

IEEE

ELECTROMAGNETIC COMPATIBILITY GROUP

NEWSLETTER



ISSUE NO. 78, Summer, 1973

EDITOR ROBERT D. GOLDBLUM

NEWSLETTER COMMITTEE REPORT

I am pleased to announce the appointment of Charles Anderson as Associate Editor for Chapter Chatter. Charlie is replacing Marty Berman, who has resigned after five years of dedicated service. Chapter Chairmen and other interested parties are invited to send all chapter related news to Charlie at 2 Bauer Ave., Oakhurst, N.J. 07755.

In accordance with a request made during the March ADCOM meeting, the Summer issue of the newsletter will contain a roster of G-EMC members. The listing will be alphabetical by Regions and Sections, but will not include addresses. It was last published in July, 1969, and comprised six pages. The current list is expected to consume five pages of the newsletter, thus reducing the news contents by one third.

The selection of material for publication in the G-EMC Newsletter is not arbitrary. It is governed by IEEE policies and ADCOM preferences. The editors lean toward publishing news and letters sent to us by members, since this encourages membership participation and involvement. Unfortunately, we often receive material from various sources which is dated and does not fit within our publication schedule. The schedule is not very flexible, since we are

governed by post office 2nd class periodical regulations.

Cost and space available are also limiting factors. IEEE related material is given first priority, but other material is often included based upon its relative importance. We have feature items, such as Book Reviews prepared by Associate Editor Jim Hill; Chapter Chatter prepared in the past by Associate Editor Marty Berman; ADCOM Reports and Problems and Solutions prepared by Associate Editor Bill Duff, which we try to include with every issue. We are also fortunate in having selected material prepared by our corresponding Editor, Rex Daniels.

In fact, there is sufficient news available to make the newsletter at least twice its present size. Therefore, the editor must exercise his discretion in selecting material to be published. For this reason, comments, constructive criticism, desires, preferences, etc., are welcome from all Group members and will be given fullest consideration in the preparation of the Group's Newsletter.

Respectfully submitted,

(Sgd.) ROBERT D. GOLDBLUM,
Editor
G-EMC Newsletter

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REPORT OF THE INTERNATIONAL AFFAIRS
COMMITTEE

June 19, 1973

The 1973 IEEE International Symposium on Electromagnetic Compatibility marked an increased international participation. There were 14 papers by non-USA authors on the program and, in addition, an increase in non-USA attendees as a result of the CISPR meeting preceding the symposium. The Chairman of CISPR, Prof. Stumpers delivered a paper on CISPR at the opening session of our symposium.

The committee has been working with various European engineering groups and the AE-4 Committee of SAE to arrange an EMC Symposium at Montreaux in May, 1975. A trip was made to Montreaux to discuss the Symposium, assess the Montreaux facilities and observe the management operation of the International Television Symposium by the Montreaux Conference Bureau.

There was enthusiastic support for the symposium by all of the representatives of the European organizations and an obvious desire to have our group participate and support the meeting. It must be pointed out that the G-EMC Transactions is the only periodical on EMC available in Europe and that English is the language that is generally accepted and understood by those working in this field. Our cosponsorship of the symposium will not involve any financial risk because the meeting will be planned to be self supporting with the provision that any deficit will be borne by the Montreaux Conference Bureau. The dates of May 20-21-22, 1975, have been selected to immediately precede the Ninth International Television Symposium so that those who have an interest in both meetings can make one trip to attend both. Exhibitors may also do both symposia with one exhibit and one staff.

The committee recommends that the Group give support by cosponsorship and participation to the fullest extent. While this meeting may seem to compete with our symposium in San Antonio, we should not overlook the real need for an EMC symposium to satisfy the requirements of our European members, as well as those who are prospective members. Our support as a cosponsor will verify our interest in EMI/EMC as a subject for international study and action. We are fortunate to be in a position to lend support to the very talented committee of technical and management representatives who will take the burden of the work of running this 1975 EMC symposium.

Respectfully submitted,

(Sgd.) James S. Hill, Chairman



RICHARD SCHULZ

Dick Schulz, one of our well known members of the Group, and a hardworking member of ADCOM, is a candidate for IEEE Director of Division III. This Division includes the following Groups/Societies:

- G-2 Broadcasting
- G-8 Broadcast and Television Receivers
- S-10 Aerospace and Electronic Systems
- S-19 Communications
- G-27 Electromagnetic Compatibility

His statement of position, along with those of other candidates, is appearing in the August issue of Spectrum and qualifications will appear on the ballot form.

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IEEE REVISES CHARTER

IEEE has completed the lengthy process of amending its Certificate of Consolidation. The Certificate, commonly called the "Charter" is the legal document that created IEEE as a merger of the AIEE and the IRE. The amended Certificate will permit IEEE to engage in programs concerning the professional activities of its members.

Events leading to IEEE broadening its scope of activities began in early 1972. A membership survey revealed that members would favor this type of new activity. Constitutional amendments permitting these additional aims were voted upon. The results were announced at a special evening panel during the Northeast Electronics Research and Engineering Meeting (NEREM). Approximately 85% of the vote favored the new amendments. The next step in this complicated legal process was a membership meeting that was held in January, 1973. At that time, the membership overwhelmingly approved changing the Certificate of Consolidation. Finally, on May 18th, the amended Certificate was signed by a New York State Supreme Court Justice and the added goals of IEEE became legally possible.

This change enables IEEE to engage in professional activities, conduct and publish surveys and reports of professional concern, collaborate with public bodies and other societies for the benefit of the engineering profession as a whole, and establish standards of qualification and ethical conduct.

Report of the Awards and Fellows Committee

The group has three members who have been nominated for Fellow and processed through the new group evaluation system. Selection of the new Fellows is announced in December.

The new Best Transactions Paper Prize Award was made at the Symposium. The editor and his staff of associate editors selected the paper "Excitation of a Coaxial Line Through a Transverse Slot" authored by C. W. Harrison, Jr., and R. W. P. King, which appeared in the November 1972 issue of the G-EMC Transactions.

The following group awards will be made at the 1973 G-EMC Symposium:

Certificate of Appreciation-John O'Neil
Certificate of Appreciation-Ira M. Berman
Certificate of Achievement-Arlon T. Adams
Certificate of Achievement-

Henning F. Harmuth
Certificate of Recognition-Joseph J. Fisher
Citation- John W. McDonald, Jr.
Honorary Life Member-Carl L. Frederick

A certificate will be prepared for the chairman, vice chairman, and secretary for a presentation ceremony by the Chapter Activities Chairman at a chapter meeting. Announcement of the award will be made at the 1973 G-EMC Symposium. The Central Texas chapter was in second place and the Atlanta chapter in third place.

1974 IEEE INTERCON PLANS

IEEE's Conference Board announced plans for the Institute's 1974 exposition and convention in New York, welcomed two new directors to the board, and named the chairman of next year's technical program.

Board Chairman Carroll G. Killen, Jr. (Sprague Electric) announced that IEEE INTERCON will be presented March 25-29 at the New York Coliseum and in a new headquarters hotel -- the Statler-Hilton. He said that board members voted unanimously in favor of the newly remodeled and refurbished Statler-Hilton after an extensive survey of all Manhattan hotel choices. For INTERCON's purposes, the Statler-Hilton has a number of major advantages: proximity to Penn Station for arriving convention visitors, excellent facilities for major technical sessions and the many smaller meetings held during INTERCON week, and large ballrooms for conventional social events. The hotel also offers 2000 sleeping rooms for visitors.

The technical program and other meetings will run Mon thru Thursday at the hotel. The INTERCON exposition will open Tues morning at the N. Y. Coliseum and close Fri afternoon, with evening show hours on Wednesday. Free-of-charge shuttle bus service will run continuously between the hotel at 34th and 7th and the Coliseum on Columbus Circle. Killen noted that there is also convenient subway service between the two locations.

Killen also reported that exhibitors in this year's INTERCON had strongly supported the Tuesday-Friday exhibit schedule in a just completed survey. More than 92 percent responses (with 60 percent responding) were pleased with the schedule, but a significant number wanted one "show evening" to accommodate visitors who could not attend during the day.

G-EMC OPINION POLL

In our last issue of the Newsletter, we mentioned a survey taken by the L.A. chapter of G-EMC. EMC Consultant Robert B. Cowdell has been kind enough to send us the results of the survey. He notes that there were 57 responses which represents approximately one third of the local chapter mailing list.

Many of the questions were of interest only to local people since they referred to meeting sites, dates, etc. The following questions (and answers) may be of more general interest.

13. What do you like best about meetings?

Tech info	39%	Fellowship	17%
No answer	30%	Contacts	9%
BS & booze	5%		

14. What single thing could be done to improve meetings?

No answer	50%	Better Tech.	9%
Start on time	9%	Misc.	32%*

* X Rated movies
Dancing girls
Get single women to attend

IEEE

15. How do you feel about the \$42 cost of joining IEEE?

a. reasonable	20%
b. too much	38%
c. excessive	22%
d. keeps me from joining G-EMC	16%
e. get out	2%

16. Please comment on value received

(a) IEEE General - \$35

No answer	41%	No value	45%
Worth it	2%	Don't know	6%
Fair	6%		

(b) G-EMC - \$7

No answer	40%	Great	44%
Misc	16%		

17. Should the G-EMC

(a) go independent	27%
(b) remain with IEEE	53%
(c) affiliate with SAE	20%

LETTERS

Mr. Robert D. Goldblum
Editor, EMC Newsletter

Dear Mr. Goldblum:

I read with interest your April Newsletter and compliment you for turning out a group newsletter that is distinctly better than the average.

The letter from your loyal reader, quoted on page 3, was of particular interest. In response to a questionnaire, he noted that "G-EMC should repair part of IEEE". I thoroughly agree! We need a great deal of repair. The only question is where G-EMC would like to begin. Let me suggest maintenance of the IEEE standards in electromagnetic compatibility. You doubtless know of other areas to work in as well.

Good luck!

Sincerely yours,

(Sgd.) Bruce B. Barrow

DOES YOUR VOTE COUNT?

According to J. Paul Georgi, Chairman of the G-EMC Nominations Committee, only about 30% of the G-EMC membership bothers to vote each year for new ADCOM members. This is pretty good when compared to other technical groups, but not good enough. You will be given the chance to select six new members of ADCOM later this summer when you receive a ballot automatically in the mail. These elected members will represent you and be your voice in administrative policies. A short biographical sketch will accompany the ballot. You have a vote. But if you want it to count, you must return the ballot to IEEE Headquarters by the prescribed date.

LIGHTNING FILMS RELEASED

Four new films dealing with lightning and aircraft are now available on request from J. J. Fisher, Naval Air Systems Command, Code 6335, Washington, D. C. 20360 (202) OX 2-3876. Films are titled (1) Early History of Lightning/P-Static & Aircraft Design (2) Advancement of Lightning/P-Static Research, (3) Lightning P-Static Hazards, (4) Aircraft Advance Design.

NEW STANDARD ON ELECTROMAGNETIC RADIATION

A new standard on EM radiation is being published by IEEE for the ANSI. It deals with "Techniques & Instrumentation for the Measurement of Potentially Hazardous EM Radiation at Microwave Frequencies" and has already been adopted by the D. O. D. Available at \$5. from IEEE Standards Office, 345 E. 47th St., New York, N. Y. 10017.

ANSI RELEASES 1973 CATALOG OF STANDARDS

The American National Standards Institute (ANSI) has just released their new catalog. It lists all ANSI standards in all fields, ISO (International Organization for Standardization) Recommendations, COPANT (Pan American Standards Commission) Recommendations, CEE (International Commission on Rules for the Approval of Electric Equipment) Specifications, and Index to Titles of Standards, Recommendations and Specifications, and a listing of Special ANSI publications. Available from ANSI, 1430 Broadway, New York, N. Y. 10018.

CHANGES IN ORGANIZATION AT WRIGHT-PATTERSON AFB

The Aeronautical Systems Division (ASD) is now the focal point of all Air Force EMCE work while the A. F. Avionics Laboratory is no longer in the EMC business. All EMC work is now controlled by the ASD office under the direction of Sam Skolnick and EMC efforts at ESD are now coordinated with ASD. They have an AFSC Program Direction to develop a systems approach to the control of lightning and precipitation static. The program plan which is being developed identifies tasks that are needed toward the EMC of missiles, ground systems and aircraft. Completion date is set for April 15, 1973. Dr. Robb, LTRI, and Plumber, GE, are working up suggestions to revise MIL-B-5087B for submission to ASD. Others are invited to submit comments relative to lightning protection. ASD is also working in the TEMPEST field and EED radiation hazards and is currently cataloguing EEDs for sensitivity to radiated fields. They are not involved in biological hazards or EMP studies.

CANADIAN LEGAL STANDARDS FOR TOLERABLE LIMITS FROM ELECTRICAL APPLIANCE AND EQUIPMENT

Mr. Frank Garlington, at the March G-46 EIA EMC Committee meeting, called attention to a new Canadian law which has given mandatory status to the Canadian Standards Associations' standards C22.4 No. 101-1972, "Electromagnetic Interference Measuring Instruments" and CSA Standard C22.4 No. 105-1972, "Tolerable Limits and Special Methods of Measurement of Electromagnetic Interference from Electrical Appliances and Equipment". Copies of these standards, along with CSA Specification C22.2 No. 8-1945, "Construction and Test of Suppressors for Radio Interference", are forwarded for your information.

Mr. H. W. Robinson of the Canadian Standards Association has informed EIA that they are reviewing CSA Standard C22.4, No. 105-1972 and would appreciate receiving any comments that the addressees might have. Mr. Garlington will be associated with the CSA Committee working on these standards and any comments or recommendations should be sent to him. His address is:

Mr. Frank E. Garlington
Sprague Electric Company
87 Marshall Street
North Adams, Ma. 01247

EMERGENCY LOCATOR TRANSMITTERS (ELT) CONTROL

DOT Advisory Circular No. 20-81 dated 10 Oct 72 alerted the general aviation community to the harmful effects of accidental or unauthorized use of emergency locator transmitters and suggests means of containing or controlling radiated energy on the emergency frequencies during testing. The following paragraphs have been excerpted from the circular:

"Maintenance testing of an ELT should be conducted in a screen room or metal enclosure to ensure that electromagnetic energy is not radiated during repairs, thereby causing a false search procedure to be initiated. Any necessary testing of an ELT, external to a shielded enclosure, e.g., installed in an airplane, should be performed as described below.

"Prior to the installation of an ELT in an airplane it may be operationally tested in a screen room or metal enclosure to determine that it is in working order. It is good practice to have a radio receiver, tuned to 121.5 megahertz, close at hand during an installation to monitor this frequency. In the event that an ELT is inadvertently activated, it should be turned off at once.

MEETINGS & EVENTS

SHORT COURSE ON ACTIVE FILTER DESIGN

December 10-12, 1973

This course provides the circuit design engineer with the technical background and design data needed for designing active filters. It includes filter design examples and a design workshop session.

TOPICS: Filter transfer functions
Frequency transformations
RC networks
Operational amplifiers
Sensitivity analysis
Q-multiplication
Some Sallen and Key networks
Gyrators, circuit theory - integrated circuit design - the stability problem. Practical notes on thin film active filters.
The Biquad resonator

STAFF: PHILIP R. GEFTE, Fellow Engineer at the Westinghouse Defense and Space Center, Baltimore, Md.; author of more than 30 research papers and technical articles on network theory, filter design, and miscellaneous subjects; author of Simplified Modern Filter Design (Rider 1963); his article "Toward High Stability in Activer Filters", appeared in the May 1970 issue of Spectrum.

FEE: \$ 230

For further information, write to the Continuing Engineering Education Program, The George Washington University, Washington, D. C. 20006 or call (202) 676-6106.

STANDARDS NEWS

NEW STD ON EM RADIATION is being published by IEEE for the ANSI. It deals with "Techniques and Instrumentation for the Meas of Potentially Hazardous EM Rad at Microwave Freq" & has already been adopted by the O.D. The cost is \$5 and it is avail from the IEEE Standards Office, 345 E. 47th St., New York, N. Y. 10017

ICC '74 MEETING

The 1974 IEEE International Conference on Communications (ICC74) will be held at the Learning-ton Hotel in Minneapolis, Minn., June 17-19, 1974.

The theme will be "Communications - Providing Intellectual Bridges for a Shrinking World". Original papers, not submitted elsewhere, are invited, but not limited to, the following technical areas:

- Computer and data communications system
- Communication switching
- Radio and space communications
- Communication theory
- Communication systems
- Optical and millimeter-wave technology
- Wire transmission system
- Satellite communications
- Communication electronics
- Signal processing

Prospective authors are requested to send five (5) clear copies of both the paper and a one page summary to:

Dr. M. S. Ulstad, ICC 74
P. O. Box 35366
Minneapolis, Minn. 55345

The copies must be received by December 17, 1973.

EMC FIGURE-OF-MERIT SEMINAR

A one day seminar on EMC Figure-of-Merit for receivers and transmitters will be held on Thursday, October 18th, at the Electromagnetic Compatibility Analysis Center, Annapolis, Md. Discussions will be held on work to date by, and future plans of, an ad hoc committee. This seminar should be of particular interest to receiver and transmitter manufacturers as well as certain government agencies. Attendance may be limited to the earliest applicants by available meeting space. If you wish to attend, please notify:

Mr. M. L. Lustgarten
Electromagnetic Compatibility Analysis
Center
North Severn
Annapolis, Md. 21402
Phone: (301) 267-2554

1973

ELECTROMAGNETIC COMPATIBILITY GROUP MEMBERSHIP ROSTER

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BARTON L CONARD
M C EDGAR JR
JOHN H GUTZKE
N P HAVERKOS
F E KING
MALCOLM A MAC LEON
ALFRED W SCHEIDE

CLEVELAND

JOHN W GROSS
H M HUGG
C E SMITH

COLUMBUS

JAMES O EVERLY
ARTHUR R GOODMAN
THOMAS H NEWHOUSE
C G SVALA

DAYTON

H M PARTMAN
LARRY L BURK
C O KEIHL
L H LLOYD
DOUGLAS G LOCKIE
P T MARTIN
C E MAST
VICTOR MORATS
CHARLES E SETH
SAMUEL SKOLNIK
R G STIMMEL
D R WALTER
ELDEN F WICK
R L WIRT

DELAWARE BAY

C E SHAPPELL JR

ERIE

C A BURKHARD
P CHOWDHURI
JOHN R LANE
THOMAS L VENABLE
J J WALSH
E L ZEIGLER

LIMA

W E HAWLEY

NORTH CENTRAL OHIO

RONALD W BREWER

EASTERN SHORE

DAVID C SHIREY

PHILADELPHIA

W E AMOS
R E ANDERSON
JOSEPH F BLAZEWICZ
H A BOND
JOHN N BREEN
E M BROWN
J F CASEY
S H COLONY
R V FARIS
NEIL M FOGLIANT
CONRAD J FOWLER
STEVEN C GARCIA
E E GARFIELD
ALBERT J GETA
R D GOLDBLUM
F HABER
F W HARLAND
EUGENE J HERBERT JR
NORMAN A HUGLUND
W JARVA
A R KALL
M KANT
H N KRITIKOS
T W LIAO
DANIEL F LILLIE JR
JOHN H MOORE
DELIS NEGRON JR
A G NEWMAN
R D NUSSBAUM
M M OFLAHERTY
E T PAYLMAN
J S PEESE
J O REID
L J SHANE
P M SHOWERS
P H SPROWLS
R H SUGARMAN
W A THOMPSON
W A FISHER

PITTSBURGH

HAROLD W ASKINS JR
VERNON L CHARTIER
M L OSBORN
A G POKRANT
DEPRILL F SHANKLE

SUSQUEHANNA

WILLIAM B FRITZ
JAMES C LATIMER

WASHINGTON

EDWIN L ABELL
J D AHLGREN
WILLY S AHS
A P ALBRECHT
C G ALLEN
VIRGIL ARENS
JAMES H ATKINSON
WILLIAM BARBINGTON JR
JOHN H BAILEY
S BAILEY
WILLIAM A BAKER
JOHN H BICKFORD
A E BILLS
JAMES BOLAND
R J BOTEILHO
G A BROWN
IRVING B BROWN
R N BULLOCK
A F CARROLL
F R CARROLL JR
ARTHUR CASEY
W S CHU
J G CHURCHILL
R L CLARK
DAVID P COFFIN JR
F W COOK
J J CRENCA
VINCENT J CUSHING JR
A DAMBRIST
H DAVIS 3RD
HAROLD E DINGER
J E DODGE
THOMAS W DOEPFNER
ROBERT J DOUCHIS
WILLIAM G DUFF
R J FRTMAN
J H FWING
FRANK E FFRANTE
JOSEPH J FISHER
E R FREEMAN
J T FREEMAN
ROBERT H FRENCH
RICHARD W FRENIER
ALBERT W FRIED JR
F M GAGER
WILLIAM GAMBLE
H GARLAN
GEORGE F GAUTNEY
J P GOLDEN
WILLIAM C GREEN
R GRIMM
C M GWALTNEY
G H HAGN
ROBERT J HAISLMAIER
HENNING F HARMUTH
DEAN HEATON
WILLIAM F HEINZ
J S HILL
M L HODGES
W H HODOWITZ
W E HOWE
J JANSEN
C M JAUQUES
R E JONES

J J KELLEHER
JUNE KOSTYK
R F LANE
J D LEE
J M LEOPOLD
RONALD J LEPKOWSKI
R H MAIER
F S MARSHALL JR
JAMES B MC CRUMB
J M MC CUTCHEN
ROBERT C MC INTYRE
JAMES G MC NELLIS
H P MEISINGER
GEORGE MERKEL
M MORELLI
W P MORTON
JOHN G DEHLENSCHLAGER
R D PARLOW
ALVIN W PAUL
T A PENDLETON
WILLIAM S PICKETT
MICHAEL J PLAVETZKY JR
CURTIS B PLUMMER
H RANDALL
A R RASMUSSEN
ALVIN REINER
J J RENNER
HAROLD R RICHMAN
W K ROBERTS
J ROMAN
MORTON RONEY
JOHN J ROVITO
J E RUSSELL
ROBERT R RYASON
HERBERT M SACHS
C E SAMPSON
G F SANDY JR
C J SAUNDERS
ERIC J SCHIMMEL
R A SETTERSTEN
GUSTAVE SHAPIRO
R H SIMMONS
J W SKAGGS
F S SPECK
R W STEINHOFF
REDMOND O STEVENS
ROBERT E STEVICK
J L STEWART
ALFRED C STRING JR
A H SULLIVAN JR
WILLIAM E TATE
R E TAYLOR
RICHARD A TELL
L W THOMAS
LEONARD W THOMAS JR
JOHN R TROUTNER
W VAN WINEGARDEN
HENRY H VARHUS
LESLIE A WALL JR
S M WARREN
C F WATKINS
B D WEINSCHEL
EDWIN P WESTBROOK
DONALD R WHITE
DENIS A WHITTAKER
E A WOLFF
LEO YOUNG

WEST VIRGINIA

J L DOLAN

Region 3

ALABAMA

SAMUEL J JOHNSON
HAROLD V POOR

ATLANTA

F L CAIN
LORIMER CLAYTON JR
ERNEST E DONALDSON JR
JOSEPH G DOSTER
R S DUGGAN JR
T G HICKMAN
F P HOLDER
E G HOLMES
H H JOHNSON
P C JOHNSON
RONALD W LARSON
ROBERT D NEVELS
D W ROBERTSON
W ROBINSON
J C TOLER
BRUCE C VRIELAND
CURTIS E WALKER JR
JIMMY A WOODY

CANAEVAL

W F PAKALA
O B RAWLS
F J TYZENHOUSE

CENTRAL VIRGINIA

W L BRAUN
R P CUFFORD
L U CUFFORD
RICHARD T MYERS
NEAL H SHEPHERD

DAYTONA

R P BOUCHARD
R R RASCHKE

FLORIDA WEST COAST

CHARLES M DEAN
RICHARD F FILIPOWSKY
EDWARD R HEISE
H W HUNT
MARY F NOEL
E R PELZEL JR
GEORGE F SILBERMANN
BRUCE W SUTER
WILLIAM A WILSON

GAINESVILLE

ROGER V KRUMM
R R MC PHERSON
JAMES A TILLER

HAMPTON ROADS

J N BOLAND
R P FAUST
ROBERT E METCALFF
JAMES E NORMAN

HUNTSVILLE

WALTER FLATTAU
ROBERT R PARKER
T A PRESTWOOD JR
H R SEID
J W WEIMER

LEXINGTON

DONALD R RUSH
JOSEPH C CLEMENTS
CLAYTON R PAUL

LOUISVILLE

E L MARVEN SR

MEMPHIS

JIM HARKINS

MIAMI

FREDERICK W DAUER
A HEMPHILL
JAMES C KOEPER

MISSISSIPPI

WILLIAM H FREEMAN
CLAYBORNE D TAYLOR

MOBILE

R E DWYER

NEW ORLEANS

WILLIAM E AICKLEN JR
J A CRONVICH
PAUL A ESPOSITO
J W JOYNER
R A STUTE

ORLANDO

D D BAXTER
SAM J BRIDT
HERBERT S COOPER
R N HOKKANEN
G F MC CLURE
C W NORTH
B H ROBINSON JR
PHILIP A TONEY
C D WHITESCARVER

PALM BEACH

B B BJORKLUND
L W FEENEY

PANAMA CITY

J L FOWLER

RICHMOND

RICHARD T FORD
JOSEPH H HALBERSTEIN

AFFILIATION OF N. C. SECTIONS

CENTRAL NORTH CAROLINA

JAMES H PATE

EASTERN NORTH CAROLINA

JAVAD S CHITSAZ
JACK D WILLIAMS

WINSTON-SALEM

G C WATFORD

AFFILIATION OF S. C. SECTIONS

COASTAL SOUTH CAROLINA
HUGH W DENNY
S VOGEL

Region 4

CALUMET

JAY L WILSON

CEDAR RAPIDS

ARNOLD M BUCKSBAUM
R D DIEDRICHS
E A HABEGGER
MILDRED A LAHR

CENTRAL ILLINOIS

J D DYSON
PAUL NIELSEN

CENTRAL INDIANA

V CONES
MARK D DISOSWAY 3RD
JEN-REEN DUAN
H D FASSBURG
W S LISTON
DANIEL G WAYNE

CHICAGO

MOHAMED K ABDELAZEZ
NORMAN R ANDERSON
WAYNE R ASHBY JR
ROGER A BAUM
J A BELLINO
P R BERRY
J E BRIDGES
L B COSTELLO
JOHN E DEAL
DENNIS DZIERZAWSKI
B EBSTEIN
BRENT R EGGLESTON
O F ELSNER
EMIL EMERLE
LAWRENCE J FAY
VINCENT C FORMANEK
MICHAEL F GENGE
R GOLDSTEIN
D J HEALY
H R HEGNER
DENNIS L HEITZMAN
R S JOHNSON
JAMES C KLOUDA
J J KRSTANSKY
GREGORY M LEWANDOWSKI
K P LUNDGREN
M MARKS
RICHARD F MESE
ROBERT J MELKA
ALEXANDER S MICHAELSON
P A MIHALKANIN
D A MILLER
STEPHEN D NORTHRUP
ALLEN B PAPIERZ
ED REESE
EDWIN M SCHAEFFER
ROBERT M SCHARDING
W A SCHLESINGER
ROBERT E SHARP
EMIL SKOCYPEC
STEVE SMANDRA JR
L S SMULKSTYS
R A WAGHORNE
P M WALTERS
E W WERER
NORMAN W WEHLING
COLIN B WILLMOTT
H L WOLFMAN

CHICAGO

MOHAMED K ABDELAZEZ
NORMAN R ANDERSON
WAYNE R ASHBY JR
ROGER A BAUM
J A BELLINO
P R BERRY
J E BRIDGES
L B COSTELLO
JOHN E DEAL
DENNIS DZIERZAWSKI
B EBSTEIN
BRENT R EGGLESTON
O F ELSNER
EMIL EMERLE
LAWRENCE J FAY
VINCENT C FORMANEK
MICHAEL F GENGE
R GOLDSTEIN
D J HEALY
H R HEGNER
DENNIS L HEITZMAN
R S JOHNSON
JAMES C KLOUDA
J J KRSTANSKY
GREGORY M LEWANDOWSKI
K P LUNDGREN
M MARKS
RICHARD F MESE
ROBERT J MELKA
ALEXANDER S MICHAELSON
P A MIHALKANIN
D A MILLER
STEPHEN D NORTHRUP
ALLEN B PAPIERZ
ED REESE
EDWIN M SCHAEFFER
ROBERT M SCHARDING
W A SCHLESINGER
ROBERT E SHARP
EMIL SKOCYPEC
STEVE SMANDRA JR
L S SMULKSTYS
R A WAGHORNE
P M WALTERS
E W WERER
NORMAN W WEHLING
COLIN B WILLMOTT
H L WOLFMAN

FORT WAYNE

M A CAMBRE JR
J G MAST
ALAN B SHOWALTER

ILLINOIS VALLEY

WILLEM F BAKKER

MILWAUKEE

F A BLOMDAHL
DAVID L DEVINE
LORIN R GALLISTEL
LAWRENCE B KORTA
M E MAZZONI
LAWRENCE D RADOSEVICH
H M SCHLICKF
R G WHEELER
FREDERICK J WOLTERS

NEBRASKA

A G CARPENTER
WAYNE J FLICKINGER
K H WYCOFF

NORTHEAST MICHIGAN

J C MC LAUGHLIN

NORTHEASTERN WISCONSIN

A O FITZNER

ROCK RIVER VALLEY

JOSEPH S NABER
CURTIS R WHITE

SOUTHEASTERN MICHIGAN

NICHOLAS ALIMPICH
F BAUER
A C DONTY JR
JOHN N LATTA
CLARK E LOWMAN
J A M LYON
GARTH MAXAM
R B WALLACE
C T YOUNG

TWIN CITIES

N B COIL
PAUL C CORNETT
E F FINEGAN JR
ROBERT C FLINK
S J GADLER
WILLIAM P GIBBONS
JOHN HORNSBY
THOMAS JORGENSEN
D J KEATING
HARRY G MAURER
JAMES J MC KEOWN
P L MORAWETZ
J W NESTING
D V ROMANO
ROBERT J SCHLENTZ
C A SWENSON
MARK A TAUBE
L WERNER

WEST MICHIGAN

JAMES D HABEGGER
L M YIKE

Region 5

CENTRAL TEXAS

JAMES F ROHREN
C M BRENNAN
EDWIN L BRONAUGH
C W CHAPMAN
W C DOLLE
LEWIS S FOUNTAIN
CARL L FREDERICK SR
RICHARD C HEIDENREICH
D L JOUFFRAY
C C LAMBERT
JOHN D OSBORN
RICHARD B SCHULZ
CHARLES H SMITHPETER
MAX O TEEBS
G N VAN STEENBERG
R J WELTY
C P WILKES
A E WILSON JR

DALLAS

M A BONDY
F E CHEW
DAVID CLIFTON
GENE H FORESTER
C M JONES
J P MOSER
G R STEELE

DENVER

J E ADAMS
H AKIMA
WILBUR J ANSON
MILFORD G ARTHUR
GENE G AX
A F BARGHAUSEN
ROBERT T DISNEY
G D GIERHART
F M GREFFE
D L HOWARD
JACKSON H HWANG
RAYMOND C JENNINGS
JAMES E KLUGE
JOHN KORNFIELD
R O LEWIS JR
FRANK V MC FARLAND
DAVID MOFFETT
C R MOORE
J P MURRAY
ROBERT E NELSON
HENRY R RAY
H E TAGGART
JOHN J TARY
WILLIAM W WHITE
F H WILLIS

EL PASO

O D PAGE

FORT WORTH

K W KOEPITZ
J L MOE
O E WATKINS

HOUSTON

J P GERMAN
W T HUDGINS JR
PAUL A RAINOSEK

KANSAS CITY
NASIR AHMED
R RASHAM
R L CLARKE
WILLIAM P CRAIG
CHRIS D FEDDE
K L MORTON

OKLAHOMA CITY
CARL L SCHFIRMAN

SAINT LOUIS
J BREMER JR
J R COX JR
C L FISHER
ROBERT E FREEMAN
JERRY D LEE
T M MC CALLA JR
KEYHAN MOLAVI
R T STINCHCOMB

SHREVEPORT
F L CRESWELL

TULSA
J E HAWKINS

WICHITA
D E DENNY
LEONARD O HENDRY
W R JOHNSON
VINCENT R SITES

Region 6

ALASKA
W A DOLAN
ROY W SNYDER JR

ALBUQUERQUE
CHARLES M ANDERSON
CAPL BAUM
D B CUMMINGS
DOUGLAS L DUNBAR
C W HARRISON JR
ROBERT L HUTCHINS
D E MEREWETHER
E M ROBY

BOISE
L R LANGDON

FORT HUACHUCA
J P JARVIS JR
DAVID T KJELLQUIST
M G STILES

HAWAII
R DONALD BROUGH
CALVIN B CHRISTIANSON
R R FORD
STEVEN P GOUVEIA
J M JOUVENAT
W A KERNAGHAN
B K KINARITWALA
STEVE Y KOBASHIGAWA
JAMES T MC KENNA JR
NORMAN J METZ
DUNCAN S PLASMAN
ALFRED PRATT
JAY K SAKAI
T C SAKAI JR
WILFRED I TSUKAMOTO
LEE R WICAL

IDAHO
STANLEY SZEMBORSKI

LAS VEGAS
DOUGLAS E PROCTOR

PHOENIX
DWAYNE R AWERKAMP
R E BLIXT
O M CLARK
ROBERT E ELMORE
JOHN M FLOWERS
CARL P JESPERSON
R R LASH
R F LELAND
V I MINKEL
HAROLD E NILES
B E ROSEBERRY
R E SAMUELSON
FRANK A SCHNEIDER
DAVID H SHAFF
R E SIMMONS
RONALD D STONER

PORTLAND
K R AUSTIN
HOMER T CURTIS
FREDERIC H DICKSON

DAVID E HACKLEMAN
VAL S LAVA
F E MILLER
R N PROVINCE
DANIEL RADOVICH
R F SHOW
WILLIAM A WAGNER

RICHLAND
W G PARMELEE

SACRAMENTO
A F HOEFFLICH
G G NORTH
A L PETERSON

SAN DIEGO
H D BRANSTETTER
W H GRIFFEL
R H HOERL
M F KRUPP
A G LOVEBERG JR
D P MCALEY
H K MERTEL
OLIN J MOORE
W F PICKETT
H B SCHOW
JAMES H SCHUKANTZ
W R STONE
VICTOR A VAN LINT
BENNETT WEINBAUM
THERON C WELLS

SAN FRANCISCO
ROBERT L ANDERSEN
M H BAER
PAUL F BOLANDER
A P BRAZAUSKI
FRANK J BURGE
BERTRAM M BURRIS
JAIIME J CARVER
KING S CHAW
WILSON CHU
J A DANN
WILLIAM S DRUMMOND
H ECHEVARRIA
EDWARD EDISON
P A EKSTRAND
CHARLES I GAUSE
A L HART
DEXTER HARTRE
H J HATT
J D HOFFMAN
DOROTHY A HUTSON
H R IRWIN
FERDO IVANEK
JULIANNE J JEDEKA
ALAN K JOHNSON
PHILIP M KANE
T J KAUSEK
R H KELKENBERG
J F KIRK
J A KIRTLAND
KLAUS C KUCHLER
JOHN A KUYPERS
M V LAMASNEY
SAM Y LIAN
ROBERT O MAGATAGAN
LEROY C MARTIN
KENJI MATSUDA
H J MOHR
W H MYERS
A NALRANDIAN
FRED NASE
EUGENE G NEELY 3RD
J R NOON
GUY L OTTINGER
W R PURCELL
J H ROBINSON 3RD
F C ROSE
W H SANDERS
J A SCARONI JR
B SCHENKER
SAM B SHANKLE
MARVIN D SHEPHERD
V SIEGFRIED
AHMET M TUFFEKIOGLU
V M TJRESIN
EDWARD F VANCE
EMERICK L VANN
V J VAN VELZER
THOMAS M WALSH
CARROLL WHITSON
S G WHITTLEY JR
JERRY F WOOLETT
S YAKAHI

SEATTLE
F A BEAUCHAMP
MAX H BICE
JOSEPH P BLASCHKA
J P BRADY JR
J E BROWN
B L CARLSON JR
J M CARTER
WILLIAM W COOLEY
W J CROWLEY
D L DENNIS
A E DORRARD
A ECKERSLEY
GEORGE G FRICKSON
W H FAKHARZADEH
G M GILBERT
WARREN S HARAKI
P V HENDRICKS
THOMAS H HERRING
RICHARD F HOLTMAN
FREDERICK R HUME
L JORGENSEN

H H JUDDSEN JR
K M KALANQUIN
AUGUST T KARLSON
DAVID KEMLE
F D KNOWLES
JAMES C LAMBERT
M O LOFTNESS
G M MAGURA
JACK MAY
F H NOWAK JR
HENRY F PARKS
ABUL F RASHID
R R REED
A RUDZITIS
R L SHIROD
C H TERWILLIGER JR

SPOKANE
L B CRAINE

TUCSON
RAYMOND C ALLIS JR
CARL E BOXLER
J CIGLAR
H L CLARK
ROBERT M COWGILL
THOMAS J FLAHE
DONOVAN D FLETCHER
E A HAYES
A J HOEHN JR
L K KINGTON
R D LARSON
V G LUNELL
RAYMOND K MASNAGHETTI
M B MC CALEB
F P MICHALK
C W MILLIGAN
J K OLIVER JR
M E PARMER
R R SEACH
I J SORKIN
L L TSAI

UTAH
JOHN J BACON JR
ALFRED G BULLETT

LOS ANGELES COUNCIL

ANTELOPE VALLEY
A E WOLFE JR

BUENAVENTURA
JAMES L BROOKS
KENNETH W CANAGA
THORNTON E CHEROT JR
DON B CLARK
ROY E DEHM
WILLIAM T HAMILTON
R W JACK
P PERINGER
JAMES C SENN
JAMES A SPAGON
T E WALENTA
WILLIAM L WEN
DONALD J ZELENY

CHINA LAKE
DONALD B CLARK
MICHAEL A FREDERICK
FRANKLIN D HARRIS
WAYNE R ROUNTRIE

FOOTHILL
O G ELZIE
SAUL FELDMAN
G L FJETLAND
J F GRAY
JOHN KOREWICK
J F MCELWEE
ROBERT A MOLZ
FREDERICK R MOTTER
H SCHWARTZ
M W SHORES
E N SKCMAL
R D SMITH
G G SUNDBERG
DONALD S THOMB
R J ZOLLINGER

MET. LOS ANGELES
J A ECKERT JR
THOMAS GESS
HOMER H GRANT JR
B L MYERS
E J NICHOLS
A T PARKER
ROBERT A STEVENSON
JOHN W WRIGHT

ORANGE COUNTY
W E AHLBERG
J E BERGER
J F BLASKI
H E COMMINS
JOHN F COOLIDGE
JOHN W COX JR
STANLEY B DEMES
ROBERT J DRECHSLER
DONALD L EWING
B J GAUREAU
D E HARRIMAN JR

ERIC K HCNKA
HARLOW JUDSON
R A KFY
FRANK K KOIDE
W LASH
G W LEGEL
DON H MATSUMIYA
JEAN R MILLER
A J PERRELLA
ROBERT B PHINIZY
GAYLORD C ROGENESS
H P SCHILDHAUER
R C SCOTT JR
DAVID H SIMONS JR
HECTOR M SMITH
D W STRATTON
LAURENCE J VACLAVIK
EMIL J WALCEK
R L WILLIAMS
LAURENCE J ZYNDA

SAN FERNANDO VALLEY

R H AIFES
B W BAKER
EVERETT W BERAN
ERNEST L ROCK
E D COCHRAN
J W DUNCAN JR
ERNEST G EITING JR
HOLLICE A FAVORS
ROBERT C HANSEN
D L INGRAM
GEORGE M KUNKEL
H D MC KAY
JOHN E MURRELL
D R MEYER
STAN PRO
D S RADMACHER
S SABAROFF
A SANKARANARAYANAN
GUDDIP S SARAN
R M SIGNER
J R SMITH
S STEPANOFF
C W TONG
CHARLES E TOUHY
G R UFFEN

SAN GABRIEL VALLEY
J G BASTOW JR
A C WHITTLESEY

SANTA BARBARA
R S HUTCHEN
ROBERT J MC MILLIN

SANTA MONICA BAY
O R ABERNATHY
GALE O ALLEN
WILLIAM E BECHER
R B COWDELL
D S DAVIS
A L HIERERT
ART-ONG JUMSAI
N KADAR
E V KAVANAUGH
AUGUST J LINK
THOMAS N RUBINSTEIN
R W SCHULT
S SENSIPER
H D SHOULDERS
C A SORESENSEN
R C TWOMEY
JACK H WATSON
H Z WILSON
RAYMOND WOOD

SOUTH BAY HARBOR

JOHN M DAITLEY
JOHN EKPARIAN
J F FISCHER JR
HAROLD GERSON
E S HUGHES
R H JAEHNIG
DONALD L MOORE
DAVID A NESHEIM
C B PERLSTON JR
ROBERT E ROSENBERG
S SHOKARA
H A SMITH
B A TUELING
ROBERT D WANSELOW

Region 7

BAY OF QUINTE
J S MAC KELVIE

CANADIAN ATLANTIC
RICHARD R COWMEADOW

MONTREAL
J L BOULET
P DEMERS
S J KUBINA
LAURENT MARQUIS
G B MIGNAULT
ROBERT E WEBSTER

NORTHERN CANADA
P L STROHSCHNEIN
ROBERT F SUTCLIFFE

OTTAWA
R G AMERD
VINCENT CAPOGRECO
L CHWEDCHUK
G GLINSKI
F D GREFN
R M MORRIS
KENNETH A PEEBLES
JAMES E PROSPER
H V PUNDLEIDER
WILLEM J STEENAART
G A WERSHOVEN
J E WILSON

QUEBEC
GILLES Y DELISLE
MARCEL DES JARDINS
A L LORTIE

SOUTHERN ALBERTA
SORIN COHN-SFETCU

TORONTO
GORDON Y R ALLEN
D BEATTIE
GARY G BLACK
ELIZABETH CARRIERE
C K FOLL
GORDON E GALBRAITH
JOAN A HALL
ROGER G HUM
W JANISHEWSKYJ
J E LOCKYER
NEIL MACKINNON
K MASSOUCIA
STEPHEN S MAXNER
J D MC NEILL
P YACHIMEC
R L YIP

VANCOUVER
R BARTHOLOMEW
J B CLAYDON
J A GALT
J RUSKIN
P W WADDINGTON

WINNIPEG
YAHIA M ANTAR

Region 8

BENELUX
P BOUCHIER
W B BROUWER
ANDRE A DANTHINE
H P DEBRUYN
STEPHANE J DE VLEMINCK
G R DIENNE
A L FAWC
M GROENENBOOM
H H HEERMA
MEINART H HUIZINGA
FRANS MOHRING
D C SCHERING
J G VAN BLADEL
P G VAN ZANTEN

DENMARK
MOGENS P GRONLUND
SVEND E JENSEN
H L KNUDSEN
D S NAG
AKSEL K NORGGAARD

FRANCE
F J BABIN
HENRI J BUTIN
EMILE P DUCROS
HERBERT H ERNYEI
LOUIS J FECHANT
P A GRIVET
JACQUES HEBENSTREIT
MICHEL KARSKY
F MAYER
W MAZEL
PIERRE RENARD
J H ROBIEXUX
B A SOKOLOFF

GERMANY (WEST)
V G ASCHOFF
GOTTFRIED FARWER
HELMUT GEISSLER
BERND K KNOERR
L ROMDE
ADOLF J SCHWAR
HEINZ SCHWARZER
DIETER K STOLL

ISRAEL
YAKOV REERY
DOV BIRAN
URI BLOCH
DAVID BRONSTEIN
E CASPI
MORDECHAI DORON
U GALIL
F JACOBS
D SPIRA

MIDDLE & SOUTH ITALY
ENRICO A BOZZONI
CATELLO D AURIA
ELIO A FAGNONI
G GOMMELLINI
T LEARDINI
U PIZZARELLI
U TIBERIO

NORTH ITALY
G COTTAFAVA
A D DEROSI
G DE VITO
C EGIDI
G E PERONA
P QUARZA
P SCHIAFFINO
GUIDO P VULPETTI
C ZANELLI

NORWAY
O J TVEIT

SPAIN
NARCISO GARCIA-REDONDO
MARCELINO LAGE
VALENTIN M PARRA
JOSE T PASTOR

SWEDEN
L ARSINIUS
SVEN CHRISTENSSON
GÖRAN S CAHLEN
A L ELFVING
S G GERTZELL
ROLF J E GEZELIUS
J GUNMAR
LENNART GUSTAFSSON
ERLAND B HOLMQUIST
T L LINDSTRÖM
A LUNDQVIST
G A MARKESJÖ
R N NILSSON
A J OLSSON
D PERERS
S SJÖGREN
B WESTERHULT
TORO O WIKZÉN

SWITZERLAND
F EGGMANN JR
WALTER E GERBER
HARRY A LAETT
GUIDO J LANG
MAX J MILZ
TARO NISHIZAKI
PIERRE F SCHMID

UNITED KINGDOM &
REPUBLIC OF IRELAND
EDWARD S ATKIN
P CARMICHAEL
N J CLARK
R C CUFFE
W H DEVENISH
RUPERT I KINROSS

NO ESTABLISHED SECTIONS
MOSA N ALI
GYORGY ALMASSY
I N DENISENKO
F W GUNDLACH
ESKO H HEIKKILA
TARIK REYHAN
L SZANTO

Region 9

ARGENTINA
R J LOPEZ DE ZAVALIA
GUILLERMO H MAROTTA

COLOMBIA
KAZYS B GABRIUNAS

MEXICO
JORGE ANGELES-ALVAREZ
JUAN G BENAVENTE
CARLOS NUNEZ A

VENEZUELAN
GEORGE E CLFARY
MANUEL FLINT-HALPERN
J E GUITIAN

NO ESTABLISHED SECTIONS
R RAMPERSAD

BRAZIL COUNCIL SECTIONS

RIO DE JANEIRO
NICHOLAS BROOKING

SAO PAULO
F DE MENDONCA

Region 10

AUSTRALIAN
SIDNEY F BROWNLESS
W G CHAPMAN
LOUIS W CAVIES
RICHARD M HUEY

INDIA
MANGHO J KIRPALANI
G P NAGARKAR
V S NAZIR AHMED
ALI I ZAIDI

TOKYO
FIZO ARE
OSAMU ARE
MORIO AKIYAMA
SABURE AOI
YOSHIMASA AOKI
TAMEN FUJII
MASAO FUKATA
HIROSHI FUWA
KIYOHITO HASHIGUCHI
MASARU TEUKA
TOSHIYA INOUE
KUNIZO IWAMOTO
NOZOMU IWATA
SEIICHI KAGAYA
TADASU KAWANO
MATSUNAGA KINASE
SHUNKICHI KISAKA
TETSUJI KOBAYASHI
SHIGEYA KUWABARA
AKIO MATSUMOTO
FUMIO MINOZUMA
SHOTA MIYAIRI
MIITADA MORISUE
YASUJIRO NIWA
SUKEIRO OBATA
NORIOMI OCHIAI
NACYUKI OGASAWARA
KENZO OKUDA
SHUNICHI OMORI
KEN-ICHI OWAKI
YUKIHARU SAMESHIMA
T SAWAMURA
TOSHIRO SAWYA
KCJIRO SHIRATA
HIDEO SHIMA
SHIN SHIMADA
CHOSUKE SUGI
FUMIHIKO TAKAHASHI
IKUO TAKEKA
OKADA TAKEO
IKUO TANAKA
MASAYOSHI TANAKA
FUSAO TANIGUCHI
N TATSUMI
KAZUTO TOGINO
ISAMI TOKUNAGA
RYUICHI TOMIYASU
YOSHIHIKO UEMURA
TERUHIRO UMEZU
TACAJI UNO
MASARU YAMANO
KENJI YAMAUCHI
TSUGUO YOSHIDA
TAKEO YOSHINO

OVERSEAS MILITARY

STEPHEN F BERBICK
JOHN B BUCKMAN
JIM G DEPOY
ALBERT J FERRON JR
ROBERT G KUGLER JR
WILLIAM E NORRIS
F M PERRA
V POOBIELSKI
A RODRIGUEZ-MARTINEZ
RICHARD C SNELL
J P WALSH

NO ESTABLISHED SECTIONS

PRACHIN CHALODHORN
ESTEFANIO E CHICANO
GEORGE C HSU
INKU KANG
WU-IL LEE
TAE S YIM

CHAPTER CHATTER

by Ira (Marty) Berman

In the beginning the frequency bands were unformed and void, with no intelligence on the receivers of sound and music, and naught save static was heard through the land. A voice came from the deep saying "Let there be EMC", and there was EMC, and it was good. And EMC separated the intelligence from the static and the noise, and the people rejoiced in their cities and their tents.

ATLANTA

And Atlanta spoke unto the Newsletter saying, verily we have meetings, and we are prospering. On the 16th day of the 10th month of the previous year, Dr. R. W. Larson, who is an Associate Professor at the Technical Institute in Georgia, did lecture on the Electrical Car program at the Institute, and 14 did hear and approve. And on the 22nd day of the first month of the current year, 15 did sit in rapt attention while B. M. Jenkins who is a Research Engineer at the Experimental Station of the Institute did lecture on the Measurement of Spectrum Congestion in Urban Areas. And still the populace demanded more, so on the fifth day of the third month, Dr. A. T. Adams of the University of Syracuse did enlighten the populace on Method of Moments: An Introduction to Near Field and EMC Problems. And again in the fourth month, with Spring upon the land, there was discussed Electrical Safety in the Tents of Healing. And the people of Atlanta heard and were gladdened.

PHOENIX

And it came to pass in the first month that this Chapter chose to select its new officials, and they are Dwayne Awerkamp of Motorola as Leader; Harold Niles of General Communications as Assistant Leader; Ron Leland of Motorola as Scribe; Jim Martin of Arizona Public Service as Keeper of the Gold; and John Matteson of Honeywell as Master of Arrangements and Publicity. And these officials were chosen by ballot on the 13th day of the last month of the previous year, when one score and four heard Dr. Don G. Dudley present EMC Effects on Communication Equipment. The people, not to be outdone, sent one score and ten to hear A. Earl Cullum, who is verily a Consulting Engineer in Texas, describe Experiences and Solutions to Reradiation Problems from Antenna Towers and Other Structures. And the Chapter rested, and the members said So Be It.

LOS ANGELES

And there was a watering place in the valley in the desert, where the maidens would come in the evening to water their camels and sheep. And so it is with the tribe in the basin of Los Angeles, but there is the refreshing of the spirit. For on the 16th day of the 11th month, a number of the elders of the tribe gathered to prophesy What's New in EMC for 1973 to the amazement of two score and 12; and on the 18th day of the last month the tribe did celebrate with a party for the holiday season. On the 25th day of the first month the sage, Herb Mertel, of General Dynamics, San Diego, did expound on EMC for Rapid Transit Systems, which could cause the silver chariots that carry multitudes from city to city to run askew. And yet this problem does not occupy the attention of the prophets who predict greater use of the chariots. The leader of the tribe did state that the sage, Herb Mertel, will lead a council in its discussions at the mighty EMC convocation in the sixth month, wherein control of the silver chariots that run on two bars of iron laid upon the ground may be effected by means of connection of many small filaments of metal. And the leader does state that the tribe from the City of Los Angeles does flourish. In these days of woe, such news is surely as welcome as manna from Heaven.

SEATTLE

And there was a mighty city where the traditions were passed from the warriors with skin the color of bronze to the tribe of EMC. And when the tribe met in convocation they did choose Thomas H. Herring as Leader, and Jerry M. Carter as Assistant Leader, and Richard F. Holtman as Scribe and Keeper of the Gold. The leader has called the tribe to meetings, and on the 20th day of the ninth month of the previous year only four and 10 did hear Alfred Eckersley of the clan of Boeing speak on a Test Jig for Shielding Effectiveness. And the leader was not satisfied with the response, so he called the tribe again to meet, and now a score less one did tour the Air Route Traffic Control Center on the 11th day of the 11th month. And the tribe was wrapped in the garments of the winter season, which by the water called Puget Sound does not suffer the body as does the winter in the place called Schenectady. So the tribe girded themselves in warm clothing and heard Jack Bridges of IITRI say

Behold! for I have studied the Effects of Electromagnetic Pollution on Pacemakers. And it was now a full score and one that traveled on the 16th day of the first month to hear these words. And yet the leader would not rest, nor would he suffer the tribe to rest, calling them again on the first day of the season the Romans called Vernal to hear Dr. David Strawe of the clan of Boeing teach about Modeling of Unwilling Cables, and the tribe of EMC was greatly enlightened. So the tribe by the shores of the Sound of Puget are prospering and looking forward to greater meetings called by the leader Thomas Herring.

NEW JERSEY COAST

And thus it was that certain members of the tribe of EMC did settle in and around a Fortress called Monmouth, and because of the good works performed at the Fortress, the tribe of EMC waxed mighty. And they met on the fifth day of the last month to join in celebration of the holiday, and there were one score and ten, and the Leader did state that all present did enjoy a full measure of good spirits. And the Leader called the tribe to an assembly to hear Gregory Zwarycz of the clan of Honeywell. And the man Gregory is wise indeed, for he causes the shining silver machines to rise in the air at his command. And he did speak about Research Aircraft Visual Environment, and this happened in the dining halls of Rosie of Grady in the village of Eatontown, and it was the 15th day of the second month. And the Leader claims that in the third month a Woman of Valor who has reached the pinnacle of studies was the great teacher, and the Leader exhorted all the members of the tribe to be at the meeting. And lo! the tribe at the fortress of Monmouth is prospering.

SAN FRANCISCO

And the members of the tribe of EMC who abide where the ground shakes and mighty bridges span the water near the city have met on the 20th day of the 11th month, and one score and ten were enlightened when William Berger of the clan of Philco-Ford WDL did speak on Semiconductor Failure Analysis. And the sages Dick Krasner of the clan of National Semiconductor, and Alan K. Johnson of the clan of LMSC did assist the man William in his speaking. And on the 18th day of the second month still another group lead by Dr. Roy Amara who is also the Leader of the clan of the Institute of the Future, and Fred Nichols who is the leader of the clan of LectroMagnetics, and Dr. Harold Gumbel of the clan of Philco-Ford WDL did teach on Technological Forecasting and Assessment and the Status of the EMC Engineer. Thus it was that the tribe of EMC does not let the occasional shaking of the ground cause them to falter.

WASHINGTON, D.C.

And it came to pass on the 17th day of the fifth month that the members of the tribe of EMC who assist the leaders of the nation did convene and hear Mr. David B. Colby of the Office of Telecommunication Policy. And the sage David was very wise, for he was able to explain "OTP Circular 11-A Policy to Assist Planning for Use of the Spectrum Space". And the leaders of the tribe did choose new leaders from among the multitude, and they were William Gamble as Leader, and John Leopold as Assistant Leader, and George Hoggin as Scribe. And the tribe did celebrate the meeting with the sage David with a feasting and with strong drink. And the members of the tribe did drink and eat, and were satisfied.

CHICAGO

And there was an exceeding great city, and it was so large that one would journey three days from end to end. And myriads of people sojourned there, and it was on the shores of a great lake. And there was fear in the councils of the tribe of EMC that the members in the great city had deserted the tribe. But there came a message from the Leader, Steve Smandra, saying Behold! we are yet part of the tribe, and therefore should you still consider us. And the Scribe, Howie Wolfman, did report that on the 14th day of the second month the tribe did meet to learn about the FCC Van. And the Scribe Howie did indicate that the tribe was recovering from the great Convocation in the previous year, and that the elders of the tribe did confuse and confound the name of the Scribe Howie with the name of the Leader Steve, and that messages were transmitted incorrectly. And the Scribe did indicate that all is well with the tribe in the big city.

MOHAWK VALLEY

And the tribe of EMC did adopt the name of the warriors with the bronze skin, and their members of the tribe were active in pursuing the goals of the tribe. And the tribe did convene on the 10th day of the 10th month of the previous year, and they did hear Dr. Demetrius T. Paris of the Technology School of Georgia, and he did speak on the Graduate Engineer Production, Enrollments, Trends and Placement to one score and ten. And on the 12th day of the 12th month, Dr. Kendall Su of the Technology School of Georgia did speak to one score and four on an Electrical Engineer's View of the Chinese Written Language, and the members of the tribe became knowledgeable, for the topic was indeed difficult. And on the 22nd day of the third month did arrive Mr. Delmar C. Ports, who is Vice President of Engineering of the National Cable Television Association, and he did speak to one score and nine on CATV. And this was a subject of interest

to all men, for it would provide learning and entertainment in their leisure hours. And still the leaders of the tribe persevered, and they rewarded the multitude with a discussion wherein Professor James Whalen who is a teacher at SUNY Buffalo, and the members of the tribe did prophesy on RF Pollution and the future of the technology. And this was on the 17th day of the fifth month. And the prophesies are shrouded in mystery, for no man can predict the future. And the tribe did select new leaders, and they are Thomas Baldwin of the clan of Atlantic Research who is the Leader, and Gerald T. Capraro of the clan of Rome Air Development Center who is the Surrogate Leader, and Kenneth R. Siarkiewicz of the clan of Rome Air Development Center who is the Scribe. And the tribe prepared for the changing of the seasons and for the continuing of their good works.

METROPOLITAN NEW YORK

And in the greatest city there was a mighty grouping of the tribe, and they do convene one time every new moon. And in the multitude of their meetings they do tap new sources of wisdom, and in their wisdom they all do become wise men. And their meetings were held on the 15th day of the 11th month, in which they learned Radiation Hazards Measurements, and their teacher was E. E. Aslan of the clan of Narda, and on the 13th day of the 12th month the teacher, A. G. Zimablatti taught on the methods of conducting the Great Symposium in the summer, and on the 17th day of the first month the tribe did consider the protection of the materials of the tribe from the great electric spark in the sky, and on the 21st day of the second month the tribe did ponder the Philosophy of Tests. And the teachers for these two meetings were from the clan of Grumman, and these men are wise indeed as they are skilled in the manufacture of the great silver birds that carry men through the Heavens. And in the third and fourth month and even unto the fifth month were there meetings, and members of the tribe became learned in the conducting of the Great Symposium. And in the sixth month the Great Symposium took place, and members of the tribe from the far corners of the earth convened and paid homage to the elders and wise men of the tribe. And the wise men taught and prophesied and the members waxed mighty in their knowledge.

PACIFIC AREA COMMITTEE

And there was a mighty ocean, so great that no man could cross it alone. And in the center of this ocean there were islands, and their names were in beautiful but alien tongues. And on the island named Hawaii there lives and works a man wise in the ways of EMC. And this man did or-

ganize and establish the tribe of EMC in all the islands of the great ocean, and in the lands on the western shores also. And this was mighty undertaking, as the men of the tribe were many cubits distant one from the other. And yet meetings of the tribe were held, and the work progressed. And on the fifth day of the second month the tribe did meet and heard the guest teacher Dr. Minozuma, and he did teach on Radio Noise Interference for Frequency Management--Automobile Radio Noise and its Suppression Methods, and on the 18th day of the fourth month again the tribe met on the island, and the teacher was Richard Snell, and he did teach on the leaders and their duties in the works of the tribe that live on the islands of the ocean. And the warm winds did blow from the ocean, and all men basked in the warm breeze, and the sounds of the musical instruments with strings of steel were heard, and EMC was assured.

And thus it came to pass that this is the last column I will be writing. It's been a wild five years--FIVE YEARS--that has seen me through three jobs, and has seen the rise and fall of EMC Chapters all around the country. But now I'm just about out of the EMC Business, and it's really tough to follow it as closely as a Group Newsletter column requires. With a fairly firm hand (but with just a trace of catch in my throat) I pass the guidon to the new Associate Editor. To all who have sent me news and stuff--thank you. To all who have sent best wishes--thank you too. And best wishes from here for bigger and better EMC!

NOTICE #5 TO MIL-STD-461

Issue dated 6 March '73 and circulated through EIA G-46 EMC Committee. Notice is applicable to mobile electric power (MEP) and supersedes MEP requirements of Notices 3 and 4. Preparing activity - Navy - under project EMLS 0049, released without the benefit of review by Industry. MS-461A/462 Revision is scheduled for release between June and Sept. '73. Expanded introduction, intent of document for tailoring to specific use system and unique test methods for hand tools, pwr lines, MEP and jet engines are expected to be most significant revisions. MS-449D dated 22 February '73 should be available shortly. It is written in the format to be included in MS-462 for similar test procedures. MIL-HDBK-232 "Red/Black Handbook" dated 14 November '72 is now available. MIL-HDBK-235 release scheduled for June, EM Radiations, Environ. Consid. for Design & Procurement of Electric Equipment; 3 part document, 2nd and 3rd parts classified.

BOOK REVIEWS

Nomographs for Electronics, by Robert L. Peters, 276 pages cloth bound \$27.50, Cahner Publishing Co., 89 Franklin St., Boston, Mass. 02110, 1972

This is a collection of 131 nomographs by the author that had appeared in a number of periodicals serving the engineering community. They are designed for the practicing engineer for immediate application in solving engineering problems.

The book is organized into 12 chapters to cover the following subject areas; AC and DC networks, transistors and tubes, time dependency, magnetic design, control systems and response, heat, capacitors, delay lines, filters, inductors and solenoids, relays, motors and generators.

According to the author, the input-output relationships in the nomographs presented in this book have been optimized to minimize reading error. Many of the nomographs provide better accuracy than obtained from the slide rule and the answers that are provided are suitable for use in varied engineering situations. Most of the nomographs are linear alignment graphs. The very few exceptions are not difficult to use. The author has employed a system of handling the scale magnitudes with positive or negative exponents of the base ten. This allows a wide range of values for the parameters involved in each problem.

Each chapter is introduced with a list of abbreviations and symbols. These are followed by a section of equations on which the nomographs are based. Most of the nomographs can be used for more than one type of problem. The organization of the material in the book has been carefully planned. Nomographs can be located through the table of contents or by reference to the "Index and Nomograph Locator" in the back of the book.

After reviewing this book, one is tempted to equate the nominal investment for the book against the price of a minicomputer capable of a much more universal application including even balancing the check book. Admittedly, there are a number of nomographs or equations in the book that will push the lower price range minicomputer beyond the range of its capability, but it seems clear that many nomographs will find it hard to hold their own against the little computer.

James S. Hill
RCS Service Company
Springfield, Virginia

Contemporary RF Enclosures by Erik A. Lindgren, 108 pages, cloth bound. Copyright 1967 by Erik A. Lindgren, available from Erik A. Lindgren & Associates, Inc., 4515 North Ravenswood Avenue, Chicago, Ill. 60640

This treatise on shielded enclosures was prepared by the author in support of his claims for the superiority of the double electrically isolated room. The author has developed a patented method of construction in demountable sections. This enables simple construction methods for a complex type structure as well as ease of demounting for relocation of the room.

Erik Lindgren has long been an advocate of the double electrically isolated shielded room which is constructed as a complete inner shield enclosure within a complete outer shield enclosure. Even the door maintains the electrical isolation of the two shields. Complete isolation can be maintained but, in most practical applications, the inner and outer shield walls are connected together at the point of entrance of the power lines and also grounded at that point.

The author documents his case of the double isolated shielded room by including nine complete test reports of measurements on the types of rooms mentioned above. The measurements were made on rooms using various shielding materials such as 3 ounce cooper, 24 gauge steel, cooper screen, bronze screen, as well as combinations of copper and steel sheet material. All of the shielding effectiveness tests were reported to be conducted by an independent laboratory under the direction of a registered professional engineer.

The book also includes detail drawings which show the ingenious design of the patented panels which are used in the construction of the double electrically isolated shielded room. The frame clamps are designed so that the bolts do not penetrate the inner shield and the door latching hardware maintains isolation between the inner and outer handles while providing smooth operation of the door mechanism.

The author has presented a case to clear up some of the confusion which has existed regarding the relative merits of "cell type" and "double electrically isolated" shielded enclosures. He points out that the Naval Air Development Center Report on "Theory, Design, and Engineering Evaluation of Radio-Frequency Shielded Rooms"

MISCELLANY

purported to show that both the isolated and not isolated rooms had identically the same attenuation figures. This was not true because testing of a double electrically isolated RF room was not done at NADC as part of the report.

This book should be of interest to anyone who works in a shielded room or who is contemplating procurement of a shielded room for an EMI, EMC, or TEMPEST type measurement program.

NEW HOME STUDY COURSES IN ELECTRO-TECHNOLOGY AVAILABLE THRU IEEE

Four newly developed correspondence courses have just been made available. Prepared by the IEEE, Great Britain, course titles are: Field-Effect Transistors, Pulse-Code Modulation, Digital Instrumentation, Modern Control Theory.

The self-study courses are designed to provide an engineer who graduated between 5 and 20 years ago with opportunities to bring himself up to date in post-graduate subjects in electrical, electronics, and control engineering. Courses run continuously, and each student will be associated with an individual instructor who will advise and comment on his progress. Although the time a student can devote each week to his studies will vary, courses have been designed with the intention that individual lessons and their test questions should occupy, for the average student, about six hours and should be completed within two weeks. In this way the normal duration of each course will be in the order of 30 weeks.

Courses commence at a level appropriate to the final year of a modern 4-year degree course in electrical/electronics engineering. Corollary texts are recommended for each course. Certificates are awarded students who have satisfactorily completed all of the written work.

IEEE members living in North, Central, and South America may enroll in any of these home-study courses for the same tuition paid by overseas members of the IEEE—\$75.00 per course. The rate for non-IEEE members in the Americas is \$120.00 per course.

A syllabus of each course may be obtained by writing to: Education Registrar, IEEE, 345 East 47th Street, New York, N. Y. 10017

CONNECTOR ARRESTS LIGHTNING

A lightning arrester connector for use in aircraft and missiles is now in production. It is said to be small, rugged, fast responding, and simpler than past devices. Ordinary connectors provide a potential pathway for lightning energy into electrical systems. The new connector diverts lightning energy and other electrical surges by dielectric-stimulated arcing, accomplished by use of materials having a high dielectric constant. This contributes to a voltage breakdown between conductors. Sandia Science News, Vol. 7, No. 4, December 1972, Sandia Laboratories, Albuquerque, NM 87115. (From "Explosives & Pyrotechnics" Published by the Franklin Institute Research Labs)

BIBLIOGRAPHIES ON WALSH FUNCTIONS

Computerized bibliographies on Walsh functions are maintained by Mrs. J. N. Bramhall, Johns Hopkins University Applied Physics Laboratory, 8621 Georgia Ave., Silver Spring, Md. 20910; and by Mr. K. G. Beauchamp, Computing Center, Cranfield Institute of Technology, Cranfield, Bedford, England. Updated bibliographies are printed about once a year.

GEORGE UFEN LEAVES SIGNALITE

George R. Ufen has resigned effective June 1, 1973, as Western Manager of Signalite to become president of the recently incorporated G R U Asso. in Glendale, Ca. George was previously Western Manager for Fairchild Electro-Metrics and prior to this he was co-owner of an electronic manufacturers representative group.

G R U Associates is an electronic manufacturers representative firm. They will offer technical engineering sales in the EMP, transient, EMC/RFI and technical component areas in Southern California. Sandy Ufen has been appointed secretary of the Corporation.

SYMPOSIUM SNAP SHOTS

