Jack E. Weatherford
   Office of Telecommunications Policy
   Executive Office of the President
   Washington, DC 20504

4. "Future International Allocation and their Impact on Land Mobile Service"

   W. M. Borman
   Motorola, Inc.
   Washington, DC 20036

5. Title Unavailable

   Dale Hatfield
   Federal Communications Commission
   Washington, DC 20554

This session is being co-sponsored by the Social Implications of Technology Committee of COMSOC.

The second session, chaired by Hank Ott, Bell Labs, is titled "Design Techniques to Reduce Electromagnetic Susceptibility." The paper titles and authors are as follows:

1. "EM Susceptibility of a Line of DC-DC Converters"

   J. C. Wadlington
   Bell Laboratories
   Whippany, NJ 07981

2. "Generation of EM Susceptibility Test Fields Using An Absorber-Loaded TEM Cell"

   M. L. Crawford, J. L. Workman, and C. L. Thomas
   National Bureau of Standards
   Boulder, CO

3. "No. 2 ESS Design for Operation in High 60Hz Induction Environments"

   H. J. Beuscher and L. W. Richards
   Bell Laboratories
   Naperville, IL 60540

4. "Establishing the Immunity of Telecommunications Equipment to EMI--Strategy and Techniques"

   R. R. Goulette and S. K. Xavier
   Bell Northern Research
   Ottawa, Canada

5. "Broadcast EMI Environment Near Telephone Equipment"

   D. N. Heirman
   Bell Laboratories
   Room 2A-220
   Whippany, NJ 07981

A third session, also organized by Hank Ott, is an evening session titled, "There Really is a Way to Solve Interference Problems."

The intent of the evening workshop is to provide a forum for a candid exchange of ideas and opinions on current topics of EMC. The format will consist of discussion leaders, comprised of the two EMC-sponsored session speakers, participating in items of interest shown by the audience. The following are examples of some of the topics that could be discussed:

1. How much susceptibility should be designed into equipment?
2. Advantage of early EMC considerations.
3. What are some of the "free" techniques that can be used in equipment design?
4. The importance of grounding in EMI reduction.
5. Is heavy and expensive shielding required to meet a reasonable susceptibility objective?
6. The importance of the proper use of test equipment in measuring susceptibility.
7. What test facilities are required to demonstrate susceptibility?
8. How should susceptibility requirements be proportioned between various subsystems?
9. What would be a reasonable objective for radiated and conducted susceptibility and emission?
10. How should EMC objectives be set? By FCC regulations, IEEE or ANSI standards, or by individual manufacturers?

C. ICC '77 - Chicago (June 1977)

Tentatively, there are two EMC-sponsored sessions being reserved. Due to the interest indicated at ICC '76, two possible EMC session ideas were advanced and discussed at the conference.

1. EMI/Spectrum Pollution by New Devices/Users

   The session could address the hypothesis that the pollution of the radio spectrum is at the same state and headed in the same direction as, for example, the Lake Erie 30 or 40 years ago. The papers are intended to provide information to the attendees so that they can form their own opinion as to the truth of the hypothesis. John Wright of the Trans-Canada Telephone System, Ottawa, has agreed to organize such a session.

2. Design Techniques to Reduce Undesireable EM Radiation from Electronic Devices

   This session is intended to complement the one presented by Hank Ott at NTC '76 on EM Susceptibility Reduction Techniques. New design techniques to reduce the undesireable unintentional and intentional emissions from electronics equipments will be discussed. The role of the latest changes in FCC rules would be incorporated. Other suggestions from our Group members are always welcome. This session is being organized by H. R. (Bob) Hofmann at Bell Labs in Naperville, IL.

June 28-30, 1977 — A Date for Your Diary

EMC — Symposium & Exhibition, Montreux 1977

Symposium organisation: Prof. Dr. F. E. Borgnis, Zurich (Symposium chairman) ; W. Boehm, Montreux (Local arrangements) ; T. Dvorak, Zurich (Secretary general) ; X. Kempf, Montreux (Exhibits) ; H. K. Mertel, San Diego (Workshops) ; Prof. Dr. F. L. Stumpers, Eindhoven (Scientific program)

Symposium Council: J.-J. Cevey, Montreux ; E. Dünner, Zurich (SEV) ; W. Cory, San Antonio (IEEE G-EMC) ; Dr. H. Fleischer, Frankfurt/M (VDE) ; Prof. Dr. W. Gerber, Berne ; J. S. Hill, Springfield (IEEE G-EMC) ; J. Meyer de Stadelhofen, Berne (CISPR) ; Prof. V. V. Migulin, Moscow ; J. L. Moe, Fort Worth (SAE AE-4) ; W. Moron, Wroclaw (SEP) ; Prof. E. Paolini, Milan ; Prof. Dr. H. Prinz, Munich ; H. Probst, Berne ; Dr. L. Rohde, Munich ; Prof. Dr. R. Sato, Sendai ; J. Toler, Atlanta (IEEE G-EMC) ; J. Voge, Paris (URSI) ; Prof. Dr. R. Zwicky, Zurich

Scientific Program Committee: Prof. Dr. F. L. Stumpers (Chairman) P. Akerlind, Farsta ; Prof. Dr. G. Almassy, Budapest ; T. Dvorak, Zurich ; Prof. Dr. C. Egidi, Turin ; C. Gary, Clamart ; R. Gressmann, Brussels (EBU) ; A. Gromov, Geneva (IFRB) ; Dr. F. Horner, Slough (URSI) ; G. A. Jackson, Leatherhead ; Dr. W. Knopf, Berlin-GDR ; D. Kohoutova, Prague ; J. Krusek, Prague ; R. M. Labastille, Bad Neustadt ; R. A. Mills, Zurich (IEC 12A) ; Dr. F. Minozuma, Tokyo ; Dr. W. J. Oosterkamp, Eindhoven ; Prof. Dr. R. M. Showers, Philadelphia ; Prof. Dr. R. Struzak, Wroclaw ; Prof. Dr. A. Wedam, Ljubljana

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Topics: Social and economical impact of EMC • Electromagnetic pollution, control and enforcement • Spectrum economy and management • National and international cooperation in EMC • Immunity of receptors and electronic systems, analog & digital • Electromagnetic compatibility of electric power, automotion and communications • EMC hazards to ordnance and vital safety systems • Compatibility of medical electronics • Biological effects of R. F. energy • Interference propagation, source-to-receptor coupling • Nuclear Electromagnetic Pulse (NEMP) impact • Regulations, limits, standards and specifications • Measuring methods and instrumentation, production testing • Computers in EMC prediction and analysis • Design of compatible equipment, suppression methods & devices • Interference statistics • New techniques: biological transducers, fibre optics, sequency functions, processing of noisy signals.

URSI Special Open Session After consultation with Dr. Likhter, chairman of URSI Commission E, special sessions will be organized on statistics of quasi-impulsive noise, and on signal processing in the presence of atmospherics and man-made interference. These sessions form an open URSI Symposium for which contributions may be offered by all interested scientists.

Exhibition: Suppressed and high immunity equipment for use in R.F. exposed environment • Suppressors for household, industry and transport • Screened and anechoic enclosures • Modern measuring apparatus, mobile and fixed facilities for interference testing and investigation • Cables, connectors, special components and devices • Shielding and absorptive materials • Advanced aids for spectrum surveillance, EMC planning and interference control.

Language: The official language of the Symposium is English. Authors may also present their papers in French, Russian, Spanish or German. However, no simultaneous interpretation will be provided for.

Papers: English summaries of up to 500 words in three copies with full address and telephone number of the author(s) should be received till **October 30, 1976** by Professor F. L. Stumpers, Elzentlaan 11, Eindhoven, Netherlands.
Authors will be notified by November 30, 1976. Author's kits will be enclosed. Manuscripts in English language should be received till February 15, 1977. Full text of papers will be printed and made available in a Symposium Record.

Prize Awards: Five best papers will receive special citations, the first two will be awarded monetary prizes of Swiss francs 1,500.— and 1,000.— respectively.

Registration fee: Speakers, session chairmen, committee members: Swiss francs 195.— • Preregistration before May 15, 1977: Members of cosponsoring organisations sFr. 195.—, non-members sFr. 240.— • After May 15, 1977: sFr. 250.— • Students: sFr. 50.— • Prices include one copy of Symposium Proceedings and further gratuities.

Social events: A welcome Get-together Cocktail Party, a Prize Award Dinner a Ladies Program and technical excursions will be organised during the conference. All authors will be guests of the Symposium at a special Authors Luncheon.

Meeting place travel, tours: All sessions, workshops and technical exhibits will be located in the Congress House of Montreux (opposite to the Palace Hotel).
Montreux, on the famous Lake Geneva, may be reached from Geneva International Airport by train or bus. Special transportation arrangements will be available for larger groups. Montreux with a population of 21,000 accommodates up to 6,000 guests in its hotels and offers unique touring possibilities on land and water. A ladies program and special excursions will be organized during the Symposium. With favourable weather you will be able to enjoy the most beautiful time of the year in Switzerland.

Further Information: A preliminary program will be available in February 1977. Special inquiries may be directed to: Mr. T. Dvorak, Hochfrequenztechnik, 8092 ETH Zurich, Switzerland.
For information concerning the exhibition contact Mr. X. Kempf, Box 97, 1820 Montreux or Mr. R. D. Goldblum, Box 328, Plymouth Meeting, PA 19462 (US representative).

VEHICULAR TECHNOLOGY CONFERENCE
CALL FOR PAPERS

Papers are requested for the 27th Vehicular Technology Conference to be held on March 16-18, 1977 in Orlando, Florida. The Theme of the conference is: "Personal Communications and Vehicular Technology - Linking Man to Society." Papers on the following topics are requested:

- -Microwave Mobile Communications Systems
- -Air-Ground Public Radiotelephone Systems
- -Digital Communications in the Mobile Services
- -Satellite Systems for Extended Coverage: Aeronautical, Maritime, Land Mobile and Rural Radiotelephone Units
- -Automatic Vehicle Location, Monitoring, and Identification of Mobile Units
- -Transportation Systems Control or Simulation
- -Spectrum Efficiency Improvements in Mobile Services, Including Trunking, Mobile Access, and Spread Spectrum Methods
- -Industrial and Transportation Uses of Mobile Communications
- -Spectrum Requirements in the Mobile Services
- -Propagation at 900 MHz and Above in Mobile Service
- -Mobile Service Issues in the World Administration Radio Conference
- -Marine and VHF Communications and Control Systems
- -EMC and RFI in the Vehicular Environment
- -Roles and Effects of Regulation on Vehicular Technology
- -International Developments in the Mobile Services

DEADLINE: Six copies of a 500-word outline should be submitted by October 30, 1976 to:

Mr. Martin L. Barton, MP-437
Martin Marietta Aerospace
P. O. Box 5837
Orlando, FL 32805

Outlines or summaries should be typed single-spaced with a two-inch left margin, in a 4-3/4 inch column with a 1-1/2 inch top and bottom margin. The title, name(s), and affiliations should be included, with complete address and telephone number.

IMPI CALL FOR PAPERS

The International Microwave Power Institute's 12th Annual Microwave Power Symposium will be held at the Radisson Hotel Downtown, Minneapolis, Minnesota on May 25-28, 1977. The Symposium will include technical sessions as well as short courses on microwave power and the use of microwave ovens in food preparation, both commercial and home. Original and review papers are being solicited which describe new technical contributions in non-communication areas of microwave power.

Authors are invited to submit an abstract of less than 40 words and a summary of less than 500 words and no more than 2 figures. The technical program chairmen reserve the right to edit papers. Deadline for submission is January 3, 1977. Please forward the original and four clear copies of both Summary and Abstract to the Technical Program Committee Chairman: Oscar P. Snyder, Univ. of Minnesota, Dept. of Food Science and Nutrition, St. Paul, MN 55108; tel.: 612-373-1430.

SEMINAR ON ELECTRONICS IN A NUCLEAR RADIATION ENVIRONMENT

8:30 A.M. - 5:30 P.M., Tuesday & Wednesday, November 16 & 17 at the Base Theatre of Hanscom AFB, Bedford, MA

Chairman - Herbert A. Ullman, GTE Sylvania

The IEEE Electromagnetic Compatibility (EMC), Aerospace & Electronics Systems (AES) and the Nuclear & Plasma Sciences (NPS) Group Chapters of the Boston Section are sponsoring a two-day seminar on Electronics in Nuclear Environments. The seminar will give engineers and managers with little or no background in Nuclear Effects and Hardness an awareness of the important technical and managerial considerations. The first day's program will serve the dual function of giving a manager's overview of all the topics from EMP and radiation phenomenology through hardness design, maintenance, and testing, as well as acting as an introduction to the more technical sessions of the second day.

As each of the important technical topics are covered, an attempt will be made to give perspective on the technical complexities, manpower, special facilties, and other cost and schedule requirements needed for successful design, radiation test and evaluation of electronic hardware. The lectures will be delivered by professionals from government agencies, industry, universities and the military who are experts in the topics.

Reference material, including pertinent sections from handbooks, technical papers, facilities listings, copies of speakers' illustrations, et. al., will be provided to allow them to acquire more detailed knowledge than can be covered in this seminar in their areas of interest. A tour of a radiation facility has been planned.

EMC PERSONALITY PROFILES

by William G. Duff

Dr. HEINZ M. SCHLICKE

Heinz M. Schlicke received his Master's and Doctor's Degrees in Engineering Sciences under Professor Barkhausen (Electron-Jesus) from the Institute of Technology, Dresden, Germany.

After working on synchronization of satellite transmitters in the Laboratory for Large Transmitters at Telefunken, Berlin, he served in German Naval Research guiding projects of large scope pertaining to submarine warfare. At the conclusion of World War II, he was captured as Commander aboard a submarine on special scientific missions and became a so-called "paper clip" scientist and project engineer at the Office of Naval Research.

In 1950, he joined the Allen-Bradley Co., Milwaukee, Wisconsin, as Chief Scientist. His duties included building and managing various laboratory groups, such as Ferrites, High Frequency, Advanced Research which included Optoelectronics and Data Transmission. Heinz recently became affiliated with Spectrum Control, Inc.

Dr. Schlicke has published more than forty articles in the Journal of Applied Physics, Proceedings, and Spectrum of the IEEE, etc. His book "Essentials of Dielectromagnetic Engineering" also appears in French. He is the invited contributor to five books, among them: "The Molecular Designing of Materials and Devices," section "Mutual Substitution of Networks and Materials," Von Hippel, editor, MIT Press; "Practical Design for Electromagnetic Compatibility," section "Filtering," R. Ficchi, editor; "Noise Guide," section "Filters," IEEE-IAS. He is now writing a book, "Principles of Cost-Effective Interference Control."

Schlicke was twice invited guest lecturer in summer sessions held by the Massachusetts Institute of Technology, and has been for several years a course director on Electromagnetic Compatibility for the Center for Professional Advancement. He is also on the IEEE List of Outstanding Speakers. In 1974 he was an IEEE delegate to and gave a talk before the Popov Society Meeting in Moscow, U.S.S.R. which was a part of a Scientific Cultural Exchange Program. Eighteen U.S. patents are in his name, and more are pending.

He is a registered Professional Engineer in the state of Wisconsin, past chairman of the Milwaukee Section of the IRE, was twice president of the IEEE Professional Group on Electromagnetic Compatibility. He is a liaison member to the IEEE G-IAS on Electrical Noise, and coordinator between the EMC group and the IEEE-nsf sponsored TFA (Technological Forecasting and Assessment) Committee. He is listed in American Men of Science, and is a Fellow of the IEEE ("for his pioneering contributions to the understanding and applications of ferrites and high-permittivity dielectrics") and of the AAAS.

Personal sidelights include teaching Autogenic Training (in which he is self-taught) to small groups. He experiments with biofeedback and in collaboration with his son, who is an M.D., is preparing a book on mental fitness. He is an enthusiastic runner, hiker, and cross-country skier.

CHAPTER CHATTER

by Charles F. W. Anderson

Your column editor's apologies for the lack of Chapter Chatter in the June issue. As our editor Bob noted, I was on an overseas consulting assignment at deadline time. Again, I plead for information from Chapter Chairmen and Secretaries. The column can only print what YOU provide!

Across the Pacific

Your Column Editor has received a most gracious note from Professor Risaburo Sato of the Department of Electrical Communications of Tohoku University in Sendai, Japan. From his letter, I gather that interest in EMC is on the ascendancy in that country. Japanese EMC/EMI engineers have held several symposiums within in the past year or so, and have more planned. Who knows? Perhaps, we may even have a Japanese chapter of G-EMC, or at least a technical affiliate group in the Land of the Rising Sun. Certainly, the lists of topics presented at their meetings indicate wide and intensive interest in all aspects of EMC/EMI.

Tucson

On June 24th, the chapter met for a happy hour/dinner/technical program. The speaker was Carl Boxler, of Tri-TAC/Lockheed, who discussed Kirlian Photography, including corona discharge photographs.

Baltimore-Annapolis

Dr. Andrew Farrar, of ECAC, Chairman, reported that this new chapter had several meetings in the past season and will continue its activities. Their first fall meeting, to be held on October 21st, will have Mr. Art Zoellner speaking on "New Techniques in Spectrum Management." Place and time: Anne Arundel Community College at 8:00 P.M. Contact Dr. Farrar at 267-2710 for further details.

Central New England

John Clarke, last year's Chairman, reports that the 1976-77 officers will be: Dale Samuelson, Chairman; himself as Vice Chairman; and Bob Berkovits, Secretary-Treasurer. In May, ADCOM President Jim Toler addressed a joint meeting of the EMB and EMC Chapters, speaking on the topic "Compatibility of Biological Systems and Electromagnetic Environments." CNE Chapter has tentative plans for sponsoring a seminar as one part of their '76-'77 program.

Jersey Shore

Activity continues high in this Chapter. The April meeting featured Gordon Parks of Breeze-Illinois with a presentation on "Assembly and Packaging Techniques for Flexible Optical Waveguide Cables." The May meeting was a luncheon/field trip to the Bell Telephone Holmdel Laboratories. The technical aspects of the program dealt with "Satellite Radio Propagation and Radio Astronomy Experiments," and was presented by Robert W. Wilson of the Bell Labs Radio Physics Research Department. Primary emphasis was on the new seven-meter diameter millimetric wave antenna built at the Crawford Hill site near Holmdel. This antenna is specially designed for use from 20 GHz up to about 300 GHz. At the June meeting, Herman Garlan of the FCC spoke on "Current Changes in Parts 15 and 18 of the FCC Rules," with particular emphasis on those aspects relating to unlicensed devices (FCC Dockets 20 119, 20 746, 20 780 and 20 718). Election of officers for the '76-'77 term was also held at this meeting. Don Heirman, of Bell Labs will be the Chairman; Joe Chislow, also of Bell Labs, will be the Vice Chairman; and Herb Bennett of The Electronics Command will be the Secretary-Treasurer. As Editor of the Chapter Newsletter, Don circulated a comprehensive member survey. Results of this poll are to be used to assist in planning chpater activities for the coming year. The first meeting of the season will be on October 21st.

Washington

The Chapter's May meeting (which your Column Editor was fortunately able to attend) featured Charles Higginbotham, Chief of FCC's Safety and Special Services Bureau; John B. Johnston, Chief of the FCC Amateur and Citizens Division; and Mike Toia, Assistant Chief of the FCC Laboratory Division. The topic was the Citizens Radio Service, its interference problems, and discussions of shortcomings of CB equipment, particularly with regard to interference-producing characteristics. (Note: Mike Toia presented some of the details of the last of those items in his talk at the G-EMC Symposium in July.) There was a huge turnout (63) for this program, at which the officers for '76-'77 were elected. They are: Thomas W. Doeppner, General Research Corp., Chairman; Alvin W. Paul, FCC, Vice Chairman; and William G. Duff, Atlantic Research Corp., Secretary.

(A "well-done" to Al Paul for his conscientious reporting of Washington Chapter activities over the past few years.)

Bill Duff has reported that the first luncheon meeting of the 1976/77 season featured a panel presentation by senior EMC representatives of the three military services, and the Department of Defense's Electromagnetic Compatibility Analysis Center (ECAC). Panel members were:

Mr. Allan (Andy) Anderson, Army Radio Frequency Manager
Mr. Morton Roney, Chairman, Navy Material Command EMC Committee
Major Fred Wentland, Air Staff, EMC Focal
Mr. James Chadwick, Manager, Spectrum Engineering Section, ECAC

Panel members briefly summarized some of their activities, current and projected EMC programs, and concepts, with emphasis on the impact of these on non-military members of the EMC Community. Following the panel presentations, there was a question-and-answer period. Thirty-eight people were present for the meeting.

IEEE PRESS PUBLISHES BOOK ON SPREAD SPECTRUM TECHNIQUES

The publication of Spread Spectrum Techniques, a Book of Selected Reprints, has been announced by the IEEE PRESS. This collection was edited by Robert C. Dixon. The use of spread spectrum systems has grown apace with the development of information and coding theory, applying many premises and conclusions as soon as they were formulated. This rapid growth has been stimulated by the need to protect communications signals from detection, demodulation, and interference.

This book begins with a tutorial introduction giving the whys and wherefores of the spread spectrum field, a summary of its present status, and a projection of future developments. The 44 reprinted papers are divided into the following 11 subject areas:

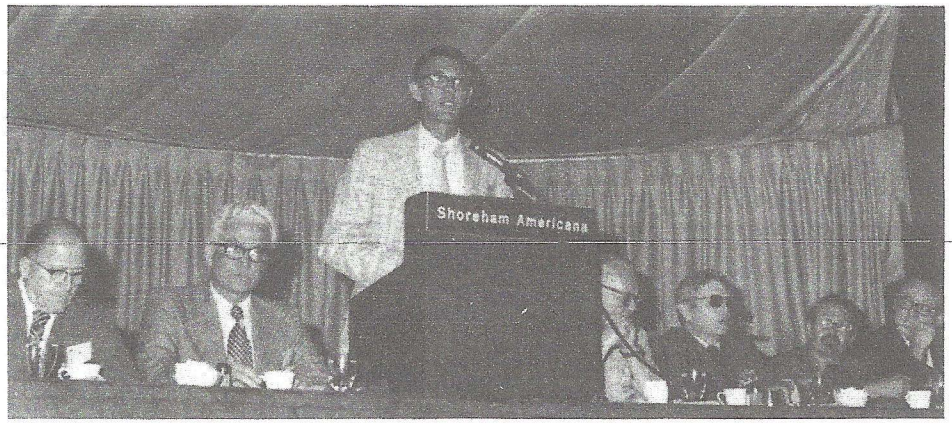
- Anti-Interference
- Applications
- Coding
- Chirp
- Direct Sequence
- Frequency/Time Hopping
- Information Transmission
- Ranging
- RF Effects
- Synchronization
- Miscellaneous

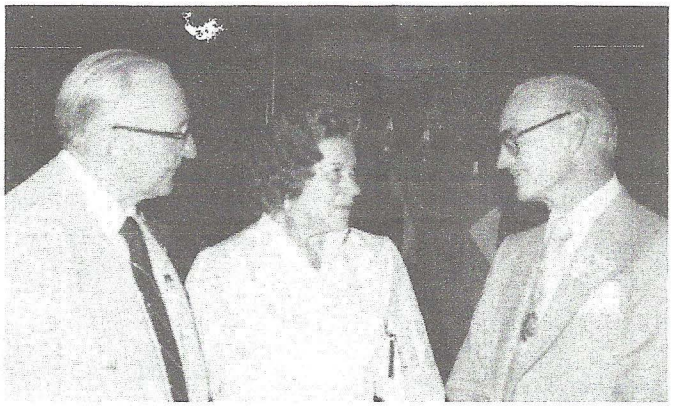
Each of the parts is preceded by introductory remarks giving the reader perspective on the subject and the papers included. A bibliography of the literature on spread spectrum techniques and related subjects concludes this volume.

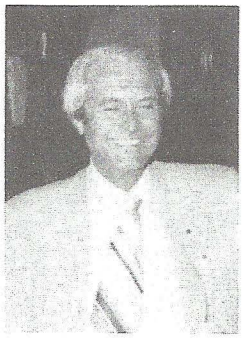
Spread Spectrum Techniques, sponsored by the IEEE Communications Society, is priced at $10.95 for the paperbound member edition. A clothbound edition is available for $21.95 (discounted to $16.45 for IEEE members). This 424 page book can be ordered from the IEEE Service Center, 445 Hoes La., Piscataway, NJ 08854. Payment should accompany the order.

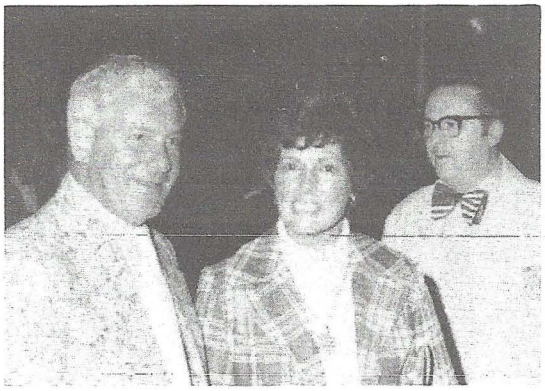
1976

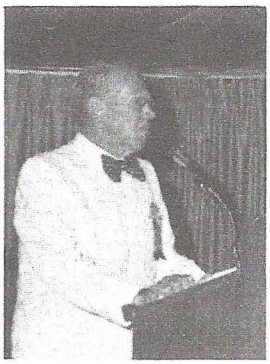
SYMPOSIUM SNAP SHOTS











BOOK REVIEWS

BOOK REVIEW

by Jim Hill, RCA Service Company

We bring you two reviews in this issue. One is a handbook for technicians, ably reviewed by Edward E. Wetherhold as he takes the editors to task for various shortcomings he finds in this handbook. The second review is on a book dealing with noise reduction techniques, reviewed by Transactions Editor, Richard B. Schulz. This book began as a set of lecture notes for an out-of-hours course given at Bell Labs. The approach used in the text is design oriented and the amount and complexity of mathematics is kept to a minimum.

"*Handbook for Electronics Engineering Technicians*"

EDITED BY

Milton Kaufman, President, Electronic Writers and Editors, Inc. and Arthur M. Seidman, Professor of Electrical Engineering and Acting Dean, School of Engineering, Pratt Institute.

Mc-Graw-Hill Book Co., NY, NY
Hard-cover edition, 9 1/2 X 6 1/4 inches
560 pages, 695 illustrations, $19.50

This handbook is advertised as explaining "every on-the-job procedure, application, piece of equipment, and pitfall that today's electronic technician and engineer must know to perform efficiently and accurately." And in the preface, the editors, Kaufman and Seidman, write "this is the first fully comprehensive handbook designed to meet the day-to-day needs of electronics technicians." This is quite an impressive description which naturally arouses one's interest, but just how well does this book meet these expectations of the editors and the requirements of prospective readers? The handbook is indeed comprehensive with eighteen chapters attempting to cover all the electronic technology one might need. The first five chapters discuss the basics of resistors, capacitors, coils, magnetic circuits, transformers, and circuit analysis. The next five chapters discuss the more advanced topics of meters, semiconductor devices, integrated circuits, tuned circuits, and filters. The last seven chapters discuss transistor amplifiers, oscillators, op-amps, digital circuits, power supplies, batteries and vacuum tubes. The handbooks is well illustrated with a sufficient number of design examples to demonstrate the application of the theory and equations. But, regardless of how comprehensive a handbook might be, the real test of its worth is its usefulness and accuracy. Because this handbook fails (in varying degrees) to meet these two basic requirements, the *Handbook for Electronics Engineering Technicians* is not recommended to the technician or engineer seeking a reliable reference source of electronic technology. This handbook is best suited as a text for an electronic technology course at a junior college level where the instructor can correct the text where necessary and provide any missing information or procedures.

There are an unusually large number of people associated with this book - two editors, an associate editor, a sponsoring editor, and two other editors from McGraw-Hill, plus the "cooperation and assistance of various individuals and companies," and unspecified "invaluable contributions" of seven persons who are named in the preface. In spite of this impressive number of editors and contributors, this handbook contains too many errors and too frequently lacks some of the basic data and procedures required by the engineering technician.

The shortcomings of this handbook will soon become evident to anyone who purchases it and attempts to use it in his work. For example, the discussion related to the design of passive LC filters is useless because of the excessive number of errors in the text and in the design examples. The reader is advised that design examples of both the image-parameter and network method will be discussed, but the only design examples presented (and incorrectly) are of the image-parameter type. If a filter is constructed, this handbook is of no use in testing it for no procedures are given for measuring the filter insertion loss.

Here is another example of the omission of important design information - resistive attenuators and matching pads are quite important to all technicians, whether they are concerned with the audio, video, r. f. bands, but the design of these networks is completely ignored in this handbook.

The design information that is provided is frequently presented in the wrong perspective. In Chapter 3 (Coils), an example is given in which the inductance of a multilayer coil is calculated. But the technician seldom needs to mathematically calculate the inductance of a coil (he simple measures it with an inductance meter). He needs to know how to design and construct an inductor having a specified inductance and, preferably, having a minimum resistance. After designing a coil, an optimum wire size must be selected from a solid-copper AWG wire table, but that is not possible with this handbook since there is no wire table.

The handbook has no bibliography and the acknowledgements for material obtained from outside sources are too brief to be of much use to the reader. For example, a few pages of the Arnold MPP Core Bulletin PC-104D are included in the handbook, but the only source acknowledgement is in the form of "Courtesy of Arnold Co." The only portions of the Arnold bulletin that are reproduced in the handbook are for iron-core toroidal inductors with no d.c. If a design is required for an inductor which carries direct current, the reader will have to obtain the necessary additional information from the Arnold bulletin. But the omission of the exact bulletin number makes it inconvenient for the reader to obtain the missing information.

In summary, this reviewer concludes that the *Handbook for Electronics Engineering Technicians* is unsuited for the engineering technician because of the too frequent omission of important design data, the presence of too many errors, and the inability of the authors and editors to relate to the needs of the technician.

"Noise Reduction Techniques in Electronic Systems"

BY

Henry W. Ott

294 pages, 205 illustrations, $19.95

John Wiley & Sons, P.O.Box 063, Somerset, NJ 08873

Reviewed by Richard B. Schulz

IIT Research Institute/ECAC

This book is intended to be both (1) a reference of noise-reduction rechniques for designers, engineers, and technicians and (2) a classroom text on the practical aspects of noise suppression from audio to RF. It performs both functions exceptionally well. The reader cannot fail to be impressed by the clarity of writing, richly enhanced by an abundance of pertinent illustrations. The result is a clear exposition of the ways noise mechanisms affect circuit performance and of techniques for improving such performance.

After a first-chapter introduction to the subject of noise reduction, Chapters 2 and 3 cover two primary means of noise reduction: cable shielding and grounding, respectively. Of particular note for coaxial-cable shielding is the derivation of a cutoff frequency and tabulation of values for popular cables. Also, both analytical conditions and experimental results are presented for cable/circuit grounding at both ends of a cable. Techniques for isolating the circuits are presented. Chapter 4 covers other noise-reduction techniques, including balancing and decoupling. This chapter is noteworthy for its decoupling presentation which is uniquely applicable to printed circuits. Another unique presentation concerns noise-reduction techniques peculiar to digital circuits. Chapter 5 discusses significant noise-reduction aspects of passive components: capacitors, inductors, transformers, resistors, conductors, and ferrite beads. Although the discussion on standard components is adequate, this reviewer was disappointed at the omission of components, such as lossy capacitors and filters, intended specifically for noise-reduction applications.

Chapter 6 on the shielding effectiveness of metallic sheets is generally well done in presenting basic concepts, except for omitting limitations on their use. For example, the author extends the concept of plane-wave shielding to frequencies so low that plane waves are not found in the real world. Also, although he discusses seams and holes, he gives no indication of the upper limit on performance due to such imperfections in a physical shield, compared with the basic material from which it is made. Although conductive gaskets are discussed, no mention is made of conducting spring-contact fingers. (A minor problem resides in a mixture of MKS and English units.)

Chapter 7 is devoted to contact protection and the suppression of transients, from either mechanical contacts or transistor switching. The subject of Chapter 8 is intrinsic noise sources, such as thermal noise, and the subject of Chapter 9 is active-device noise; both are well presented.

At the end of each chapter is a summary of the most important points discussed. For those desiring additional information, a bibliography is also included, but is understandably abbreviated. In addition, Appendix A discusses the decibel and its use. Appendix B (presented in the form of a check list) is an overall summary

of the more-commonly-used noise-reduction techniques. Appendix C extends the discussion on shielding to include multiple reflections of magnetic fields in very thin shields. Review problems for each chapter are found in Appendix D, with answers in Appendix E.

In summary, this is an excellent book that should find much use by both newcomers to, and those well-experienced in, the techniques of noise reduction.

PROCEEDINGS SPECIAL ISSUE FEATURES ELECTRICAL HISTORY

Two Centuries in Retrospect is the title of of a unique special issue of the PROCEEDINGS OF THE IEEE covering the development of electrical science and engineering in the United States over the past two hundred years. The intent of the issue is to acquaint electrical engineers with the rich and varied heritage of their profession.

The coverage is divided into two parts, the first concentrating on the period from 1776 to 1876 and the second covering the past century. Papers in the first part treat the contributions of such early workers as Franklin and Henry. The papers in the second part are arranged into three subject categories: Telecommunications and Electronics; Power, Light and Transport; and Social, Professional, and Educational Aspects.

An unusual - if not unprecedented - feature of the issue is that it is made up of papers from two different types of authors: professional historians of technology, and engineers who have contributed to the developments they describe. The electrical historians were invited to write on topics in their fields of special interest and competence. The engineers - people such as W. L. Everitt, F. E. Terman, P. L. Alger, and D. G. Fink - tell some fascinating eye-witness tales. The result is a collection of papers that reveals numerous linkages and yields a broad coverage of electrical history.

This issue devoted to the history of electricity appears at a time of special historical significance to the PROCEEDINGS. The first special issue, which was devoted to color television, was published in October, 1951. The present issue thus marks the completion of a quarter century of PROCEEDINGS special issues.

Copies of this issue are available from the IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. The price to IEEE members for the first copy is $5.00; the price to nonmembers (and to members for additional copies) is $10.00. Annual subscriptions for the monthly journal are $9.00 and $60.00 for members and nonmembers, respectively.

TABLE OF CONTENTS
NOVEMBER 1976 ISSUE OF EMC TRANSACTIONS

NOTES FROM SEQUENCY UNION

by
G. R. Redinbo

WEST GERMAN SYMPOSIUM

An extensive symposium on applications of Walsh and other nonsinusoidal functions was held October 8 and 9 at the Technical University of Aachen, West Germany. The program included eleven sessions spread throughout the two days and was organized by a committee headed by Professor H.J. Tafel. The gathering gave engineers, scholars and scientists from many countries the opportunity to discuss topics of mutual interests.

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DR. HARMUTH WINS PAPER AWARD

Professor H. F. Harmuth was awarded the Best Paper Prize at the IEEE 1976 International Symposium on Electromagnetic Compatability. His paper "Antennas For Nonsinusoidal Electromagnetic Waves" not only describes efficient methods for radiating two-valued periodic waves, but coincidently gives information about what not to do if one wishes to avoid some EMC problems.

This article which is well written in a straightforward manner is a delight to read. It along with many other interesting papers are contained in the proceedings of this symposium; all are available through the usual IEEE publication channels.

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BOOK ALERT

There are several new books which may be of interest to our readers. Some are currently under review by our book review editor.

M.G.Karpovsky, Finite Orthogonal Series in The Design of Digital Devices. New York: John Wiley & Sons, 1976.

H.F.Harmuth, Sequency Theory Foundations and Applications. New York: Academic Press, 1976.

A.M.Olevskii, Fourier Series with Respect to General Orthogonal Systems. New York: Springer-Verlag, 1975. (Translated from Russian. Contains chapter on role of Haar system in theory of Fourier Series)

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NTC CONTAINS WALSH FUNCTION SESSION AND PAPERS

The National Telecommunications Conference being held November 29, 30 and December 1, 1976 in Dallas, Texas presents one session dealing with the applications of Walsh Functions. Session 44, scheduled for Wednesday morning is devoted exclusively to nonsinusoidal functions while many other interesting related papers will be presented elsewhere in the program, e.g., session 6. A list of the papers in session 44 is given below.

Session "Walsh Functions Applications in Digital Telecommunications Systems"
Chairman: G. R. Redinbo

1. "Haar Transform Image Coding", R.T.Lynch and J.J.Reis, Northrop Corporation, R&D Center, Hawthorne, CA.

2. "Velocity Detection in the 3D Transform Domain", M. Cotton, Stanford University, Department of Electrical Engineering, Stanford, CA.

3. "Criteria for Building 3D Vector Sets in Interlaced Video Systems", S.C.Knauer, NASA Ames Research Center, Moffett Field, CA.

4. "Two-Dimensional Walsh Transform with a DAP-Effect Liquid Crystal Matrix", D. Roszeities, Bahnhofstrasse 43, D-2000 Wedel/Holstein, West Germany.

5. "Receiver for Walsh and Other Periodic Electromagnetic Waves with General Time Variation", H.F.Harmuth, Catholic University of America, Department of Electrical Engineering, Washington, D.C.

6. "Experimental Results with a Walsh Wave Radiator", J.C.Chapman, Terrestrial Systems Inc., Lexington, MA.

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Editor's Note: See page 2 for Dr. Redinbo's new address.

FCC RULES

FCC PART 15 AMENDED FOR CB RECEIVERS

FCC Docket No. 20746 adopted July 27, 1976 has amended Part 15, Subpart C of the Rules and Regulations. Interference reported by the Utilities Telecommunications Council (UTC) arises from the particular type of frequency synthesis used by many of the CB receivers. With conventional techniques, 23 crystals--one for each channel--are required in a CB receiver designed to receive each of the 23 CB Class D channels. By combining the outputs of two oscillators--one using crystals at 37.6, 37.65, 37.7, 37.75, 37.8, and 37.85 MHz and one using 4 crystals at 10.180, 10.170, 10.160 and 10.140 MHz--all the 23 Class D channels can be obtained with a total of 10 crystals. It should be noted that the frequencies 37.6, 37.7 and 37.8 MHz are precisely those used by the Power Radio Service and that the frequencies 37.65, 37.75 and 37.85 MHz are only 50 kHz removed from the Power Radio frequencies.

The rules are amended by adding a new Section 15.59 immediately after the heading Subpart C - Radio Receivers and affect the CB receivers manufactured after January 1, 1977 and January 1, 1978. In summary, these requirements are as follows:

1. Maximum receiver antenna terminal measure of power in 25 - 500 MHz range: 2.0 nanowatts (after 1/1/77): 0.2 nanowatts (after 1/1/78)

2. Maximum chassis radiation at 3 meter in the 2.500 MHz range: 5 microvolts/meter

3. Maximum conducted emission at public utility interface in the .45 - 25 MHz range: 100 microvolts.

EXCESS PH.D. LEVEL MANPOWER FORESEEN

A Bureau of Labor Statistics study has projected 3% annual increase in the number of new doctorates between 1972 and 1985. About 580,000 Ph.D's will be seeking to enter the U.S. labor force. BLS projects job requirements for Ph.D's at a total of 187,000. More than twice as many PhD's would be available for work in 1985 than job requirements.

LIGHTNING HAZARD OF EXPLOSIVES

Lightning is a hazard to explosives. Obviously, a direct hit will induce a shock and high temperatures. In addition, it can set off electroexplosive devices because of the large voltage surge when the lightning discharges in the ground. Two important don'ts are: (1) Don't handle, use, or be near explosives during the approach or progress of any electrical storm, both during surface and underground operations, and (2) Don't use or uncoil the wires of electric blasting caps during electrical or dust storms or, for that matter, near any source of large charges of static electricity. An article describing lightning, its effects, and listing lightning detectors is: "Lightning Hazard to Explosives," by Deane Boddoroff, The Explosive Engineer, No. 1, 1976, Hercules, Inc., Wilmington, DE 19899.

STATUS REPORT AMERICAN RADIO RELAY LEAGUE RFI TASK GROUP

Dr. Ted Cohen reports that it now appears that the "RFI" Bill (HR 7052) will probably not even reach the hearing stage during this session of Congress. FCC, as yet, has not taken a position in support of the proposed legislation, in spite of the estimated 120,000-plus interference complaints which it now seems will be filed with them this calendar year. Ted also mentioned that a revised version of the list of people to contact at various electronic equipment manufacturers with RFI complaints is available from ARRL.* Please enclose a self-addressed, stamped envelope with your request - it's not required, but it will certainly expedite your receiving the list. (This is the list first mentioned in our write-up of the RFI Symposium held at the ARRL National Convention last year.)

Tony Dorbuck, of the ARRL Laboratory staff, was one of the speakers at the G-EMC Symposium in July. Full text of his paper is in the Symposium Record, but some highlights follow. The basic problem in susceptibility of consumer electronics seems to be shielding - or, rather the lack thereof! ARRL Labs are continuing to work the problems, looking towards simple fixes wherever possible. If you happen to encounter a particularly troublesome consumer electronics susceptibility or interference problem, please send details to ARRL; whether you have a solution or not.

*American Radio Relay League
225 Main Street
Newington, CT 06111

IEEE AND CONGRESSMEN MAP PAY STRATEGY FOR PROFESSIONALS

As part of a program aimed at finding relief from "wage-busting" situations resulting from lack of coverage of professionals under the Service Contract Act of 1965, officials of IEEE met with Congressmen Frank Thompson, Jr., and James Corman to map out further plans to provide aid to this important segment of the nation's manpower. As part of their plan to gain support to remedy this situation, Congressman Thompson introduced on August 23 H.R. 15228, "a bill to amend the Service Contract Act of 1965 to extend its coverage to professional employees." Congressman Corman was the co-sponsor. In seeking this support, Thompson and Corman explained:

"In hearings held by the House Education and Labor Subcommittee on Labor-Management Relations, it was recently revealed that wage busting bidding practices on government contracts are driving down the standard of living of professionals. This situation has arisen because professionals, such as engineers, have been subjected to depressed local standards of pay instead of a standardized national average. In Cape Canaveral, Florida, for example, which experienced a technical boom for engineers during peak activity in the 1960's and early 1970's, many engineers find their wages cut to the minimum wage due to the tremendous competition for jobs.

"Our bill, H.R. 15228, seeks to remedy this situation. First, it would define a professional employee to include any professional covered by the most recent U. S. Department of Labor National Survey of Professional, Administrative, Technical and Clerical Pay (PATC), employed in a civilian job at a rate not less than that received by Federal Government employees in Grade 15 of the General Schedule. Second, the bill provides that professionals whose services are comparable to those described in the Survey receive not less than that prevailing rate. Third, the measure would establish a successorship standard, so that a bidder succeeding to a previous contractor's agreement with the government could not pay professional employees less than they earned under the predecessor's contract. This is fundamental in preventing the wage busting practice which the government has fostered through competitive bidding. And lastly, where salaries and fringe benefits for various classes of professional employees are not adequately described in the Survey, the Labor Department shall make those determinations.

"This bill will go a long way to insure the dignity and integrity of the professional during these difficult economic times. It will prevent undercutting of wages by establishing a national minimum professional standard of pay. And it will do this by providing coverage under the umbrella of the Service Contract Act."

Plans also include the stimulation of interaction between local IEEE members and their Congressmen in order to obtain the necessary sponsorship of this bill.

(Copies of the bill may be obtained from your EMC Newsletter Editor.)

MAIL

Dear Editor:

Thanks for EMC's Newsletter article on "TV, Flourescent Light Makers Slow to Utilize Safeguards."

I hope that you will continue publishing this type of much needed material because it is up to the engineers to take the lead in combating man's environmental degradation with electromagnetic pollution.

I am concerned about pollution because the quality of mankind is largely determined by the quality of his environment. Please note that the cancer rate in the U.S. is increasing every year apparently in direct proportion to pollutants released to the air, water and soil.

It is my belief that the engineering professions must speak out against any and all pollutants, otherwise they will be assailed as the creators of the technologies generating the pollutants.

Sincerely,

Steve J. Gadler, P.E.
Member, G-EMC of IEEE

EDITOR's NOTE:

I agree with you, Mr. Gadler, that engineers should take a leading role in helping to solve the social and ecological problems. Your response to our Newsletter is sincerely appreciated and all members are encouraged to follow your example by expressing their views through letters to the editor.

Bob Goldblum

EHLRI INVITED TO JOIN ROSWELL PARK

This article has been excerpted from the Dec. 1975 issue of the "EHLRI News" published by the Environmental Health and Light Research Institute, 3112 Southgate Circle, Sarasota, FL 33579.

The collaboration of the Environmental Health and Light Research Institute (EHLRI) with the Roswell Park Memorial Institute, a leader in cancer research, is being announced. The plan is to establish a Center for Light Research at Roswell Park in Buffalo, NY. The new Center would also encourage, coordinate and cooperate with other research centers in light research studies.

That center's decision to invite EHLRI to become part of Roswell Park is a culmination of three years of experiments on the effects of different colors or wavelengths of light on laboratory animals. Dr. Cora Saltarelli, who directed the study, considers the results very significant. She is now in the process of completing that report.

A four-part series in "Eye, Ear, Nose and Throat" related the findings of six research projects undertaken at major medical centers which studied the effect of various wavelengths of light on tumor growth. All tended to confirm Ott's original experiments done 15 years ago. Ott noted a dual function of the eye when he discovered that the pigment epithelial cells of the retina of a rabbit's eye showed abnormal responses to alterations in the intensity, periodicity and wavelengths of lights. The project was originally undertaken as a drug toxicity study but it soon became apparent that the pigment epithelial cells were more sensitive to the color of the filter in the microscope light than to the drugs.

The University of South Florida is now planning a major study of the effects of light on behavior patterns. That study will focus on hyperactivity leading to crime and violence. The control study is to be done in a Florida prison. USF has already been using some EHLRI equipment in a study of Red Tide organisms to assess growth and behavior under a wide variety of light-temperature conditions.

The affiliation of EHLRI with a major university medical center is a milestone in the field of light research which John Ott has been concerned with since he began taking time-lapse pictures as a hobby in 1927. Early efforts turned up startling discoveries that bean plants growing under differing wavelengths would shrivel up and that laboratory mice could not stand up to exposure to radiation from television sets. With 49-1/2 years in the field, Ott is hoping to semi-retire next year while remaining a consultant and giving periodic seminars. In all these years, Ott has been working in EHLRI without salary, contributing both his time and considerable financial support to the work. Ott and his son, Henry, are setting up a foundation to include the patents on their TV radiation shield and fluorescent lighting developments. Part of any future royalties from their patents would be used to support further research on light.

Loyola University of Chicago, which awarded Ott an honorary Doctor of Science Degree, was the first university interested in accepting the time-lapse equipment and incorporating the research in its department of biology. A site had already been picked out on campus when Ott was advised by the department chairman that research would be limited to the study of effects of light on plants and that no experiments on animals would be permitted. Since the effects of light on animals, and ultimately humans, had become the significant point of Ott's interest, the plans with Loyola lapsed. However, this was approximately twenty years ago.

The tide of acceptance really turned in favor of EHLRI when experiments at four major medical centers confirmed abnormal responses in bean plants and lab animals exposed to flourescent lights. These experiments were carried on at the School of Public Health, John Hopkins; Nuclear Medical Research, Veterans Administration Hospital, Hines, IL; Department of Chemistry, University of South Florida, and Graduate School of the State University of New York at Buffalo. National attention has come in the last year or so with publication of scientific and medical journals of results of experiments by Ott and other researchers which indicate that different wavelengths of light received through the eyes influences the pineal and pituitary glands which control the endochrine system.

Rep. Paul G. Rogers has asked Ott to again testify before his subcommittee on Public Health and Environment about research that has been done on the effects of light on tumor development, as well as the need for stiffening the safety requirements for television sets and possible fluorescent lights. Rep. Rogers has asked Ott to bring as many of the doctors who have been conducting light research at different medical centers with him to testify and all have indicated they will enthusiastically do so. EHLRI needs contributions to cover expenses.

DAVID SHAFF PROMOTED

David H. Shaff has been named Manager, market Planning and Development - Telecommunications by ITT-Cannon Electric. Mr. Shaff became known to many G-EMC members in recent years through his presentations in filter pin connectors at various Chapter meetings. He has left Dallas to join the World Headquarters of Cannon Electric Division at 666 E. Dyer Rd., Santa Ana, CA 92702.

COMSAT TECHNICAL REVIEW

COMSAT Technical Review is published in the spring and fall of each year by Communications Satellite Corporation. It is the only journal devoted exclusively to satellite communications. Since its beginning in 1971, CTR has published more than 100 papers totaling about 2,700 pages, with abstracts translated into French and Spanish. It has become widely quoted in technical and scientific literature throughout the world. Below is the table of contents for the fall 1976 issue which will go into the mails to subscribers about October 29.

NUCLEAR AND SPACE RADIATION EFFECTS CONFERENCE

College of William and Mary
Williamsburg, Virginia
July 12 Thru 15, 1977

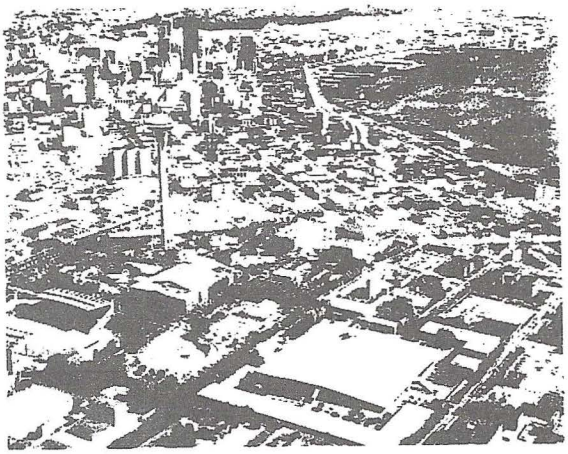
As usual, the committee has chosen one of the more colorful sites in the country for this meeting. Preliminary information indicates that principal paper categories will be:

- Radiation Effects LSI circuits including microprocessors and RAMS
- Basic Mechanisms of Radiation Effects
- Charge Build Up and Surface Effects (MOS)
- Space Radiation Effects and Systems
- Electron Transport and Energy Deposition
- Hardness Assurance
- SGEMP, IEMP, EMP

Conference chairman will be Harold L. Hughes, Naval Research Laboratory, Code 5216, Washington, DC 20375; Tel.: 202-767-2429. Papers chairman will be R. B. Oswald, Harry Diamond Laboratories, 2800 Powder Mill Rd., Adelphia, MD 20783; Tel.: 202-282-2131. The Call for Papers will be out shortly and in the meantime, inquiries should be directed to the papers chairman.

AMBIENT RADIATION DATA

The SAE AE-4 Committee on EMC is presently developing an EMC standard for medical equipment and facilities and is seeking data and information on electromagnetic ambient levels present in urban and rural areas. This data will be used to help establish minimum operating environments for medical instrumentation. Persons who have such data from site survey, test reports, etc. are requested to contact Hank Knoller at 213-847-1787. Hank is the co-chairman of the AE-4 Sub-committee on Medical Facilities/Equipment EMC Design.



"FOR AN EXCHANGE OF VIEWS"

1977 IEEE International Symposium ON ELECTROMAGNETIC COMPATIBILITY

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EMI/EMC, shield, enc. consult. test. & anal.; Scrn. rm. (incl. for large veh.); Comp. instr. for Mil. EMI test.

LECTROMAGNETICS, INC., 6056 W. Jefferson Blvd., Los Angeles, CA 90016
Telephone (213) 870-9383

RF shielded enclosures, modular, prefabricated & all welded. RFI/EMI power line filters; signal line filters.

SINGER INSTRUMENTATION, 5340 Alla Road, Los Angeles, CA 90066

Automatic/manual EMI test systems, EMI meters, impulse generators, antennas, and components.

SPECTRUM CONTROL INC., 152 E. Main, Fairview, PA 16415
Telephone (814) 474-5593

MIL-STD-461 testing, L, Pi, and T filters, capacitors fixed and variable in stock at HALLMARK.

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