IEEE ELECTROMAGNETIC COMPATIBILITY GROUP

NEWSLETTER

ISSUE NO. 70 - Oct., 1971 **EDITOR** ROBERT D. GOLDBLUM

G-EMC TO CHANGE ITS NAME?

Again, the AdCom is considering changing the name of the Group on Electromagnetic Compatibility nee RFI. In the opinion of many, EMC lacks in popularity and stature. During the AdCom meeting during the 1971 EMC Symposium, the following names were suggested:

Spectrum Control
Spectrum Engineering
Spectrum & Compatibility Control
Spectrum Pollution Control
Electromagnetic Spectrum Control
Spectrum Electromagnetic Edology
Spectrum Environment Control
Spectrum Pollution Interference Control Engineering
Spectrum Management
Spectrum Sciences Group
Interdisciplinary Spectrum Management
Electro Spectrum Control
Spectrum Conservation
Spectrum Utilization
R. F. Utilization

After the AdCom meeting, "Radiation Spectrum Imagineering" was suggested. Radiation defines the type of spectrum to the electromagnetic and extends from DC to cosmic rays. It, therefore, encompasses gamma and x-rays which create EMP during nuclear effects problems. Imagineering replaces the term engineering which is already covered in IEEE and has the restrictive word engine in it. Imagineering can be any of the new and positive forward-reaching disciplines as well as the old and present ones.

Your editor likes "Interference Technology". How about "Group on Radio Frequency Interference" or RFI?

Seriously, it looks as though a change in our Group's name is in the cards. Therefore, you are urged to submit your comments to the editor of this Newsletter so that he may present them at the next AdCom meeting in November.

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CORY IS CANDIDATE

FOR REGIONAL DELEGATE/DIRECTOR—1972-73

William E. Cory, an outstanding member of the G-EMC, is a candidate for IEEE Regional Delegate/Regional Director, 1972-73, in the Southwestern Region, Region 5. Known as Gene to many of our Group members, he is the Director of Electronic Systems Research at the Southwest Research Institute in San Antonio, Texas.

The following is an excerpt of Gene's platform which appeared in the September issue of SPECTRUM:

Where do I stand on the major issues before our IEEE today? I am for maintaining a strong technical society within which the pros and cons of technological and socio-technological issues are freely discussed in our publications and conferences. I am against IEEE becoming a union or lobbying organization. I am for expanding IEEE activities aimed at improving the professional well being of our members; here providing technology assessments and forecasting and expanded employment opportunity information may help. I am for expanding current efforts to improve communications between all members, professional cross-fertilization can lead the way to more effective use of today's technology for solution of today's and tomorrow's problems; for expanding communications between IEEE members and their national government organizations and international organizations and for expanding the international aspects of our IEEE.

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MEETINGS AND EVENTS

ANNOUNCEMENT AND CALL FOR PAPERS

PURDUE 1972 SYMPOSIUM

ELECTROMAGNETIC HAZARDS, POLLUTION

AND ENVIRONMENTAL QUALITY

May 8-9, 1972
Purdue University
Lafayette, Indiana 47907

The theme of the Symposium is to explore the effects and new application areas of electromagnetic fields. Specific topics to be examined include:

1) Hazards of, and effects of, exposure to electromagnetic radiation.
2) Noise and interference due to power lines and other high power equipment.
3) Interactions of electromagnetic radiation and our environment, and pollution monitoring by electromagnetic means.

Two types of contributing papers are being solicited:

1) Regular Papers. The regular papers are to describe complete work in detail. The complete manuscript for a regular paper is to be limited to ten typed pages, including text, footnotes, references, figures and photographs. Deadline for regular papers is January 15, 1972.

2) Short Papers. The short papers are to report recent and perhaps preliminary work. The summary for a short paper should be two typed pages in length, including figures and photographs and must clearly reflect the content of the papers. Deadline for short papers is February 15, 1972.

Authors will be notified of acceptance of their papers by March 1, 1972.

The Symposium Proceedings will be prepared directly from the manuscripts and summaries of accepted papers. The original and three copies of the manuscript or summary must be submitted in final form to permit direct processing.

Prospective authors are invited to submit manuscripts or summaries for review to:

Professor Chin-Lin-Chen
School of Electrical Engineering
Purdue University
Lafayette, Indiana 47907

1971 IEEE MOUNTAIN-WEST CONFERENCE

ON

ELECTROMAGNETIC COMPATIBILITY

TUCSON/SIERRA VISTA, ARIZONA • NOVEMBER 11-12, 1971

The Electromagnetic Compatibility Group of The Institute of Electrical and Electronics Engineers has scheduled the Mountain-West EMC Conference for November 11 and 12, 1971 on the campus of the University of Arizona in Tucson, Arizona. The Tucson and Fort Huachuca Sections of The Institute of Electrical and Electronics Engineers (IEEE) are joint sponsors of this conference.

Seven Technical sessions of invited papers are planned. A partial list of subjects and authors are as follows:

1. National EMC Standards for Electromagnetic Energy Transfer Systems by Dr. Carl L. Fredrick, Southwest Research Institute.

2. Prediction of Interference Voltages on Telephone Lines at ELF by William M. Moran, Electromagnetic Compatibility Analysis Center, IIT Research Institute.

3. Electromagnetic Interference Analysis System for Ships by R. D. August, Bell Aerospace Company, and Sheldon Balk, Litton Systems, Inc.

4. Spectrum Management Utilizing Computer Controlled Monitoring Systems by H. Dean McKay, Fairchild Electro-Metrics Corp.

5. There are two papers on propagation effects by Dr. S. N. Gupta, Indian Institute of Technology, Delhi, India.

In addition to the technical sessions, those interested in seeing facilities at Fort Huachuca may join a conducted tour of the Safeguard Communication Agency Horizontal Electromagnetic Pulse Simulator, and the USAEPG Electromagnetic Interference Facility.

Support of and participation in this conference has been indicated by engineers and scientists from organizations such as the University of Arizona in Tucson; STRATCOM, and USAEPG at Fort Huachuca, Arizona; Southwest Research Institute in San Antonio; Bell Aerospace Company, Lockheed Electronics Company, and Hughes Aircraft Company in Tucson, Arizona.

For those who might want to spend a few days vacationing after the conference, there are many things of scientific, historical, and educational importance within a seventy-mile radius of Tucson. The University of Arizona has an art center, museums, and the Steward Observatory. Kitt Peak National Observatory is fifty miles Southwest of Tucson and on the way, just a few miles off the main road, is the San Xavier Spanish Mission located on an Indian Reservation, Due South, about sixty miles, is Nogales, Arizona adjoining the port-of-entry at the Mexican border and the Mexican city of Nogales. On the way to Nogales, s Tumacacori Spanish Mission and Tubac, the oldest settlement in Arizona. West of Tucson, fifteen or twenty miles, is "Old Tucson", a motion picture set, and the Arizona-Sonora Desert Museum with exhibits of desert wild life and plants. To the East and Southeast of Tucson is the Saguaro National Park with stands of Saguaro cactus; Tombstone, the old mining and frontier town; and Cochise National Monument marking the area in which the Indian Chief by that name held off the U. S. Army and settlers for many years.

Advanced programs, registration information, and accommodation availability will be mailed to members of the IEEE Electromagnetic Compatibility Group during the latterfpart of September. Anyone else desiring this information should send a postcard with name and address to Q. W. Coker, Publicity Chairman, Mountain-West EMC Conference, 2125 Avenida Planeta, Tucson, Arizona, 85710.

INTERNATIONAL FILTER SYMPOSIUM

There will be an International Filter Symposium held at UCLA on April 15-18, 1972. The meeting is designed to bring together experts in the field of electric wave filters from all over the world for a short concentrated meeting. Current plans call for technical sessions on the afternoon of April 15, with Sunday, April 16, held open for informal discussions and an evening social. The symposium will conclude with three technical sessions on Monday, April 17, and a single session on Tuesday, April 18.

The technical session will include:

Digital Filtering
Microwave Filters
Crystal, Ceramic & Mechanical Filters
Distributed RC Filters
Active RC Filters
Time-Domain & Matched Filtering
LC Filters
Phase-Lock Filtering
Unconventional Filters (including integrated filters, filters for biological systems and Walsh function Filtering)
Approximation & Filter Specification

On Monday evening there will be a special session with experts from Western Europe, Japan, U.S.A. and the Soviet Union discussing international activity in filters.

Additional information may be obtained from:

W. J. Spencer
Bell Laboratories
555 Union Boulevard
Allentown, Pennsylvania 18103
215-439-6761

The deadline for abstract submission is January 15, 1972. Abstracts should be sent to the Program Chairman. Authors will be notified of acceptance of their papers before February 10, 1972.

NEC CANCELS FALL SHOW

The 26-Year old National Electronics Conference, scheduled at McCormick Place, Chicago, October 18-20, has been cancelled.

Felled with it was the new computer forum which was to have run concurrently with NEC. Robert M. Janowiak, board chairman, said the decision to cancel mwas made by a "blue ribbon" committee of board members.

In place of this year's annual conference and show, NEC will expand its professional growth seminar programs in line with its commitments to promote continuing educasion programs, he said. The seminars will be expanded this fall and into 1972.

Despite this year's decision, NEC may not fold for good, according to Rudy Napolitan, general manager. Firm McCormick Place conference dates for the ensuing 5 years have not been cancelled.

1972 INTERNATIONAL EMC SYMPOSIUM

EMC AT THE CROSSROADS

The dates of the Symposium have been shifted one day from Monday, Tuesday, Wednesday to Tuesday, Wednesday, Thursday, July 18, 19, 20, 1972 to allow for better integration into a standard week and to permit AD-COM to meet on Monday, July 17, 1972. The Arlington Park Towers Hotel in Arlington Heights, Illinois has been seleeted as the location of the symposium. This is a full service hotel complex having recreational facilities for attendees, their wives and families, which include swimming pool, theater, horse racing, night golf, etc.

Rates for the symposium will be $20 - $26 for a single and $18 for government employees.

The tentative program will be based on 3 days of sessions as is the custom. It is planned to hold one session the morning of the first day and two sessions concurrently the remainder. The subject areas are as follows:

SHIELDING
FILTERING
GOVERNMENT EMC
COMMERCIAL EMC
EMC PREDICTION
EMC CONTROL
EMC STANDARDS
EMC MEASUREMENTS AND INSTRUMENTATION
SPECTRUM POLLUTION AND CONSERVATION
BIOMEDICAL EMC
ANTENNAS - COUPLING AND PROPAGATION

The categories of papers anticipated are as follows:

INVITED PAPERS
INTERNATIONAL PAPERS
GENERAL CALL PAPERS
STUDENT PAPERS

In addition, the Specialist Working Group, Standards Committee, Standing Committees and AD-COM meetings and panel discussions will be programmed.

DOMESTIC AFFINITY - GROUP FLIGHTS

The flight information shown here has been provided by one of the major airlines. It lists all pairs of cities on their network for which 20% reduced fares are available. Other major regularly scheduled airlines also provide reductions of 20% for affinity groups traveling between certain U. S. cities. The local offices of these airlines would be glad to provide equivalent information concerning destinations they serve.

The basic conditions pertaining to the 20% fare reduction are as follows:

- Twenty-five (25) or more persons in a group having demonstrable affinity (IEEE membership) for at least six (6) months prior to departure.
- Group travel necessary for outward journey, but individual travel on the same airline is allowed for return trip.
- No minimum stay required.
- No stopovers permitted.
- Application must be made to airline sales office 21 days prior to departure.

Reductions of 33% on round-trip and 20% one-way are offered by some regional airlines, e.g. Allegheny and Ozark. Conditions are similar, except that only ten (10) people are needed to form a group.

Sections, Group Chapters, and other organized units within IEEE could benefit from these reduced fares when attending major conferences such as WESCON, NEC, NEREM and the IEEE International Convention. The Section or Group Chapter willing to organize and publicize this program could offer a service to their members and stimulate unit activities.

IEEE IS NOT INVOLVED IN ANY WAY WITH FLIGHT ARRANGEMENTS. ALL COMMUNICATION SHOULD BE MADE DIRECTLY WITH THE AIRLINE SALES OFFICE.

CHAPTER CHATTER

BY IRA M. BERMAN

What's that you say? August 30th already? Good heavens, another summer is almost gone. Seven more days to Labor Day, then school and back to the autumn-winter grind. Wasn't this the summer that you swore you would not waste? When you would wring out every last drop of enjoyment--concerts; camping out at the lake; finally weeding out that area behind the garage; running off on those three--four day excursions that go so fast?

For those 500 lucky ones who got to Philadelphia this past July, that was a three-day excursion that went all too fast, and left behind many pleasant memories. I don't ever remember attending a "bad" symposium, anywhere, but the latest was, as far as I am concerned, one of the greatest.

Back to reality. Summer is usually a quiet time for technical societies, and G-EMC is no different. News is in short supply, but here is what I have.

MOHAWK VALLEY

Drums along the Mohawk beat a steady stream of good news. The little Chapter up the River is planning six or seven meetings this coming season, after six meetings all with excellent technical presentations this past year. No wonder their attendance was an average of 20 members and 6 guests for the period just completed. The new officers are Jacob Scherer, Chairman; Hollis Hewitt, Vice-Chairman; John Spina, Secretary-Treasurer; and Tom Baldwin, Program Chairman. These gentlemen are all with the Rome Air Development Center, and were installed on May 27, 1971. Looks like the new slate will pick up the good work where the retiring officers left off.

NEW JERSEY COAST

There are new officers here, too: Charles D. Joly of Honeywell, Chairman; Bruce C. Miller of ECON, Vice-Chairman; John F. Prorok of ECON, Secretary-Treasurer; and John A. Soboleski of Honeywell, Programs. Max Brown, the immediate Past Chairman, told me at the Symposium that he had resigned after only one year (N.J. Coast's officers serve two-year terms). Max did a fine job and he, along with many other members of the Chapter, provided considerable assistance to the Philadelphia Symposium Committee. The Chapter had one meeting with the attendance not reported in the last column. Len Milton's talk on "Computer Security and Susceptibility" was heard by 37 persons.

WASHINGTON, D.C.

First: congratulations to the new officers Chairman is Carl C. Allen of Honeywell; Vice-Chairman is William C. Green of William C. Green Associates; and Secretary is William D. Gamble of the Office of Telecommunications, Department of Commerce. Next: the Chapter's last meeting before the summer turned out 51 people to hear AEC's Dr. David Nelson speak on "EMP Effects". More: the Chapter has at least the meeting dates for the coming year. The meetings will be spread over almost exact two-month intervals starting in September. Planning that far in advance these days shows lots of confidence in the future. And last: an average attendance of 40 members and 15 guests for 1, '0-71, due to their excellent programs. From the titles of the addresses, I agree, and we wish the Chapter continued progress during the year.

TUCSON

Mr. Abul Rashid has been elected as Chairman for 1971-1972. And that's the truth, the whole truth and nothing--else! Hey, down there in Sun Country: what's new?

BOSTON

Congratulations, Robert J. Berkovits, Chairman of Boston (Chapter, that is). Now if someone will please tell me more, we'll all be happy.

PHILADELPHIA

No, Philadelphia is not listed last because they were first last time. I just file all the reports in more or less the order received. As I read the news from Philadelphia, I detected a collective breath-catching, especially by the new officers: Edgar Huff, AEL, Chairman; E. T. Raylman, Vice-Chairman; and Milton Kant, RCA, Secretary/Treasurer/Programs. The pepper-pot-and-scrapple crew have not yet set up the 1971-1972 program; in fact, they considered just keeping in business this year was a major accomplishment of the Chapter. Stiff upper lip, and all that. The EMC business can't be that bad, can it?

PACIFIC OCEAN AREA

I don't know what to call this agglomeration of EMC people in the Pacific Ocean basin. They aren't really a Chapter-at-Large. There seems to be some interest, however, by Group members in Hawaii and Japan and a few other exotic locations. I have not heard too much, except that Bob Ford has made some overtures and received some response. He's sent a two-page Newsletter to all EMC folks in the area last April.

PHOENIX

Life in the desert southwest must be a marvelous experience. Our newest Chapter started off their June 9 meeting with an "Attitude Adjustment Hour", from 6 to 7 P.M. After everyone had adjusted, and eaten, seven gentlemen from seven organizations in the Phoenix area outlined their own EMC work. Following these brief introductions, the meeting was opened to the floor for questions. I'm told 22 attended. The next meeting will be on October 20, and Mr. Ron Jachowski will speak on Intermodulation.

That tears it, mates! No more news. Yes, I like a short column once in a while, but not as a steady diet. Next time we get together, it will be over a crackling fire (hopefully in the fireplace), with lists of all the Chapter Officers, and great plans for 1971-1972, and papers written and presented by the members, and Student nights....next time. For sure!

PROGRESS & PRODUCTS

UNDERGROUND TELEPHONE CABLE SHIELDS

COPPER SUBSTITUTES EVALUATED

The first corrosion data on possible substitutes for copper used in underground telephone cable shields have been released by NBS and the Rural Electrification Administration, U.S. Department of Agriculture. Of 35 various bare and coated metal specimens buried for one year, five retained excellent corrosion protection properties, even under the most adverse conditions.

Because of its high conductivity and resistance to corrosion, copper is generally the most desirable shielding material. However, the rising cost and fluctuating availability of this metal make it difficult for the electrical industry to meet increasing demands for underground cables, and stimulated the search for a suitable and economical replacement for copper. Like copper, the substitute must be resistant to soil corrosion, highly conductive, flexible, easily corrugated and formed, and resistant to rodents, particularly gophers.

For this project, 31 different combinations of metals and plastics and 4 hardware items were arranged as experimental shields, which were inserted in actual cable jackets and buried at six corrosion sites. Based on NBS experience since 1928 in soil corrosion, the sites were known to be representative of as wide a range of soil as can be found in the United States, from moderately to extremely corrosive.

Other adverse conditions were simulated in addition to the corrosive soil environments. Portions of the outer jackets of the cables were removed or cut to simulate damages that might occur during field installation or those caused by lightning or rodents. Corrosion was further accelerated in some of the specimens by coupling a copper strip to the shield, creating a galvanic cell between the shield and the copper metal.

Five configurations of cable shield systems provided excellent protection in all soil environments after one year of exposure: 1) 5-mil alloy of copper, iron, and phosphorus; 2) 5-mil type 304 stainless steel; 3) same as 2 but coupled to copper; 4) 3-mil type 211 stainless steel bonded with plastic to 8-mil aluminum; 5) same as 4 but coupled to copper. However, final evaluation will not be made until completion of the program in five to eleven years. Until that time periodic inspections will be made of remaining duplicate specimens.

DESIGN PACKAGE AVAILABLE FOR NBS RF POWER MEASUREMENT SYSTEM

PRIVATE MANUFACTURERS wishing to produce and market an NBS-developed rf power measurement system, now can purchase the design package from the Bureau's Boulder Laboratories.

Designated the NBS Type II Power Measurement System, it is not only the most accurate high-frequency and microwave power measurement system available, it is a versatile multifunction instrument which can be used as a precision rf power stabilizer, an accurate dc voltmeter, or a dc voltage source. Power measurements are made by the dc substitution technique.

Weighing only 5.67 kg (12.5 lb.), and measuring 20.8 cm (W) x 17.8 cm (H) x 34.8 cm (D), or 8½" x 7" x 13 3/4", the unit replaces an older NBS-designed system which involved some 240 pounds of equipment costing about $18,000. Since components for the Type II system cost about $600 in lots of 100, NBS estimates that the system could be manufactured for less than $2000 per unit. The savings in cost and weight are complemented by a sevenfold increase in accuracy over available commercial equipment.

The unit consists of two solid-state modules in a single case--(1) a self-balancing bolometer bridge employing thermistors or barretters, and (2) a reference-voltage generator (RVG), which also serves as a 0-10V dc source or voltmeter and as a precision stabilizer. In the stabilizer mode, the six-decade divider becomes a high-resolution level-set attenuator. The bridge power supply also powers the RVG.

NBS, after developing this equipment, and supplying pilot units to the military, is making the design and production information available to commercial manufacturers. Anyone interested in producing the Type II system may request free information giving extensive details and specifications of the system.

Contact the Electromagnetics Division, National Bureau of Standards, Boulder, Colorado 80302, telephone (303) 447-1000, ext. 3131, for the above materials and information.

STATIC ELECTRICITY MEASUREMENT

The following item is excerpted from the July 1971 issue of Explosives & Pyrotechnics, a Newsletter published by The Franklin Institute Research Labs:

"Measurement yielded good reproducibility in a Faraday cage in a shielded room. Taking off clothes generated a remarkable charge at a water vapor pressure below 20 mm Hg. The charge quantities depend on both temperature and relative humidity of the atmosphere; however, both factors could be reduced to one, the absolute water vapor pressure. Static capacities of humans standing on a grounded plate were also measured. Static electricity generated by the actions in the figure are large enough to ignite initiating explosives.

BRIDGE COMPENSATES FOR LEAD IMPEDANCE

HOW DO YOU MEASURE LOW IMPEDANCES over the scope of audiofrequencies without the interconnecting resistance between the unknown and the bridge components affecting the measurement? The NBS Institute for Basic Standards did it with a bridge using an injection transformer, almost completely eliminating the impedance contribution of the interconnecting link. John D. Ramboz, of the Institute's vibration measurement laboratories, employed this novel addition to a ratio bridge for measuring driving coil impedance with an uncertainty of less than 0.1% at frequencies from 50Hz to several kHz, in studying ways of calibrating vibration generators for the Department of Defense. Such a bridge may be useful to other scientists needing to measure impedances unaffected by the necessary electrical connection between the unknown and the bridge.

Bridge circuits for measuring impedance to alternating currents differ from the simpler bridge for measuring resistance to direct currents in that a variable reactance is part of one of the known arms of the former bridge. When a detector null is reached, indicating that the bridge is balanced, the resistance and the reactance of the unknown can be computed from the known bridge parameters.

The NBS bridge has a configuration based on a six-arm bridge circuit in which the unknown impedance is in series with a standard, noninductive resistor. Both the unknown and the standard resistor are four-terminal devices, each having a current terminal connected to the driving signal source and the other to the link connecting the standard resistance with the unknown impedance. Each is connected to the other bridge components at the potential terminals. These two arms are connected to two paralleled guarded ratio transformers, the variable contacts of which are connected to the bridge detector, one via a resistor and the other via a capacitor, to form the other four arms of the bridge. Both transformers are adjusted to achieve bridge balance, the capacitor-connected one accomplishing the reactance balance.

I.F.I. INTRODUCES NEW EMI METER

I.F.I. introduced a new broadband direct-reading EMI meter at the 1971 EMC Symposium. Designated as model EFS-1, the meter reads directly in volts per meter from 10kHZ to 220mHz. During a susceptibility test, the meter is placed in the right position and the radiated power increased until the meter indicates the desired level; for instance, 10 v/m. The meter can also be used as a system component since the signal, which is proportional to field strength, can be fed back to the leveling circuit of the source so that a constant field strength can be maintained automatically as frequency is swept or stopped.

For additional information, contact: James D. Fahnestock, Instruments for Industry, 151 Toledo Street, Farmingdale, New York 11735.

FOR NEW A-D SCHEME CUT OUT THE NOISE

You can't buy a Triphasic analog-to digital converter yet, but when you do, you'll be buying a change in design philosophy as well as a new sort of converter, according to Harold S. Goldberg, operations manager of Data Precision, an affiliate of Gordon Engineering Inc., Wakefield, Mass.

To dampen noise, Paul Lucas, Data Precision's project manager, used an inverse feedback loop, something common in other fields, but apparently not in converters. In the Triphasic converter, noise is picked up at the output, integrated, and fed back into the converter at an earlier stage, 180° out of phase with the original output noise signal. This makes noise removal a simple matter of cancellation. The company says noise is a tenth that of equivalent devices made the old way; for example, yearly drift with the technique is measured in thousandths of a percent.

[Excerpted from Electronics, June 7, 1971]

RFI SHIELDED CHAMBER FOLDER

A four page folder describes the construction and performance of several types of shielded chambers. Chamber size may vary from 130' x 100' to 8' x 8'. The brochure lists the typical insertion loss versus frequency which is achievable with each type of construction. The shielding effectiveness against magnetic fields, electric fields and plane waves is shown.

For additional information, contact:

Mr. Eino J. Luoma, Emerson & Cuming, Inc., Canton, Mass. 02021

5-DAY TRAINING COURSE

A new 5-day Training Course in Electrical Noise Pollution and Control is announced by Don White Consultants. Taught in the metropolitan Washington, D.C. area this fall and winter, course registration has begun and is limited to 10 students. For additional information, write to:

DON WHITE CONSULTANTS
Rt. 2, Box 76
Germantown, Maryland 20767
301-948-0028

AIRWAVES

NON-IONIZING RADIATION

The March 1971 issue of Non-ionizing Radiation has just been received by your editor. This magazine is published quarterly by Kendervic Ltd., P. O. Box 13, Guildford, Surrey, England. Annual subscription rates are $35. or $39. including air mail postage. Single copies are $9.00 each. The following is excerpted from the table of contents:

Laser-induced retinal damage

Comparison of microwave power density meters

Instrumentation for microwave leakage

Near and far fields

Pathophysiological aspects of microwave irradiation. 2--critical analysis of the literature

News in brief
- MRC recommendations
- High power radar station
- Symposium covers low-level effects
- Self-calibrating radiometer
- Laser energy measurement

Literature Summaries

Coming events

The following are some of the news items:

MRC Recommendations

Medical Research Council has endorsed recommendations of maximum levels for personal exposure to radio-frequency radiation. They advise that exposure to radiation between 10 and 100GHz producing a sensation of warmth should be avoided and a simple method of monitoring possible leakage made available, especially where industrial microwave heating equipment is used. The maximum safe levels for 30MHz to 30GHz are:

$100 W/m^2$ ($10 mW/cm^2$) power density for continuous exposure.

$10 Wh/m^2$ ($1 mWh/cm^2$) energy density during any 0.1-h period for discontinuous exposure.

These levels are not intended to be applied to therapeutic exposure under medical supervision.

Symposium covers low-level effects

A symposium on biological effects of microwaves and on laser technology in biology and medicine will be held in Poland, 1 and 2 October. Sessions on microwaves will cover:

--intrinsic biological effects

--effects of microwaves on the nervous system

--hormone reaction and glandular changes

Sessions on lasers, scheduled for the second day, will include:

--introduction to lasers

--surgery

--eye optics

--research in biology and medicine

--safety in servicing laser equipment

Symposium proceedings

Papers from the Virginia Symposium on biological effects and health implications of microwave radiation, held September 1969, are available from the U.S. Clearing-house for Federal Scientific and Technical Information, Springfield, Virginia 22151 (ref: BRH-DBE 70-2). Proceedings include 31 papers, discussions, and question and answer sessions. Price
brief report appeared in Non-ionizing Radiation, vol. 1, no. 3;p. 145.)

METER MEASURES OVEN RADIATION

HEW's Bureau of Radiological Health has made available the design of a relatively low-cost meter for measuring radiation from cooking ovens. The development is described by Bureau Director John C. Villforth as a "breakthrough for concerned microwave oven owners who have found it almost impossible to have ovens tested for potentially hazardous radiation leakage."

The cost of a commercial microwave radiation measuring instrument, according to Villforth, is about $800 and has discouraged its widespread use by the oven repair shops and public health agencies. About $150 will cover the cost of the new meter and the commercial microwave power-density probe to be used with the meter. The meter itself can be assembled with about $50 worth of commonly available parts by oven service technicians without special training.

Detailed instructions for making and using the meter, including a list of parts, are provided in a Bureau report, "Inexpensive Readout for a Commercial Thermocouple Microwave Power Density Probe," by Robert L. Cloke. Copies of the report may be purchased by order number (BRH/DEP 70-31, PB 192-277) from the National Technical Information Service, Springfield, Va., 22151. The prices are $3.00 each for paper copies and 65¢ for microfiche.

FCC SPECTRUM MANAGEMENT PROGRAM

FCC Commissioner T. J. Houser has been appointed Spectrum Management Commissioner to coordinate the Commission's Spectrum Management Program. This program will promote more effective utilization of the radio spectrum by introducing systems engineering concepts and by decentralized frequency management which will consider each area's unique economic, social, demographic and other factors in making frequency assignments.

FCC STILLS VOICE OF BOYS' RADIO

The following article appeared in the July 23, 1971 edition of The Philadelphia Inquirer:

No news, music or weather from WBAD today. Government agents swept in and locked the studio door of the homemade radio station run by enterprising youths in Metairie, La.

"I can see why the Federal Communications Commission closed us down; I can't argue with their reasoning," bemoaned the 15-year-old station manager. "But I think we were more of a public service than a public nuisance."

The other boys, all 13, played records, rewrote headlines and broke in with the latest weather reports monitored on VHF.

The station was broadcasting for almost four months with a modified walkie-talkie and a 110-foot directional antenna before the FCC found out about it. The 180-milliwatt signal--less than two-fifths of a watt--could be picked up two blocks from the boy's bedroom, the station's studio.

WBAD was on a frequency it was not assigned, the power exceeded what an unregulated station may have, transmissions were potentially dangerous to aircraft navigation and the antenna was too long, said Art Hallam, an FCC engineer.

EIA QUESTIONS FCC SPECTRUM PROGRAM

Serious questions about the FCC plans to initiate a national spectrum management program have been raised by the EIA. In a filing on FCC docket 19150, the Association said the Commission has not established an adequate model program, has failed to say how it intends to minimize or eliminate certain kinds of interference, and has not indicated what levels of unacceptable performance it plans to develop. Because of the inadequate program information, the EIA was critical of the FCC proposal in practically every respect.

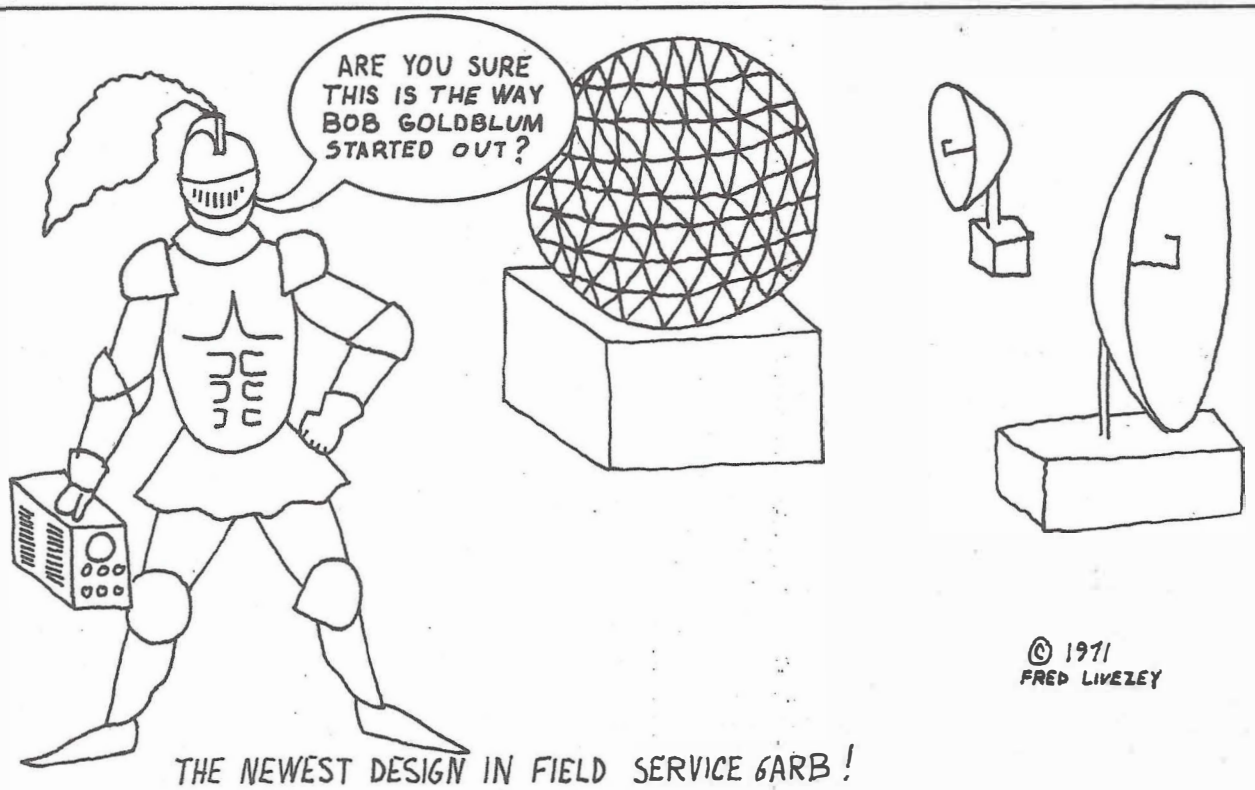
VHF-UHF RADIATION HAZARDS REPORT ISSUED BY FCC

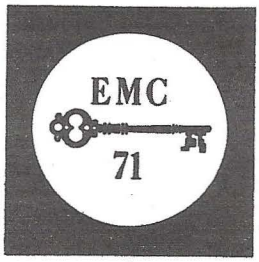
Report No. R-7104 entitled "VHF-UHF Radiation Hazards and Safety Guidelines" has been issued by the FCC. The report is intended to call attention to the possible dangers to people and animals exposed to high power radiation sources, as well as to provide some quantitative guidelines for protection from such exposures.

Copies of the report may be obtained from the FCC's Research Division, Room 214, 1229 20th St., N.W., Washington, D.C. 20554.

Footnote

U. S. Patent 3,557,899 describes a device for sonic riot control and maintains it could be used with no permanent injurious effects. A sound from a high-frequency loadspeaker ('tweeter') is directed by parabolic reflectors. The sound signal is a modulated harmonic of the human 'brain resting frequency'--about 10 or 11Hz. It's claimed to be so offensive and repugnant that no one wants to stay and listen! We suspect such an effect might be due to the kind of modulation rather than frequency being a multiple of 10 or 11Hz.





1971 IEEE INTERNATIONAL SYMPOSIUM
ON
ELECTROMAGNETIC COMPATIBILITY
PHILADELPHIA, PA. • JULY 13-15, 1971

'71 EMC SYMPOSIUM RECEIVES SUPPORT

The 1971 International Symposium on Electromagnetic Compatibility, which was held in Philadelphia on July 12-14, is now history. Whether or not it was successful depends upon your point of view.

AS AN ATTENDEE, success was based upon the technological reward. The papers and workshops were certainly varied in both subject and technical level. Also, many of the exhibitors displayed new products and distributed material and goodwill freely.

AS AN EXHIBITOR, success was based upon exposure and potential sales. We cannot comment on potential sales, but approximately 500 persons including competitors passed through the exhibit area.

AS A GROUP MEMBER, the full papers were printed in the Symposium Record and sufficient copies were printed for all those who are truly interested. Copies are still available through New York at $6.00 each.

AS AN ADCOM MEMBER, the financial picture looks very promising. Up to $6000 may be forwarded to the Treasurer to help finance the Transactions, Newsletter and Abstracts.

TO THE SYMPOSIUM COMMITTEE, success was realized by the smiles, comments and congratulations offered by many of those who attended. Additional rewards were obtained in the fellowship which was shared and lasting friendships established between committee members.

TO THE CO-SPONSORS, success was just the knowledge that their support was needed and appreciated. And indeed it was! At past symposiums, the donations made by co-sponsors were usually earmarked for the cocktail party. However, the Symposium Committee was reluctant to commit the total contributions to the party due to economic pressure. Thus, the co-sponsors this year also contributed to the welfare of our Group. To the twelve co-sponsors go our sincere thanks:

Breeze-Illinois, Inc.
Emerson & Cuming, Inc.
Fair-Rite Products Corp.
Glenair, Inc.
Hewlett-Packard
Hopkins Engineering Company
LectroMagnetics, Inc.
Livingston Industries, Inc.
R & B Enterprises
Southwest Research Institute
Sprague Electric Company
Wanlass, Division of AMBAC Industries, Inc.

TO THE SYMPOSIUM CHAIRMAN, success was found in the experience and the satisfaction that all goals were met, in addition to sharing the pleasures of all committee members.

1971 EMC SYMPOSIUM EXHIBITORS

Twenty-four exhibitors were given the opportunity to show their wares at the recent EMC Symposium held in Philadelphia. Although this was considerably less than the 40 to 50 from the 1968-69 era, the Group's appreciation was none the less. It is hoped that the following exhibitors will return to the EMC Symposium next year in Chicago:

AEL Service Corp.
Allen-Bradley Company
Astro Communications Lab
Bendix Electrical Components Division
Breeze-Illinois, Inc.
Captor Corp.

The Electro-Mechanics Company
Erie Technological Products
Fairchild/Electro-Metrics Corp.
Gulton Industries, Inc.
Hewlett-Packard Company
Honeywell, Inc.
I F I
Microdot, Inc.
Micro-Tel Corp.
The Potter Company
Radcon Corp.
Rtron Corp:
RF Interonics
Singer - Gretsch Division
Systron - Donner Corp.
U. S. Capacitor Corp.
Westinghouse Electric Corp.
Don White Consultants

G-EMC AWARDS MADE AT THE ANNUAL INTERNATIONAL SYMPOSIUM LUNCHEON

The Awards Luncheon this year featured the presentation for the first time of the new Chapter-of-the-Year award. This was made to the Central Texas Chapter and accepted for the chapter chairman, Carl Lambert, by Gene Corey. The award is given for chapter performance based on meeting attendance, membership growth and activities such as a newsletters, special events, and an awards program.

Dr. Ralph Showers and Leonard Thomas, Sr. were honored with the Group's highest award, Honorary Life Member. Robert Goldblum received the Certificate of Appreciation for his dedicated work as Editor of this G-EMC Newsletter, while James Krstansky was honored with the same award for his services to G-EMC in various capacities. (Due to a change in the scope of his work at IITRI, Jim will now be forced to slack off on his G-EMC activity.) The Certificate of Achievement was presented to Richard J. Mohr for his work in the measurement and analysis of conducted interference, and to Edward N. Skomal for his work in the statistical analysis of radio noise data.

The luncheon speaker, Dr. Wilbur Pritchard, the Director of Comsat Labs., was presented the Certificate of Recognition in appreciation for his fine address "Communications Satellite Technology, Present and Future".

Bob Goldblum was doubly honored at the luncheon. In addition to the Certificate of Appreciation, he was also awarded the Certificate of Acknowledgement in gratitude for his outstanding leadership as General Chairman of the Symposium.

Prize paper awards were made to the authors of the first and second place papers in two groups: (1) USA authored papers, and (2) non-USA authored papers. An honorable mention was given to a very fine runnerup in the USA authored groups. The recipients and their papers are listed below:

1. USA Author, First Prize of $100
   John M. Osepchuk
   Raytheon Company
   Research Division
   Paper: Comparison of Potential Device Interference and Biological Exposure Hazards in Microwave Leakage Fields

2. USA Author, Second Prize of $50
   P. J. Johnson and
   S. Shenfeld
   Naval Underwater Systems Center
   Paper: Shielding of Cylindrical Tubes at Low Frequencies

3. USA Author, Honorable Mention
   Theodore M. Madzay
   International Business Machines Corporation
   Systems Development Division
   Paper:L A Mathematical Model to Predict the Susceptibility of Integrated Circuits to Magnetic Fields

4. Non-USA Author, First Prize of $100
   E. Nano
   Istituto Elettrotecnico Nazionale Galiler Ferraris
   Paper: The Measurement of Coaxial Cable Immunity From an Electromagnetic Field in the VHF Range

5. Non-USA Author, Second Prize of $50
   Thomas Dvorak
   Eidgenossische Technische Hochschule, Zurich
   Paper: EMI Propagation in Built-Up Areas

RECIPIENTS OF PREVIOUS G-EMC AWARDS

Certificate of Appreciation

1962 Rexford Daniels
1964 Dr. Ralph M. Showers
1965 Leonard Thomas
1966 Aaron H. Sullivan, Jr.
1967 Harold Dinger
1967 John Maynard
1968 Milton Kant
1968 Stanton Bennett
1969 Richard B. Schulz
1969 James S. Hill
1970 Fred J. Nichols
1970 James A. Spagon

Certificate of Achievement

1968 Richard B. Schulz
1968 John F. Chappell
1969 Donald B. Clark
1970 Donald R. J. White

Certificate of Recognition

1968 Rexford Daniels
1969 Barry M. Goldwater
1970 Ralph Nader

Certificate of Acknowledgement

1969 John Egli
1969 J. Paul Georgi
1969 Herman Garlan
1969 John J. O'Neil
1970 Gene Corey
1970 George Ufen

G-EMC Citation

1969 Henry M. Hoffart

Honorary Life Member

1970 Rexford Daniels

PUBLICATIONS

PRACTICAL DESIGN FOR ELECTROMAGNETIC COMPATIBILITY, ROCCO F. FICCHI, EDITOR; HAYDEN BOOK COMPANY 262 pages---$13.95

The number of practical design books for the EMC engineer can be counted on the fingers of one hand. This latest one is a worthy addition to the list. It is in effect an updating of Ficchi's 1964 work, "Electrical Interference", with the assistance of a brace of well qualified experts in the field. The chapter on shielding by Schulz of Southwest Research Institute capably covers the subject from uniform shielding theory to design examples. The chapter on filtering is by Schlicke of Allen-Bradley and ably takes the reader through an analysis of impedance matched filters, RFI filters, and active filters. Each discussion is punctuated with a pertinent example to aid the reader in making a practical application of the theory. Interference measurement is the subject of a chapter by Haber of the University of Pennsylvania Moore School. It considers the basic requirements for RFI measuring instruments and methods of calibration. The discussion of pick-up devices develops antenna factors for all of the commonly employed antennas and describes pick-up devices for conducted interference measurement. The chapter is rounded out with a description of noise analysis instruments.

Harder of IBM contributed the chapter on digital computer systems. This investigates sources of EMI from computers and the mechanisms of emission. Computer susceptibility and control philosophy are additional subjects. The chapter on semiconducter and solid state devices is by Cooper of Nucleonic Products. It has a good coverage of the reverse recovery transient, forward transient response and Zener diodes. There is also a brief discussion of transient protection. Constant of the Midwest Research Institute is responsible for the chapter on radiation hazards. In it he examines hazards to personnel, electroexplosive devices and fuels. A final section describes methods of measurement of power density.

The remaining seven chapters were written by the editor. They cover such subject areas as an introduction to electromagnetic compatibility; sources of electromagnetic interference; interference control and reduction; interference analysis and prediction; bonding; electronic parts, circuits, and equipment; and grounding. There is also a bibliography that lists the major EMC literature from 1940 to 1965.

The book is well illustrated with graphs, charts, and circuit diagrams. Many design techniques are developed quantitatively with helpful equations. The comprehensive index contributes to the ease with which this book can be used as a reference.

The reader who is working in the EMC field and dealing with current DoD EMC specifications will be disappointed in not finding references to any of the current MIL-STD-460 series specifications. A table in the book which is headed "Current EMC Specifications" includes MIL-I-16910C dated October 26, 1967 but strangely neglects to include MIL-STD-461, 462, 463 and 469, all of which were issued prior to October 1967. In spite of this shortcoming there is much good basic information in this book that will be helpful to the engineer just entering the field of EMC as well as to the established designer.

James S. Hill
RCA
Springfield, Virginia

EMC BIBLIOGRAPHY FROM CANADA

The Canadian Research Establishment in Ottawa has prepared a bibliography of EMC papers. This bibliography, although unclassified, is limited in circulation to specific governmental agencies and in its present form, as a Government Technical Note, cannot enter the public domain. Dick Schulz, Editor of the G-EMC Transactions, is currently attempting to arrange for the bibliography to be published by the G-EMC perhaps in the Transactions.

U. S. PARTICIPATION IN INTERNATIONAL STANDARDS ACTIVITIES

The IEEE gave its support to a proposed bill, S. 1798, before the Foreign Commerce and Tourism Subcommittee of the United States Senate. The purpose of the bill is "to foster fuller United States participation in international trade by the promotion and support of representation of United States interests in international voluntary standards activities, and for other purposes." The IEEE indicated its strong belief that the bill would serve a useful and valuable purpose in strengthening the participation of United States interests in international standardization.

NOVEMBER EMC TRANSACTIONS PAPERS

A Realistic Approach to Defining the Probability of Meeting Acceptable Receiver Performance Criteria . . . . . H. M. Sachs

Modeling of Fields Produced by Currents on Power Supply Wiring . . R.M. Showers

A Model for the Currents and Voltages Induced within Long Transmission Cables by an Electromagnetic Wave . . . . . C. P. Bates and G. T. Hawley

Line Impedance Measuring Instrumentation Utilizing Current Probe Coupling . . . . R.A. Southwick and W. C. Dolle

SHORT PAPER

Short-Term Time Characteristics of Atmospheric Radio Noise Bursts above Different Thresholds . . . S.N. Gupta

CORRESPONDENCE

The Radio Interference Field of an Overhead Transmission Line . . J.N. Saha

IEEE SIXTH REGION CONFERENCE

RECORD AVAILABLE

The 450-page conference record of the 1971 IEEE 6th Region Conference held May 11-13 in Sacramento is available in bound form at $12.00 per copy. Carrying the theme, "Engineering for the Conservation of Mankind," the conference included fourteen sessions, including the following:

Session 1A - The Engineer Starts a Business

Session 4B - Power Systems

Session 5B - Communications and Microwaves

Session 6A - Spinoffs from Space Technology

Session 6C - Biomedical Electronics

Copies are available by order to M. G. Jerome, 4056 Esperanza Drive, Sacramento, California.

TECHNICAL PROGRAM COMMITTEE SELECTED

FOR IEEE 1972 CONVENTION IN NEW YORK

Five vice chairmen of the technical program committee for the 1972 Convention and Exposition of the IEEE have been selected. The vice chairmen are W. E. Cory, Southwest Research Institute (and G-EMC member); R. W. Lucky, Bell Telephone Laboratories; J. A. A. Raper, G. E. Electronics Laboratory; W. G. Scheerer, Bell Telephone Laboratories; and Gerald Van den Broek, Laboratoire Central de Telecommunications; David Perreault, Clarkson College of Technology, will be responsible for the Technical Film Presentations.

They will formulate a technical program based upon the theme, "New Horizons for Engineering", with emphasis placed upon ecological and sociological problems which electrical and electronics engineers can solve, as well as sessions related to the professional scope of the electronic and electrical engineer.

The IEEE Convention will present at the Coliseum technical applications sessions of interest to the design engineer and engineering manager, providing practical knowledge on developments and techniques applicable to his every day activities.

At the Hilton Hotel, technical sessions will be provided covering subjects in depth aimed at both the specialist and the engineer with an interest and desire to learn of new applications and opportunities in his chosen profession.

PENSION PLANS DO NOT PAY OFF

A survey by Senate investigators indicates that the dream of retirement pensions usually turns out to be a nightmare. A study of payouts by 34,000 different pensionsfunds operated by private industry--with assets of $125 billion--indicates that millions of workers who go to work under pension plans never collect a cent in benefits. Unrealistic terms, layoffs, plant failures or "technicalities" will intrude to disappoint a high percentage of workers--as high as 90% in some industries, one Senator said.

(Editor's note: A follow up newspaper item indicated that "Employers get most benefit." The article indicated that funds that do not find their way into the pockets of retired workers are used instead to prop up the employer's business. It told of using tax exempt pension funds to purchase property when bank loans are not available and the practice of getting the pension funds to purchase the employers stock when he issues same for new capital or to prop up the market price of the stock. One communications company showed over 320,000 persons participating in a pension plan for over the past 20 years. Over 230,000 employees have left the firm without collecting a penny--about 6,000 of these had over 15 years service and nearly 13,000 had more than 10 years with the firm. From Miles Benson, "Pension Plan Study Indicates Employers Get Most Benefit," Long Island Press, Tuesday, April 6, 1971.)

[From the G-EMC Newsletter, May/June 1971]

WOMANHOOD IS SPREADING

According to a National Bureau of Standards study, American women are no longer as slender as they were. Example: The Bureau's updating on "body landmarks" and sizing of women's apparel show that size 12 has moved from 34-25-36 to 35-26-37. For men, there is no new standard sizing. In fact, the Bureau says, there wasn't even an old one.

THE UNEMPLOYMENT PROBLEM

FRONTAL ATTACK ON UNEMPLOYMENT. President Mulligan has signed a memorandum of understanding with the presidents of other engineering societies (civil--ASCE; mechanical--ASME; chemical--AIChE; mining, metallurgical, and petroleum--AIME; aeronautical & Astronautical--AIAA; professional--NSPE) to exert cooperative effort in a vigorous program to alleviate U.S. engineering unemployment, especially in aerospace and defense. The presidents have organized to assign lead responsibility to a specific society for each element of the implemented program the others being pledged to cooperate and exchange information for united action.

NSPE OFFERS PROPOSAL TO DOL. In behalf of IEEE and other societies named in the previous item, NSPE has submitted to the U.S. Department of Labor (DOL) a proposal for a contract under which paid study teams of laid-off professionals in 14 critical unemployment areas would develop "basic information required by the profession and agencies of government to expedite the conversion of skills and problem-solving capabilities developed during the past decade into other areas of need in the economy."

The study teams would be set up, with overhead guidance from NSPE's Washington headquarters, upon recommendation of volunteer organizational units of the named engineering societies in local areas. An example is the Joint Societies Employment Advisory Committee (JSEAC) already functioning in conjunction with IEEE's Los Angeles Council, referred to by Director Guarrera in Spectrum, June, p. 6.

BOOKS ON SEEKING EMPLOYMENT are listed by title, author, and publisher, in the pamphlet just mentioned.

As a service, some Sections are informing members which of these books are in the local library. Undoubtedly some Sections in which unemployment is high, will purchase copies to lend members.

IEEE FORMS NEW GROUP ON MANUFACTURING TECHNOLOGY

The IEEE is in the process of forming a new Group on Manufacturing Technology. The new Group has been assigned an internal code number of G-35 and the Group abbreviation of G-Mfg T. The general field of interest of the new Group will be all aspects of manufacturing technology as it relates to the manufacturing of electrical and electronic equipment. With the advent of more sophisticated production lines using computers and numerical control techniques, the electrical engineer is playing an ever increasing role in modern manufacturing technology. It is for this reason that the new Group was originated. It was not conceived to duplicate efforts in solving the detailed, specialized, manufacturing problems covered by other Groups, but to cut across all the present Group activities to establish and work in those areas that are common to basic modern manufacturing systems.

WHY BE A MEMBER OF IEEE?

"WHAT'S IN IT FOR ME?" is the real, if hidden, subject of the IEEE pamphlet carrying the prosaic title "Membership Benefits." Copies are available from Miss Emily Sirjane, IEEE, 345 East 47th Street, New York, N.Y. 10017. The booklet, containing 10 pages of text and supporting application and order forms, answers the double-barreled question: "What's in IEEE for the Member?" and "What's in it for the present nonmember?"

SOMETHING GOOD TO BE SHARED. A member of IEEE is counted with the top electrical and electronics engineers and scientists throughout the world. His contributions—technical, personal, or financial—identify him as supporting this leading transnational organization.

Invite your nonmember associate to "Get into the Swing of Things—Join IEEE." It's a natural desire for men to unite professionally in a society where the action is. Invite your engineering co-workers to "Join the Growing Team - Identify with IEEE!"

REWARDS THAT ARE PURELY PRIVATE. Not medals. Not honors. These may come later.

Personal contacts. Lasting friendships. Within the profession but extramural - extending beyond the confines of the company you work for.

Room to breathe. Scope to expand.

Why stay cooped up?

VOLUNTEERS MAKE THE IEEE. The General Manager estimates that 25,000 volunteers "run the show." They operate in 32,000 slots on committees and boards - 16,800 in locally organized units; 8,400 in Groups and Societies; 5,400 running conferences; and 1,400 on standing committees and as representatives to other societies. In IEEE a committee assignment is the surest-fire way to come out of your read-and-listen shell. Volunteer!

INCREASING PROFESSIONAL CONTACTS. Are your professional contacts too few in number for your needs on the job - or for your progress in it? Contacts can be bettered through IEEE.

Attend Section and Chapter meetings, Regional and Group conferences, the annual Conventions.

Participate in Section and Group activities as a committeeman - eventually as an officer. Accept (do better: ask for) an assignment. When you get it, do it well. Go up the ladder.

Contacts? No end. "Thousands have made it. So can you."

VASS YOU DERE, SHARLIE? Inspection trips and exhibitions of equipment share one achievement in common - they bring a 3-dimensional sense of reality to engineering and scientific products, quite unobtainable through words and pictures alone, at meetings or on the printed page. IEEE Section meetings, conferences, and symposiums therefore often feature opportunities for members to bring back to their jobs the intimate "feel" of apparatus, systems, and instrumentation in being.

YOU ARE CAPABLE--ARE YOU CONCERNED? Philip Sporn, in his book "Foundations of Engineering," says: "Engineering is a profession. Its members do creative work which results in things that people need or want. The engineer is one who is capable of bringing into being a product or system having for its objective the production of something vital or necessary in human society.

"His concern extends beyond any particular technology, and he visualizes the socio-economic or human needs and methods for satisfying them more economically and more efficiently than has been accomplished heretofore."

Yet some say engineers don't care! Has this ever been true?

EMC PROBLEMS AND SOLUTIONS

The last issue of the EMC Newsletter introduced a new reader participation feature titled EMC PROBLEMS AND SOLUTIONS. Although the response was not overwhelming, there were a few good questions regarding Federal Communication Commission Rules and Regulations. A reader that wishes to remain anonymous has posed the following problem.

> The general FCC requirement, as I understand it, is if you radiate above certain levels at certain frequencies an FCC permit is required.
>
> - Does the legal requirement say anything about radiating in say a screen room. That is, is the requirement absolute or is it modified in some way (by regulation) or just by ignoring the situation? (I'm not considering radiating into a dummy load.)
>
> - On Government R&D and D&D contracts the general requirement to obtain advance approval to radiate (ASPR 7-104.61) is usually ignored. Is this a case of "Benign Neglect" or is this a DoD policy?
>
> - In view of the general Federal Safety Standard for microwave radiation of 10 milliwatts per square centimeter, what is a good way to calculate the near field power density in the range 100 MHz to 20 GHz?

Please consider the above "problem." If you can provide information or comments related to any or all of the above questions, submit your "solution" to the EMC Newsletter so that your views may be presented to the reader that posed the problem and the entire EMC community.

Also, if you have EMC related problems that you would like to present to the many "EMC experts" that read the EMC Newsletter, please submit them. All of the problems received will be reviewed by the editorial staff and those judged appropriate will be printed in future issues of the Newsletter. Hopefully, some of our readers will be able to offer excellent solutions or suggestions to your problem, and the Newsletter will print those solutions or suggestions that are considered to be most promising. If space is available, several alternative solutions will be presented. Thus, all of the readers will profit from the exchange of problems and ideas. In addition, copies of all solutions, suggestions, or comments received will be forwarded to the reader that submitted the problem.

In preparing your problem or solution, please try to limit it to one page of single spaced type. A simple sketch or figure may accompany the problem if required. Your name and company affiliation will accompany the problem unless you indicate a desire to have this information withheld.

The success or failure of this Newsletter feature depends entirely on reader participation. If you will send your problems and solutions, the column will provide a media for exchanging knowledge and ideas and will be of immense value to all of us. If there is sufficient reader interest and participation, the EMC PROBLEMS AND SOLUTIONS will become a regular feature of the Newsletter. Don't make others "carry the ball;" submit your problem or solution immediately to:

William G. Duff
Atlantic Research
A Division of The Susquehanna Corporation
Shirley Highway at Edsall Road
Alexandria, Virginia 22314

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