

ISSUE NO. 81, Spring, 1974

EDITOR: ROBERT D. GOLDBLUM

MEET YOUR ADCOM PRESIDENT

Here are a few highlights of William E. Cory, President of the G-EMC Administrative Committee, and the man who will direct Group activities through 1974. Gene has been active in EMC work for over 20 years. His EMC group activities have included:

- Organizer and 1st Chairman, Central Texas Chapter.
- 2. Chairman, 1970 EMC Regional Symposium
- Member, Administrative Committee 1971-1973
- Vice Chairman, Standards Committee 1972-1973
- 5. Chairman, 1975 International EMC Symposium (San Antonio, July 1975) Other:
- Member of IEEE Board of Directors 1972-1973
- IEEE Fellow Citation reads "For contributions in the fields of electromagnetic compatibility and systems engineering."
- 3. Technical Vice President and Director of the Department of Electronic Systems Research at Southwest Research Institute.



WILLIAM E. CORY

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GROUP NEWS

ADCOM ELECTIONS

Dear Members:

As Chairman of the Nominations Committee of the EMC Group, I would like to alert you to the fact that it is time to consider the selection of candidates for the 1975 EMC Administrative Committee. As you know, this is the committee that sets policy for our organization, and that oversees the operation of our publications and conferences. We need individuals who are interested in making our Group grow and prosper, and who can devote a reasonable amount of time and effort in guiding the future direction of our professional society.

If you believe you can offer new ideas and directions to AD COM, I urge you to consider being a candidate this year. The steps to run are simple, while the opportunity to serve our organization is great. For further information, please get in touch with me as follows: Herbert Sachs c/o Sachs/Freeman Associates, Inc.

7515 Annapolis Road Hyattsville, Maryland 20784 Phone: 301-577-8630

This is one of the best ways you can consider to serve the EMC Group and guide its development.

NEWSLETTER STAFF

EDITOR: Robert D. Goldblum G.E.RESD 608 Gawain Road Plymouth Meeting, Pa. 19462

ASSOCIATE EDITOR: (Chapter Chatter) Charles F. W. Anderson 2 Bauer Avenue Oakhurst, N. J. 07755

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ASSOCIATE EDITOR: (Book Reviews) James S. Hill 6706 Deland Drive Springfield, Va. 22150

CONSULTING EDITOR: Rexford Daniels P. O. Box 129 Concord, Mass. 01742

ADCOM COMMITTEE CHANGES

Mr. Paul Georgi of the Electromagnetic Compatibility Analysis Center (ECAC) resigned as Chairman of the Nomination Committee. Mr. Herb Sachs of Sachs/Freeman Associates accepted the Chairmanship of this committee.

Mr. Anthony G. Zimbalatti of Grumman Aircraft resigned as Chairman of the Membership Committee. Mr. Robert B. Cowdell of Collins Radio accepted Chairmanship of this

committee. Mr. James A. Spagon of TRW Systems, resigned as Chairman of the Student Activities Committee. Dr. Woodrow Everett of RADC accepted Chairmanship of this com-

mittee. The resignations of these three chairmen were accepted with regret and their many years of service was acknowledged with appreciation.

MAY, 1974, G-EMC TRANSACTIONS

The following is the preliminary table-ofcontents for the May 1974 issue of the IEEE Transactions on Electromagnetic Compatibility. Measured Amplitude Distribution of Automo-

tive Ignition Noise ... H.P. Hsu, R.M. Storwick, D.C.Schlick, and G.L. Maxam. APD Measurements of V-8 Ignition Emanations...R.B.Schulz and R.A. Southwick. A Model of HF Implusive Atmospheric Noise ... M.P. Shinde and S.N. Gupta. The Magnetic Field in the Vicinity of Three-Wire Parallel and Twisted Cable Carrying Balanced Three-Phase Current F. Haber. Analysis of the Moebius Loop Magnetic Field Sensor... P.H. Duncan, Jr. Antenna Evaluation by Normalized Analogical Technique...E.L. Bock. A Rational Basis for Determining the EMC Capability of a System The Multivariate Norman Distribution as Applied to EMC Problems...A.S. Thompson. Two-Dimensional Encoding Masks for Hadamard Spectrometric Imager .. P.S. Moharir. Walsh Summing and Differencing Transforms.K. W. Henderson. Short Paper A Programmable Walsh Function Generator for Orthogonal Sequency Pairs. D.A. Gaubatz and R. Kitai.

CORY SETS GROUP PRIORITIES

Upon taking office as President of the G-EMC Group, William E. Cory surveyed the ADCOM for suggestions as to our Group's problems and future. After studying many replys, Mr. Cory recommended the following priorities for 1974:

1. Reorganization of the Administrative Committee to result in each elected member having definite areas of responsibility.

2. Detailed analysis of our activities to review goals and determine status. 3. Prepare action programs to include: a. Consolidate our splintered technology, b. Improve communications and coordination within IEEE and other societies, c. An increase in membership of 20%, d. Active participation of the Symposium Standing Committee in all of the annual symposia.

During the March ADCOM Meeting, Mr. Cory circulated the highlights from the comments received from his survey. These are excerpted as follows:

We should endeavor to set up a definitive program including topics to be addressed in future symposia, Transaction papers, or special issues of a Transactions, and standards projects. This program should include dates on which specific goals will be accomplished and should be continuously monitored by the Administrative Committee. An effort should be made to get assistance in these projects from the grassroots membership. One of the essentials for a vital organization is to continuously bring into its activities younger persons who are still learning the technology and not being overwhelmed by administrative and managerial responsibilities.

My...major concern is for the diverting membership and in some cases, lack of interest Somehow we need to breathe new life into the group. I suggest that we attempt to expand horizontally by more association with other IEEE groups such as VTT, COMSOC, MTT, etc.

It appears to me that the major opportunities for the group are in the glamour areas such as EMP, electromagnetic pollution, health hazards, and etc. The old areas of mil-spec EMC are still around but the interest has gone. I also believe that the group should actively encourage new R&D funding in these areas. Without some R&D, the technology will not progress. The most important problem that I feel that we as a group have is that of identification with the many other technical disciplines that are more or less subdisciplines within EMC. For example, we have NEMP or EMP, various "Hardening", Technical Security, HERO, RadHaz, etc., that are, more or less, independent at the Government level, but are within the EMC scope of a private contractor to the Government. I have further suggested that a common EMC Symposium, put on by the Government, could easily bring these into facets of one common technical discipline.

This could be a symposium somewhat along the lines of the former IITRI, but having it totally directed by DOD toward a common policy. One day or one session could be directed toward the various subdisciplines within EMC. Last year for example, I recall some 5-6 symposium seminars on EMP, several on technical security, as well as three or four on EMC. If you would like to add your comments, send them to Mr. Cory at Southwest Research Institute, P.O. Drawer 28510, San Antonio, Tx.78284, or send them to the newsletter editor.

SYMPOSIUM SITE FOR 1978 OPEN

The Symposium Committee is soliciting expressions of interest from members at various locations in holding the 1978 EMC Symposium. Boston, Los Angeles and San Diego were some of the areas suggested but this activity must be supported by the local membership. The current schedule is as follows:

1974 San Francisco, Ca. 1975 San Antonio, Tx. 1976 Washington, D.C. 1977 Seattle, Wash. 1978 Open

INDUSTRIAL LISTINGS

At its recent meeting, the ADCOM elected to accept industrial listings in the G-EMC Newsletter similar to the listings which currently appear on the outside back page of the Transactions. The additional revenue will be used to off-set increasing publishing costs due to inflation.

ADCOM PLAN REORGANIZATION

The G-EMC Administrative Committee plans to re-organize its functioning structure in order to operate more efficiently. There would be no change in electing membership to ADCOM. Eighteen would still be elected by the Group membership. These eighteen, however, would elect the Executive Committee including vice presidents as shown in the boxes on the chart. The Senior Vice President would be considered in training for the Presidency and naturally would act in his absence. He would also have some duties of his own besides being, in a sense, the Executive Officer. The Secretary would continue with his present functions as Board meeting recorder. More emphasis would be required for him to maintain contact with the chapters through the East and West Coast Chapter Coordinators (also members of AdCom) to assure that addresses of officers and chairmen are current.

The Treasurer would be in a unique status. Because of complexity and the experience required, this person should hold office for longer than three years. A longer term of office has been recommended by IEEE Headquarters. Consequently, he should not necessarily be always a member of the elected AdCom (Board). More properly, he should be selected by the board, or at least confirmed if selected by the Executive Committee. When chosen, he would become, ex-officio, a Board member with all voting and other privil-eges. He would also be required to select and train an alternate who would become his real alter ego in finance matters. Because of propinquity, the Treasurer should probably be from the East Coast although that does not seem mandatory. By-Law changes would be required for implementing this idea.

Ex-officio members with a vote would be the immediate Past President (Junior Past President) as well as elected AdCom (the eighteen). Board members, without vote, would be Chapter Chairman and standing Committee Chairman, unless they are of the elected Eighteen.

Comments and suggestions on this reorganization are welcome from interested Group members. They should be addressed to the Group President, William E. Cory, Southwest Research Institute, P.O.Drawer 28510, San Antonio, Tx. 78284.

1974 G-EMC STANDARDS COMMITTEE

The G-EMC Standards Committee consists of the Chairman, Vice-Chairman, Subcommittee Chairmen, Special Representatives, and Members-at-Large. The following notes the above, as well as providing a summary of subcommittee activities. Chairman:

Mr. J.E. Bridges IIT Research Institute 10 West 35th Street Chicago, Illinois 60616

Vice Chairman, Coordination with Non-IEEE EMC Standards Activities: Mr. Leonard Thomas 1604 Buchanan St., N.E. Washington, D.C. 20017 202-526-2545

Vice Chairman, Coordination with IEEE on EMC Related Standards: Mr. W.C. Cory Southwest Research Institute P.O. Box 28510 San Antonio, Texas 78228 512-684-5111

Members-at-Large: Mr. Julian P. Dixon Assistant Chief Engineer,Office of Chief Engineer FCC 1919 M Street, N.W. Washington, D.C. 20554

> Dr. Heinz M. Schlicke 8220 North Poplar Drive Milwaukee, Wisconsin 53217 414-671-2000

Secretary, IEEE Standards Office: Mr. Sava Sherr IEEE Standards Office 245 East 47th Street New York, New York 10017 212-752-6800

Special Representatives to ANSI C63, Radio-Electrical Coordination: Mr. Stan I. Cohn, Head of Delegation (Term ends 1974) Office of Telecommunications Department of Commerce Washington, D.C. 20004 202-967-5507 Mr. Neil Shepard (Term ends 1975) General Electric Company, Room 600 Mountain View Road Lynchburg, Virginia 24502 Mr. N. Kolcio (Term ends 1976) American Electric Power Service Corp. 2 Broadway New York, New York 10004 212-752-6800

Special Representative to ANSI C95 Dr. Carl L. Frederick Southwest Research Institute P.O. Box 28510 San Antonio, Texas 78228 512-684-5111



SUBCOMMITTEE CHAIRMEN AND PROJECT STATUS

The following lists the status of various G-EMC Standards activities and G-EMC. Standards Committee Membership. Inquiries or comments on specific activities should be directed to the various subcommittees chairmen.

Measurement of RF Shielding Characteristics of EMI Gaskets - Chairman: George C.Kunkel, Electro-Data Technology, 2808 North Naomi Street, Burbank, Ca. 91504, 213-843-5880. Status: Project Authorization received. Subcommittee has preliminary draft available for review.

Receiver Susceptibility - Status: Currently shelved for lack of Chairman.

Uniform Measurement and Reporting of Low-Level Electromagnetic Environments and Electromagnetic Ambient Site Surveying -Chairman: Vacant (temporary chairman Mr. D.R.J. White). Status: Need appears to be great. Those interested in forming a committee should contact: Mr. Donald R.J. White, 14800 Springfield Drive, Germantown, Md. 20767, 301-948-0028.

Criteria for Spectrum Utilization by Message Transfer Systems - Status: Actively dropped.

Interference Rejection Characteristics of Filters - Chairman: Fred J. Nichols, Lectromagnetics, Inc.,6056 W. Jefferson Blvd., L.A., Ca. 90016, 213-870-9383. Status: A new chairman has been selected and will form an active subcommittee.

Connector Shielding Effectiveness and Cable Shield Transfer Impedance - Chairman: Gene Knowles, Boeing Corp., P.O. Box 3996 Mail Station 8977, Seattle, Wash., 98124 206-655-9839. Status: Subcommittee is preparing draft.

Field Disturbance Sensors - Chairman: R.E. Taylor, NASA/Goddard Space Flight Center, Mail Code 750.1, Greenbelt, Md. 20771, 301-982-6908. Status: Draft should be available for EMC Standards Committee approval in February 1974.

High Performance Shielding Enclosures -Chairman: James Klouda, Elite Electronics Engineering, 5100 South Ashland Ave., Chicago, Ill. 60609. 312-436-0600. Status: Revision of IEEE 299 underway. Other standards for shielding measurements being considered. Definitions - Chairman: Jacqueline R. Janoski, ACLP, Electromagnetic Compatibility Analysis Center, Annapolis, Md. 21402, 301-267-2354. Status: A small committee is active and may propose a definite project. Currently reviewing a number of new dictionaries.

Impulse Strength and Bandwidth - Chairman: Dr. Ralph Showers, Moore School of Elec. Engineering, U. of P., 200 South 3rd St., Phila., Pa., 19104. 215-594-8123. Status: Draft should be available for IEEE Headquarters Standard Committee approval in January 1974.

Spurious Emission from Land-Mobile Communication Transmitters - Chairman: John R. Neubauer, 1013 Lake Shore Dr., Collingswood, N. J. 08108. 609-854-6191. Status: Final draft will be available for ballot approval by EMC Standards Committee in Jan.1974.

Laboratory Measurement of Fields from Small Electronic Equipments - Chairman: William Free, Georgia Inst. of Tech., Engineering Exp. Station, Atlanta, Ga., 30332. Status: Subcommittee is preparing draft.

Susceptibility of Non-Implanted Cardiac Pacemakers - Chairman: Dr. D.C. Miller, Code SM5A,Naval Underwater Systems Center, New London Laboratory, New London, Conn., 06320, 203-442-0771, ext.260. Status: Draft copy of "Recommended Practices for Determining the Susceptibility of Cardiac Pacemakers to Signals Induced in Their Leads by Low-Frequency Magnetic Fields" is being reviewed by the subcommittee. Possible action by IEEE Standards Committee as early as Fall 1974.

Revision and Updating of Old Standards -140-1950 Minimimization of Interference from RF Heating Equipment.
187-1951 Open Field Method of Measurement of Spurious Radiation from FM and TV Receivers.
213-1961 Radio Interference, Conducted.
214-1961 Radio Interference Line Impedance Network.
263-1965 Radio Noise Generated by Motor Vehicles. Coordinator: Mr. W. C. Cory, Southwest Research Institute, P.O. Box
28510, San Antonio, Texas 78228.
512-684-5111. Status: Major assignment of action responsibility by February 1974.

EMC PERSONALITY PROFILES

by William G. Duff

The EMC Newsletter is one of the major means of communicating and coordinating activities and items of interest to the EMC community. We, the EMC Newsletter editors, are constantly seeking new ways of serving the EMC community through articles in this publication; and we encourage and welcome suggestions from our readers. Recently, it was suggested that it would be desirable for members of the EMC community to know each other better. It would be particularly helpful if newcomers and those working in related areas were better acquainted with some of the more active leaders in EMC.

In response to this suggestion, the newsletter will present in each issue a brief biographical profile of one or more EMC personalities. This issue's EMC Personality Profile is presented below.

C.F.W. ANDERSON (CHARLIE)

For a number of years, the Chapter Chatter column has kept EMC Newsletter readers informed of the various EMC chapters around the country. Most readers are probably aware that Charlie Anderson has become the new Associate Editor in charge of this column, and we felt that it would be appropriate to use the EMC Personality Profile column to introduce Charlie to our readers.

Charlie Anderson was one of the charter members of PG-RFI, G-EMC's predecessor. He has been in EMC/EMI since 1942 (back then, it was called "radio noise"). From 1940 until early in 1960, he was with Martin Aircraft in Baltimore, performing ground and flight testing on avionics systems and doing installation design. After about a year and a half at Boeing-Seattle on the Minuteman program, he returned to the East Coast in mid-1961. At Grumman Aircraft on Long Island, he was involved in EMC/EMI engineering, primarily on the A6 aircraft. Moving to the Jersey Shore area in 1964, he spent five years with Honeywell, working on Tempest problems and doing avionics installation design. In 1969, he went with AEL Service Corp., working on EMI and EMC



problems in Avionics equipments and systems. In May of this year, he returned to Honeywell at their Monmouth Airport facility, where he is currently involved in a project combining EMC/EMI and avionics installation engineering. Charlie graduated from Washington College in Maryland in 1939 with a B.S. in Chemistry. (His first job was in a distillery!). Charlie and his wife, Mary, who is a psychiatric social worker, live just a mile from the ocean in Oakhurst, New Jersey. They have two grown sons and a teenage daughter. He is active in Scouting and is an amateur radio enthusiast, (WB2CMO) with special interest in working with low power.

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Recommended IEEE EMC ENVIRONMENTAL QUALITY COMMITTEE

		Consultant	Alternate
1. È	ast Coast New Hampshire	Robert G. Despathy Sr.	
	Massachusetts Connecticut	Rexford Daniels	Wm.J.Prvsner
	Pennsylvania New Jersey	Ralph M. Showers John J.O'Neil	Robert T.Goldblum Warren A.Kesselman
	Maryland	Carl C. Allen	Edward W. Chapin M.N. Lustgarten J.Paul Georgi
	Washington,D.C.	A.H. Sullivan, Jr.	Joseph J. Fisher W.C. Green
	Virginia		E.O. Attinger William G. Duff
2.Mi	Florida d U.S.	W.E. Pakala	
	Wisconsin Illinois Ohio Colorado	Heinz M Schlicke Jack E. Bridges Samuel Skolnik Harold E. Taggart	H.L. Wolfman Charles E. Seth Henry B. Ray John J. Tary
	Texas	William E. Cory	Walter C. Dolle J. L. Moe Richard B. Schulz
3. W	est Coast		
	Washington	Walter D. McKerchar	E.D. Knowles F.A. Beauchamp
	California	F. J. Nichols	V. Siegfried H.K. Mertel C.B. Pearlston,Jr. Eldon S. Hughes John E. Merrell
			Joseph F. Fisher, J

SCHOOL DAYS

The University of Pennsylvania has initiated a graduate degree program in Telecommunications Engineering and Spectrum Management. This program is designed to provide the background necessary to address the problems of government and industry in the area of telecommunications engineering & spectrum management. Many of the courses offered are of great interest to the EMC community and provide a study with direct applicability to our work. We have invited representatives of the University of Pennsylvania to our February meeting with the hope of showing our interest in an educational program with an emphasis on spectrum management. This interest will also show the need for a program of this type in the Monmouth County area. Our speaker for the February meeting is a member of the U. of P. staff involved with the Spectrum Engineering program and will be able to explain its features and requirements.

AFSC DH 1-4 REVISED

Lawrence J. Zynda Delbert M. Hish

The fourth revision of the second edition of the Air Force Systems Command Design Handbook 1-4, Electromagnetic Compatibility, has been released. The revision includes a new bibliography of lightning related documents, OTP spectrum related documents, and SAE EMC related documents. Also,minor changes have been made throughout the handbook. For additional information, write to: 4950/TEH, Wright Patterson AFB, Ohio 45433.

AFSC DH 1-X REVISED

The second revision of the second edition of the Air Force Systems Command Design Handbook I-X, "Checklist of General Design Criteria" has been issued as of 15 January, 1974. Design Note 4E5 was revised to reflect the 10 July '73 changes to DH 1-4 Electromagnetic Compatibility. Inquiries should be addressed to Mr. Seitz, Code 4950/TEN, Wright-Patterson AFB, Oh 45433; (513) 255-6295.

COMPUTER FACILITIES

More than 1,000 computer facilities in Texas are described in a new directory published by Texas A&M University. Compiled by Norman C. Whitehorn in the Industrial Economics Research Division of TAMU's Texas Engineering Experiment Station, the directory is aimed at bringing together organizations that have computer facilities for rent and those that need such services. "Directory of Computer Facilities in Texas" is an update of a 1970 compilation. The new edition includes 763 organizations operating 1,036 computers. Three listings are included: an alphabetical index by name of firm or organization; a geographical listing by city; and an equipment index, cited by manufacturer and by model number. The directory details this information about computer facilities: type of computer; memory; peripheral equipment (such as readers, punches, printers, disk and tape drives, display units, graphic plotters, etc.); operating system used; whether rental use or programming assistance are available; application areas; and program languages used. In addition to business firms, the directory includes descriptions of computers in many municipalities, public schools, universities and hospitals. This directory is not meant to be a complete listing," Whitehorn noted. "Only those organizations that responded to our questionnaire are listed, but we hope that publication of this kind of information will encourage computer users across the state to communicate." Price of the 234-page, soft-cover book is \$10. Orders should be addressed to Industrial Economics Research Division, Texas A&M University, College Station, Texas 77843 (Area code 713, 845-5711).

EMI TESTING TECHNIQUES

NBS had developed a new method for testing the susceptibility to electromagnetic interference (EMI) of electronic equipment and components and for calibrating EMI hazard meters and field-strength meters. In a recent application of this technique some smoke-sensitive fire alarms, which might be used near government radio transmitters or radar beacons, were shown to need careful shielding in such high EMI areas to reduce the falsealarm rate.

(From Demensions/NBS, Jan. 1974)

COMPUTER PROGRAM FOR METRIC CONVERSION

The National Bureau of Standards is planning to make available to American industry a computer program package to assist manufacturing companies in metric conversion. The package is based on a computer program that converts metric units on engineering drawings to their U.S.customary equivalents. The program is suitable for use on a wide range of computers with little or no modification. The package will consist of the program itself, test problems and documentation sufficient to get the program running and to use it. The program was developed by the Caterpillar Tractor Company and was given to NBS for distribution. Caterpillar has adopted a policy of producing all new drawings for new products in metric units and uses the program to compute and printa table converting metric units to U.S. Customary units for the specific numerical quantities appearing on a drawing. The table is reproduced on the drawing itself. The program will be validated by NBS and distributed for a fee which will cover validation, production of copies and other expenses incurred by the government. It is anticipated that the package will be available for distribution early this year and that it will cost in the neighborhood of \$500.

BOOK ON COMPUTER-AIDED FILTER DESIGN

"Computer-Aided Filter Design", a volume of selected reprints edited by George Szentirmai of Cornell University, has been published by the IEEE PRESS. The availability of solid-state devices and fast digital computers has had a major impact on filter design and realization, and it is important that the filter designer and user keep abreast of the latest developments. The 45 papers reprinted in "Computer-Aided Filter Design" were carefully selected with this need in mind. In a tutorial introduction, the editor discusses the design fundamentals of filters for analog signals and comments on each of the reprinted papers. The major topics covered by the papers are approximation, synthesis, optimization, sensitivity, the time-domain design. An extensive bibliography and author and subject indexes are included. This 448 page book, sponsored by the IEEE Circuits and systems Society, is priced at \$7.00 for the paperbound member edition. A clothbound edition is available for \$13.95 (discounted to \$10.45 for IEEE members. Besides being available from the Institute, IEEE Books of Selected Reprints are distributed worldwide by John Wiley & Sons, Inc.

CHAPTER CHATTER

Charlie Anderson

First, my apologies to all for the lack of a Chapter Chatter column in the Winter issue, especially to those who submitted information on their Chapter activities. I'll try to make it all up with this one, starting with the furtherest first.

Pacific Area - Bob Ford has been sending me his fine G-EMC PAC Newsletter and I This have also reviewed the back files. is an unabashed commercial for it. If you want to keep up with present or former EMC/ EMI or Frequency Management buddies in the PAC area; or if you merely want to read a most informative and highly amusing little bulletin, send Bob \$1.50 (hope the price doesn't go up with the increase in postal rates). Address at end of column. The January issue tells of the comings and goings of many EMCers who will be known to lots of you. Captain Richard Snell and Don Brough are going back to school to get their Masters degrees; Dick Snell at AFIT-Dayton and Don at U. of Hawaii. Neil Tarr has left PAC area for an assignment in the DC area. Mike Tinney replaces him. Gordon Curran, former top frequency coordination type in Japan, has accepted a new position at Fort Huachuca. Addison Pace has retired as CINCPAC Frequency Manager. Richard Maruyama has returned to EMC in Hawaii after three years in Japan in systems engineering. Dick Snell's replacement is Robert Wieler, reported by Bob Ford to be "gung ho, good education and interested in EMC. (Bob Ford: How do you find these types?). Another new PAC area man is Joe Prothero.

Chicago - Norman Wehling reports that the Windy City gang have been quite active. They meet at The Black Steer Restaurant.In October, Glenn Whiting of Singer-Metrics gave a presentation on automatic EMC test equipment. At the December get-together, Jack Bridges of IITRI discussed EMP. Interest was high, with 25 attending. In mid-February, Don Siegal of McDonnell-Douglas talked on computer programming for system compatibility. April meeting plans call for EMC movies.

Philadelphia - Milt Kant reports that the Philadelphia Chapter has been inactive and that prospects for the year do not look too promising. San Francisco - Andrew Nalbandian, Bay Area Chairman, reports lots of doings. Starting off in September, Dr. Gunther Sorger of Singer spoke on Microwave Measurements. Then, in October, Walter Dimmick of LMSC addressed the Chapter meeting on "Attraction, Repulsion and Inertial Effects from EM Waves" and also on the topic "Notes on Metric System versus American System of Measurements". At a November meeting jointly with the Aerospace and Electronic Systems Society Chapter, Wayne Picciano of Philco-Ford presented "SPURTRAK - A BASIC language Computer Program which Evaluates the Performance of Cascaded Mixers and Bandpass Filters". Planned for March is a meeting at which Paul Malnate of Tektronix will discuss the Tektronix transient digitizer. Meetings are planned through mid-June. One of these, in May, is to be another joint meeting with AES, which will feature wine tasting and a barbecue at the Paul Masson Winery! (Any good EMC/EMI jobs open in the Bay Area?). Andrew also reports the following, among others, busy with preparations for the July Symposium: Vic Siegfried (Symposium Chairman); Alan Johnson (Program Chairman); Paul Bolander (Arrangements Chairman); Alden Hart (Exhibits Chairman); and himself as Publications Chairman. Although it would appear that the papers deadline is long past, Andrew did enclose a copy of solicitation with his recent report, with a note calling it to my attention specifically. (Suggest that if you have a paper you get in touch with Alan Johnson immediately at 408-742-1361).

Phoenix - In December, Phoenix elected their 1974 officers. Carl Jesperson of Motorola is Chairman; John Flowers, also of Motorola, is Vice-chairman; Richard Reichert of the Arizona Department of Public Safety is Secretary, Gerald Kaseberg of DeVry TAchnical Institute is Treasurer; and Paul Bolster of the Salt River Project is in charge of publicity. At the same meeting, John Simmons, National President of APCO and Doug Martin, Area Frequency Coordinator of the Power Radio Service Group gave presentations on frequency coordination responsibilities and functions. A March 13th meeting will feature David Shaff of ITT-Cannon speaking on "Practical EMI/RFI Protection with Hybrid Filter Contact Connectors.

Chapter Chatter (continued)



DR. WORTENDYKE

BUD TAGGART





<u>Tucson</u> - Tucson's Secretary, Jerry Sorkin, reports the Chapter as "once again active and running". In November, they held a dinner meeting with Dr. David Cohen of IITRI briefing on ECAC activities in the area of propagation. Discussion was lively, and was highlighted by comments from Jin Deterding, ECAC Technical Director, and Marion McCaleb Director of the EMETF. AEPG-Ft. Huachuca, Lockheed Electronics and Bell Aerospace personnel also participated. Tucson's officers for this year are: Bob Seach, Chairman; Vic Lunell, Vice-Chairman/Treasurer; and Jerry Sorkin, Secretary.

Denver - Bud Taggart, Chairman of the Joint EMC/Instrumentation & Measurement Chapter reports that in September, Walt McKerchar of Boeing spoke to their meeting on heart pacemaker susceptibility. In October, Dr. David Wortendyke, Institute for Telecommunications Sciences addressed the Chapter meeting. His topic was "An Instrument to Automatically Measure and Analyze Microwave Radio Signals". Bud enclosed a picture of Dr. Wortendyke and himself (which I hope we can get into the Newsletter). Other officers of the Denver Joint EMI/IM Chapter are Hank Ray of Martin-Marietta Aerospace, Vice-chairman; and Ramon Jesch of NBS-Boulder as Secretary-Treasurer.

New Jersey/Coast - Jersey Coast's first meeting of the current season was in October. James Atkinson of ECAC explained ECAC's mission and capabilities. His presentation covered the numerous services which ECAC can provide to qualified user agencies. ECAC's new capabilities document should be available on request to the facility by this time. November meeting featured Dr. Gerard Wrixon of the Holmdel NJ Bell Laboratories speaking on Millimeter Wave Radio Astronomy. He discussed both techniques (would you believe a 5 dB noise figure receiver at 140 GHz?) and some of the more spectacular recent findings with respect to organic molecules and free radicals in the region of the galactic center and certain nebulas. Both the above meetings were held as luncheons at Rosie O'Grady's Restaurant, with attendees from Ft. Monmouth, Bell-Labs, and other EMC oriented organizations in the area, such as Honeywell, well-represented. The traditional Christmas party was held in December at the Ft. Monmouth Officers' Club. A fine turnout of G-EMC members, wives and guests enjoyed an excellent variety of hors d'oeuvres and cocktails. Among those present were John Egli (now retired from ECOM) and his wife, Catherine, Mr. and Mrs. Joseph Chislow (Joe is Chapter Vice-chairman); Mr. and Mrs.Warren Thiers (Warren edits the Jersey Coast Chapter's Newsletter); and Mr. and Mrs. John Sobole-ski (John is Chapter Chairman).

Central Texas - Reports from both Ocky Jouffray and Chairman Carl Lambert's better half, Winnie, indicate that things are going strong in Austin. Their November meeting was held at the U. of Texas Engineering Laboratory, with a panel discussion moderated by Carl Lambert. Dick Schulz and Ed Bronaugh of Southwest Research Institute and two students, Lee Terrell and Tom Ward made up the panel. Central Texas also had a September meeting which featured a workshop and discussion headed by Dick Schulz on RF susceptibility of automotive electronics. Existing and planned items which might be susceptible and potential sources of interference were discussed. Support for the SAE ad hoc committee on the standard for automotive electronics susceptibility was expressed. February saw the Central Texans gathering at Earl Abel's Restaurant in San Antonio. Charley M. Suche of Southwestern Bell's Engineering Department presented two papers dealing with inductive coordination. One was titled "Electromagnetic Aspects of Power Arc Interference on Voice Frequency Communication Channels"; and the other "Noise Frequency and Low Frequency Inductive Effects of Power Systems on Voice Frequency Telephone Plants".

IEEE ACTIVITIES

BASIC HUMAN RIGHTS

A "Resulution on Basic Human Rights of Engineers and Scientists" was passed by the IEEE Board of Directors in September 1973. It is being printed to keep you informed of IEEE's interest and concern about the treatment of engineers and scientists throughout the world. Here is the text ofthat resolution:

"The Board of Directors of the Institute of Electrical and Electronics Engineers, an organization of approximately 160,000 electrical engineers all over the world, is keenly interested in the welfare of engineers and scientists everywhere.

"This Board views with great concern the infringement on basic freedoms wherever they occur, particularly when engineers and scientists are singled out as the victims because of their profession.

"This Board regrets that many engineers and scientists and their families have been denied their right to emigrate in violation of recognized international practices," often solely because of their professional qualification in Science and Engineering.

ing. "These practices seriously endanger the spirit of transnational friendship and cooperation on which the operation of this Institute is based. The Board of Directors of the Institute of Electrical and Electronics Engineers appeals to its sister organizations, and to the National Academies of Science and Engineering or similar institutions in every country, to join in support of equal human rights for engineers and scientists."

* The International Covenant on Civil and Political Rights, U.N.Document A/RES/2200 (XXI), adopted by the United Nation's General Assembly on 16 December 1966, states in Part III, Article 12, Paragraph 2: "Everyone shall be free to leave any country, including his own."

IEEE RELEASES MANPOWER REPORT

The Manpower Committee of the IEEE has released its 1973 report, "Career Outlook in Engineering (Regions 1 through 6,USA)." The report states that generally "career opportunities in electronics will continue to grow (however)...it will be necessary to remain flexible and ever ready to transfer to another area as activity changes in focus and grows in turn to meet market demands." The report urges engineers to keep abreast of new developments so that it is possible to adjust with the market. It also warns of over-specializing your education during your college career. The Committee members observed that "employment problems are seldom encountered where the individual has maintained a regular program of study to update and broaden his background." This book is planned as the first of an annual series of reports what will provide accurate employment information about the electric/electronics engineering field. It is intended to aid in career planning for those currently employed in the field as well as aiding students at the high school and college levels. The 225 page report is divided into four sections: the industry picture; the manpower picture; careers in engineering; and the engineering challenge. The cost for IEEE members is \$10; non members \$15. The Committee studied a Carnegie Commission Report which called on professional schools and professional societies to pro-

vide careful studies of manpower supply and demand. "We (The Manpower Committee) heartily agree, and sincerely hope these activities of IEEE, of which this Report is the beginning effort, will fulfill just such a responsibility."

IEEE PLANS APPOINTMENT OF NEW G.M.

The IEEE has set up a Search Committee to seek a new General Manager. The announcement was made by IEEE's past President Harold Chestnut and Executive Director Donald G. Fink. Fink, who currently fills the dual role of Executive Director and General Manager, will reach retirement age in 1976. Earlier this year he suggested to the IEEE Executive Committee that a General Manager be selected and take office by the end of 1974, to provide adequate time for orderly transfer of management responsibility prior to his retirement.

President Chestnut stated that the Executive Committee, in agreeing to this proposal, had appointed a six-man Search Committee and had drawn up a list of specifications for the position. He said that the job of managing the internal affairs of IEEE, the largest engineering society, is a particularly demanding assignment, and the year during which Fink would be available to advise his successor would be a busy one. Director Fink said that he planned to devote more of his time to the increasing important external demands of his job, particularly in cooperation with other societies and with the National Academy of Engineering. Director Fink is the only staff executive of an engineering society who holds membership in the Academy.

The Search Committee consists of President Chestnut as Chairman, President-elect John J. Guarrera, Vice Presidents Robert F. Cotellessa and J. K. Dillard, and two past Presidents: Bernard M. Oliver, Vice President of Hewlett Packard, and Seymour W. Herwald, Vice President of Westinghouse Electric Corporation.

IEEE TO DISTRIBUTE ALL INSPEC INFORMATION SERVICES

IEEE will be the exclusive distributor in the Americas for PHYSICS ABSTRACTS and CUR-RENT PAPERS IN PHYSICS beginning with the January 1974 issues. These journals have been distributed in the Americas by the American Institute of Physics under a longtime agreement between the AIP and Inspec, which agreement is being terminated as of the end of this year.

The IEEE will continue to distribute in the Americas--as it has for many years--the following Inspec publications: ELECTRICAL & ELECTRONICS ABSTRACTS, COMPUTER & CONTROL ABSTRACTS, and their companion journals--CURRENT PAPERS IN ELECTRICAL & ELECTRONICS ENGINEERING and CURRENT PAPERS ON COMPUTERS & CONTROL. In addition, the IEEE will also distribute two new Inspec current-awareness journals, beginning with the January 1974 issues. They are:

ISMEC Bulletin - notifications, in the CUR-RENT PAPERS format, of recently published papers throughout the world in all aspects of mechanical engineering, production engineering, and engineering management. Published twice monthly, a yearly subscription includes semi-annual combined Author and Subject indexes. The ISMEC Bulletin is co-published by Inspec and The Institution of Mechanical Engineers, London, England.

METRON - a monthly current-awareness journal in measurement, instrumentation, sensors, automation and control. METRON combines both "information reviews", in abstract form, and extended "current titles" coverage of the latest literature. A yearly subscription includes an annual combined Author and Subject index. Edited by Sira Institute, METRON was formerly published by Pergamon Press, Ltd.

Complete descriptions of the eight Inspec current-awareness publications--including examples of printed entries plus subscription rates--are available in a newlyprinted brochure from IEEE headquarters in New York. Those interested in receiving a copy should send their requests to: INSPEC Information Services, IEEE, 345 E. 47th St., New York, N.Y. 10017.

IEEE COMMITTEE DISCUSSES MICROWAVE OVEN SAFETY

Microwave ovens are not categorically a health hazard. This is the position of the IEEE Committee on Man and Radiation (COMAR). While agreeing with the need for an emission standard on all microwave ovens, the committee disputes the notion that a microwave appliance cannot be considered acceptable unless there is no detectable leakage. The fallacy of this argument was noted by COMAR Chairman Mr. H. Mark Grove. Speaking to journalists at a Washington news conference, he pointed out that all radio and television receivers which employ the

conference, he pointed out that all radio and television receivers which employ the superheterodyne principle emit measurable radiation. Other common sources of detectable radiation are: automobile and lawnmower ignition systems, the fluorescent lamp, and arcing from closing or opening a light switch. "The real que "The real question is not the level at which the radiated energy becomes detectable, but rather the level at which it becomes hazardous," he said. COMAR also disputes the notion that the radiation emission from a properly functioning microwave oven will cause cataracts. Laboratory experiments indicate that the radiation level is too low and exposure is of too short a duration to cause physical damage. While the committee recognizes that improper handling of this appliance can be harmful, this is not a sufficient reason to argue against the use of it. "If a person puts his hand on the fire of a gas range, he will burn his hand" Mr. Grove said. "But that does not mean you stop selling gas ranges." The IEEE has noted the greater use of electromagnetic radiation in such areas as diathermy, food ovens, and communications. Because there is a potential danger, IEEE's Technical Activities Board created COMAR to study the biological effects of electromagnetic radiation. The purpose of this committee is to provide information that is readily understandable by a layman, but that is still factual, accurate, and complete.

MEETINGS & EVENTS

INTERCON AND NEREM AGREE ON 1976 BOSTON CONFERENCE

Two of the nation's foremost technical conventions--IEEE INTERCON and NEREM--will be joined to form a major new Eastern Seaboard conference, effective in the Spring of 1976. Board of directors responsible for the two high-technology activities have agreed in principle to a plan whereby the new conference and exposition will be held in Boston, May 11-14, 1976, in New York in 1977, and alternately each year in Boston and New York thereafter. NEREM will be held in Boston in the Fall of 1974, and INTERCON will be in New York in the Spring of 1975.

Directors of NEREM (Northeast Electronic Research and Engineering Meeting) and members of the IEEE Conference Board, which directs the IEEE international convention and exposition (IEEE INTERCON), have both approved the plan. It also has the approval of the IEEE Executive Committee. Discussions of the new activity have been underway for several months, it was an-nounced jointly by Harold S. Goldberg, Director of IEEE Region 1 and Carroll G. Killen, Chairman of the IEEE Conference Board. "The new conference will have strengths greater than the sum of the present INTERCON and NEREM events," Goldberg and Killen said. "In technical and professional programming, we are combining the efforts of two of the world's great centers for technology. In both programming and the product exposition, we pre-sent two important "markets"--each of which has its own areas of technical and manufacturing leadership."

The new conference and exposition will be professionally managed by Electrical and Electronics Exhibitions, Inc., a non-profit organization which presently manages IEEE INTERCON in New York and WESCON in California each year. Donald E. Larson is president and chief executive officer. The staff will report to a board of directors to be named at a future date, Mr. Goldberg said, and the conference will rely heavily on volunteer committee assistance.

THE 1974 USNC/URSI-IEEE MEETING

The meeting will be held on October 14-17, 1974 at the University of Colorado, Boulder, Co. The following Commissions will hold technical sessions: Commission 1 - Radio Measurement Methods & Standards. Commission 2 - Radio and Non-Ionized Media Commission 3 - On the Ionosphere Commission 4 - On the Magnetosphere Commission 5 - Radio and Radar Astronomy Commission 6 - Radio Waves & Transmission Information.



SPECIAL TOPICS

In addition to the normal sessions, special sessions will be organized as follows: Propagation at Frequencies Above 10 GHz; Kilometer Wave Radiation from Earth and Jupiter; Magnetospheric Particle Precipation caused by Wave-Particle Interactions, (Comm.5) Radio and Radar Observations from Spacecraft; Communication Channels - Characterization; Electromagnetic Wave Propagation in Biological Materials, Man-made Radio Noise; Natural Radio Noise; Effects of Radio Noise on System Performance.



ABSTRACTS

Send original abstract and two copies to: Dr. C. Gordon Little, Secretary USNC/URSI, Wave Propagation Laboratory, National Oceanographic and Atmospheric Administration, Boulder, Co. 80302. Include with your abstract the following information: (a) Commission(s) appropriate for presentation, (b) Suitability for one of the above special topics, (c) Any special equipment needs. Deadline for receipt of abstracts: July 19, 1974. Advance registration and hotel reservation information will be mailed with the Preliminary Program. Further information is available from Mr. Richard Y. Dow, National Academy of Sciences, 2101 Constitution Avenue, Washington, D. C. 20418.

1974 IEEE NATIONAL TELECOMMUNICATIONS CONFERENCE

Active participation and attendance is invited at NTC'74 to be held in San Diego, December 2-3, 1974. Note the theme is "NEW TRENDS IN COMMUNICATIONS." This conference will provide a unique opportunity to stay abreast of this dynamic and increasingly important field! Two types of technical presentation are hereby solicited: Twenty minute formal presentations by authors of papers of theoretical, experimental and developmental nature; and five minute informal presentations of current topics. The latter will not appear in the published journal. The following areas are suggested; however, prospective authors should not feel limited to these topics when submitting abstracts. Radio Communications Space Communications Wire Transmission Systems Communications Theory Communications Systems Spectrum Utilization Vehicular Communications Home Information Systems Urban Communications Data, Digital Voice, and Video Technology Energy Impact on Communications Fiber Optic Communications Wired Cities Packet Communications Prospective authors are requested to submit four (4) copies of an abstract not to exceed 250 words to: P.N. Migdal TELEDYNE MICRONETICS 7155 Mission Gorge Road San Diego, California 92120 no later than April 15, 1974.

USNC/URSI-IEEE ISSUES CALL FOR PAPERS

The Fall Meeting will be held at the University of Colorado, Boulder, Colorado on October 14-17, 1974. The following Commissions will hold technical sessions: Commission 1 - Radio Measurement Methods and Standards, Commission 2 - Radio & Non-Ionized Media, Commission 3 - On the Ionosphere, Commission 4 - On the Magnetosphere, Commission 5 - Radio and Radar Astronomy, Commission 6 - Radio Waves & Transmission Information. In addition to the normal sessions there will be a number of special sessions on related topics. Abstracts of 200 to 245 words should be sent to: Dr. C. Gordon Little, Secretary USNC/URSI, Wave Propagation Laboratory, National Oceanographic and Atmospheric Administration, Boulder, Colo. 80302. Deadline for receipt of the abstracts is July 19, 1974.

ERTS EMC SESSION SCHEDULED FOR COMMUNICATIONS CONFERENCE

EMC-session attendees at the International Conference on Communications (ICC-'74, Hotel Lexington, Minneapolis, Minn., June 17-19,'74) should attend the ERTS (Earth Resources Technology Satellite) session for a paper by Ira Bechtold and Neal Nelson regarding a proposal to instrument and measure telluric-earth currents in interstate pipeline for predicting earthquakes.Interaction of the earth's magnetic field with charged particles of solar origin generates electromagnetic disturbances which are detectable as telluric currents in the earth's crust. The metal pipeline acts as a stable sensor.

Closely allied to EMC-noise phenomena, telluric currents reach peak values up to ten amperes in underground metal pipe, which in turn may possibly be used to monitor electrical resistivity changes as earthquake-precursor data. The paper proposes a series of widely-spaced sensing stations several hundred miles along existing pipelines (water,oil,gas,etc.) in the vicinity of faults, and a global telemetrydata collection network using satellites. This could be a new application for EMC-type activity.

FCC RULES

COMPREHENSIVE RULES FOR RF EQUIPMENT

Comprehensive procedures for granting and administering Radio Frequency (RF) equipment authorizations--type approval, type acceptance and certification--have been adopted by the FCC. The action amends Parts 0 and 2 of the Commission's Rules. The Commission said that the revised procedures arise from a review of its expanded RF equipment authorization program under its marketing rules adopted in May 1970. This program prohibits marketing of RF devices unless the necessary equipment authorization has been obtained. If equipment authorization is not required, this program prohibits marketing unless the device complies with technical specifications prescribed by the Commission. The amended rules consolidate, synthesize and bring together in one section most of the procedural steps to be followed in acquiring RF equipment authorizations and most of the conditions required for granting such authorizations. The Commission pointed out that the new rules do not alter any existing substantive requirement or

technical specification for equipment operation or performance characteristics. The revised rules will be helpful in outlining the procedural steps to be followed in acquiring an equipment authorization and will make clear to the applicant the conditions attendant to a grant of an authorization and the responsibilities and rights of the grantee."

In a related action the FCC also amended Section 0.457(d) of its rules dealing with the disclosure of information to the public. The revision, brings the rules into conformity with the "Freedom of Information Act" and recent court interpretations. Specifically, the amended rule permits applications for equipment authorization and related technical specifications and test measurements to be made available to the public, but only after the effective date of the authorization.

The FCC said that this would assure an applicant for equipment authorization for a new device that the existance and design of the equipment would not be disclosed from FCC records before the authorization date. Upon request, the Commission will defer the effective date of the authorization to a time specified by the applicant. The new rules require use of a standard application form for type approval, type acceptance or certification, FCC Form 729, 723, or 722, respectively. In place of the "self-certification" which had been permissible for some equipment operated under Parts 15 and 18 of the rules, and which the FCC said had "not proved entirely satisfactory in practice, " bilateral certification will be required after Sept. 1, 1974. Under "self-certification," the user was required to perform certain engineering tests on the device and attach a label to the device "certifying" that it had been tested and found to comply with FCC rules. In the past the manufacturer performed these tests voluntarily as a service to his customer and labeled the equipment. The new rules specify that equipment requiring certification must receive such certification from the FCC prior to marketing. Bilateral certification applies to industrial, scientific, and medical equipment as well as devices operating under Part 15. The new rules permit licensing (or similar arrangements) of manufacturing or other commercial rights by the holder of an equipment authorization subject to notifi-cation to the FCC. The grantee of the equipment authorization shall remain responsible to the FCC for the continued conformance of the equipment to the model reviewed by the FCC and shall exercise a high degree of diligence in assuring such conformance and the device must be marketed under the name and number submitted to the Commission in the original application. Any changes in the name or number of the equipment from those originally specified by the applicant would require a new application to be filed. The new rules also require that the FCC must be notified in cases of transfer of control.

For type approval under the new rules, equipment must carry both the manufacturer's assigned identifier and the FCC Type Approval Number. For type acceptance and certification, the FCC said it does not assign any identifying numbers but has agreed to accept the specific identifier assigned by the grantee. It is this number which is required to be inscribed on the equipment. The Commission said that grant of an equipment authorization is valid only for the equipment bearing the identical model or type number set out therein. . equipment bearing a different model or type number, no matter how slight the difference ---including such apparently insignificant changes as the addition of a suffix letter (s) -- is considered . . . new equipment under this procedure and requires its own grant of equipment authorization." This "rigidity" is required to preclude any possibility of ambiguity and in anticipation of expanded use of electronic data processing within the next few years for application processing and retrieving information concerning grants of equipment authorizations. To minimize the possibility of harmful interference on radio channels, the FCC has adopted technical standards for equipment which emits radio frequency energy and procedures for evaluating the degree to which such equipment can comply with the standards. These procedures consist of type approval, type acceptance and certification. Type acceptance is a procedure for advance approval of licensed radio transmitting equipment by the Commission. Based on tests conducted by manufacturers, type acceptance acts to limit the potential for RF interference from radio transmitters. Certain types

of equipment are type approved by the FCC upon successful completion of tests at the FCC Laboratory. Included in this category are medical devices which employ RF energy for noncommunication purposes and microwave ovens.

Under equipment certification, the Commission acknowledges officially that equipment (radio receivers, garage door openers, and bio-medical telemetry devices) which has been tested by the producers, meets applicable technical standards as of the date of manufacture. Certification applies to equipment which may be operated under Parts 15 and 18 of the rules and for which an individual license is not required. The new rules became effective March 25, 1974.

