

IEEE



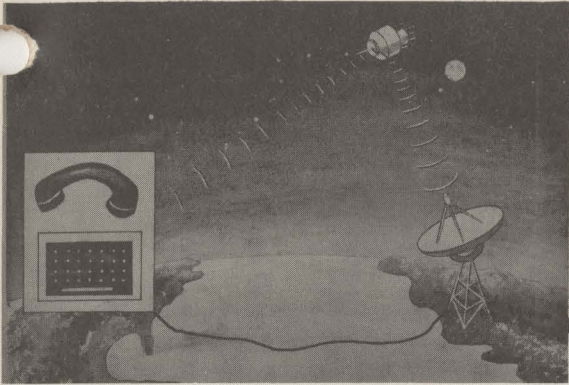
COMMUNICATION TECHNOLOGY GROUP

NEWSLETTER

Volume 4

Number 2

March 1967



COM TECH SESSIONS

IEEE Convention

CONTENTS

Message from the Editor.....	2
ComTech Awards.....	2
New ComTech Fellows.....	2
1967 IEEE International Convention.....	3-7
Committee Reports.....	7-8
Chapter News.....	8-12
The Network Hotline.....	13
General News.....	13-14
Calls for Papers.....	15

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MESSAGE FROM THE EDITOR



Gunther Karger, Editor
Pan American World Airways

This is the last time I shall write in this column as Editor of your Newsletter. I have enjoyed serving the ComTech Group and especially, bringing the news from National Committees, Conventions and Chapters to the entire membership.

With the support of the Associate Editors, and IEEE Headquarters, the Newsletter has been published on a regular basis each 3 months, initiated the NETWORK HOTLINE and revised the format to include a Communications picture on the cover.

I wish to thank Ron Slayton, our publications manager, Dave Rau, Ray Hellman, my former Chairmen, and Dr. Bill Jones our present ComTech Group Chairman for always giving their untiring support to the Newsletter function.

It is my wish to give continued support to the ComTech Group as I am on other Group and Institute Committees. As the incoming Chairman of the Canaveral Section, I invite you to call me when in the Cape Kennedy area.

I am now pleased to announce the appointment of Rollo Christensen of Radiation Inc. to Editorship. He has been our Associate Editor and has given excellent support.

I wish to thank him and Radiation, Inc. for assuming this important responsibility because it will require much personal effort and company support.

COMTECH AWARDS

Achievement Award

J. Z. Millar with the following citation, "For outstanding contributions to engineering and development in telegraph and radio relay systems."

Papers in the TRANSACTIONS

First Prize

"Demodulation of Single-Sideband Signals Via Envelope Detection," February 1966, Transactions, Page 22
H. B. Voelcker, Jr.

Honorable Mention

"Selective Fading Limitations of the Kathryn Modem and Some System Design Considerations," September, 1965, Page 320
P. A. Bello

Second Honorable Mention

"Optimum Angle Modulation," December, 1965, Page 452
C. J. Boardman and H. L. Van Trees

NEW COMTECH FELLOWS

H. H. Abbott
Captain Parker Arms
Bldg. 20, Apt. 22
125 Worthen Street
Lexington, Mass. 02173

H. A. French
259 Burnside Place
Ridgewood, New Jersey

I. J. Gabelman
225 Dale Road
Rome, N. Y. 13442

W. Y. Lang
Spring Lane
RD-1 Box 459
Towaco, N.J. 07082

J. S. Mayo
11 Donner Street
Holmdel, N. J.

J. L. Ryerson
Adriaan Goekooplaan 65
The Hague, Netherlands

H. M. Schlicke
8220 N. Poplar Drive
Milwaukee, Wis. 53217

H. H. Smith
408 O'Brien Court
Wycoff, N. J.

D. L. Solomon
Office of Sec'y. of Defense
P. O. Box 537
Alexandria, Va. 22313

H. E. Weppler
666 Shunpike Road
Madison, N. J.

The IEEE International Convention for 1967 will be held at the New York Hilton Hotel. There will be 72 sessions beginning at 9:30 a. m. Monday, March 20, and ending at 4:30 p. m., Thursday, March 23. The Communication Technology Group is sponsoring 9 sessions through this period of time. The Communication Technology Group sessions will be held at the New York Hilton Hotel in the Murray Hill Suite B, and the Sutton Ballroom South. The Communication Technology sessions with their subject matter are summarized below, with a complete listing of papers and authors following. The paper number is given after the title of the paper. The IEEE paper number is to be used for ordering copies of the papers.

- » Session 3 - Microwave Communications
Monday, March 20 - 9:30 a. m. - 12:00 noon
Murray Hill Suite B
- » Session 12 - System Interface for Global Communications
Monday, March 20 - 2:00 p. m. - 4:30 p. m.
Murray Hill Suite B
- » Session 18 - Space Communications
Tuesday, March 21 - 2:00 p. m. - 4:30 p. m.
Sutton Ballroom South
- » Session 21 - Wire Communication I - New Developments in Exchange Transmission
Tuesday, March 21 - 9:00 a. m. - 11:30 a. m.
Murray Hill Suite B
- » Session 30 - Wire Communication II - New Developments in Wire Communications
Tuesday, March 21 - 2:00 p. m. - 4:30 p. m.
Murray Hill Suite B
- » Session 39 - Advances in Data Communication, Telegraph Systems & Facsimile
Wednesday, March 22 - 9:00 a. m. - 11:30 a. m.
Murray Hill Suite B
- » Session 48 - Methods in High Speed Data Transmission
Wednesday, March 22 - 2:00 p. m. - 4:30 p. m.
Murray Hill Suite B
- » Session 57 - New Services for the Telephone User
Thursday, March 23 - 9:00 a. m. - 11:30 a. m.
Murray Hill Suite B
- » Session 66 - Reliability Field Experience in Electronic Switching Systems
Thursday, March 23 - 2:00 p. m. - 4:30 p. m.



for the...
CONVENTION!

Session No. 3
Microwave Communications
20 March 1967 - 9:30 a.m. - 12:00 Noon - Murray Hill Suite B

Session Chairman: H. G. Portz
Stromberg-Carlson Co.
100 Carlson Road
Rochester, N. Y. 14603

"Applications of a Continuous Measurement Refractometer"
IEEE Paper No. 19CP67-1074

W. VonHagen
Northern Electric Co.
P. O. Box 3511, Sta. C
Ottawa, Canada

"Design of Space Diversity Systems for Line-of-Sight Microwave Links" IEEE Paper No. 19CP67-1076

H. Makino, K. Morita
Nippon Telegraph & Telephone Co.
Musasino-Si, Tokyo, Japan

"An All Solid State Broadband 2 GC Communication System"
IEEE Paper No. 19CP67-1075

K. Yamazaki, K. Takeda,
M. Ogi, T. Sekizawa, J. Dodo
Fujitsu Laboratories
1015 Kamikodanaka, Kawasaki,
Japan

"Colorado River Storage Project Communication System:
IEEE Paper No. 19CP67-1077

A. H. Siniawsky
Stromberg-Carlson Co.
100 Carlson Rd.
Rochester, N. Y. 14603

"A Modularized 2-8 GC LOS/Troposcatter Communication Equip-
ment" IEEE Paper No. 19CP67-1078

J. Smith, D. Buscher
Philco Corporation
4700 Wissahickon Avenue
Philadelphia, Pa.

Session No. 18
Space Communications
21 March 1967 - 2:00 p.m. - 4:30 p.m. - Sutton Ballroom South

Session Chairman: Dr. J. Griffiths Barry
The MITRE Corporation
P. O. Box 208
Bedford, Mass. 01730

"Allocation of Multiple-Access Satellites to Multi-Antenna
Terminals" IEEE Paper No. 19CP67-1056

R. J. Heppe
A. L. Cohen
System Sciences Corp.
5718 Columbia Pike
Falls Church, Va. 22041

"Ranging the 1967 Mariner to Venus" IEEE Paper No. 19CP67-
1058

Robert C. Tausworthe
Jet Propulsion Laboratory
California Inst. of Technology
4800 Oak Grove Drive
Pasadena, Calif. 91103

"A Frequency Time-Hopping Random Access Technique for
Satellite Communications" IEEE Paper No. 19CP67-1003

J. H. Wittman
Sylvania Electronic Systems
Div. of Sylvania Elec. Prod. Inc.
Williamsville, N. Y. 14221

"Techniques for Altering the Properties of Re-entry Plasmas"
IEEE Paper No. 19CP67-1059

M. P. Bachynski
A. I. Carswell
B. W. Gibbs
RCA Victor Research Labs.
1001 Lenoir Street
Montreal, Canada

"Experimental Determination of Intermodulation Distortion
Produced in a Wideband Communications Repeater" IEEE Paper
No. 19CP67-1057

A. L. Berman
I. E. Podraczky
Communications Satellite Corp.
1835 K Street NW
Washington, D. C. 20036

Session No. 21
Wire Communication I - New Developments in Exchange Trans-
mission.
21 March 1967 - 9:00 a.m. - 11:30 a.m. - Murray Hill Suite B

Session Chairman: J. N. Petrie
Chief Trans. Engr.
Automatic Electric Co.
400 N. Wolf Road
Box 17
Northlake, Ill. 60164

"Design and Application of Multichannel Long Haul Electronic
Distribution System" IEEE Paper No. 19CP67-1060

W. T. Smith, V. P.
Superior Cable Corp.
Box 489
Hickory, N. C. 28601
and
C. E. Greene, V. P. Engrg.
L. Q. Krasin, President
PED, Inc.
610 Blanton Tower
3300 W. Mockingbird Lane
Dallas, Texas 75235

"Measurement of Unbalance Attenuation" IEEE Paper No.
19CP67-1062

L. O. Olson
Western Elec. Co., Inc.
777 North 50 Highway
Lee's Summit, Mo. 64063
and
J. C. Mau
General Telephone Co. of Fla.
610 Morgan Street
Tampa, Fla. 33601

"Field Evaluation of Cable Temperature Effects on Exchange
Loop and Trunk Plant" IEEE Paper No. 19CP67-1061

D. H. Potter
General Telephone Co. of Cal.
280 S. Locust Street
Pomona, California

"Compact Solid State Automatic Level Measuring Set" IEEE Paper
No. 19CP67-1063

Charles B. Crane, Jr.
Northeast Electronics Corp.
Airport Road, Box 425
Concord, New Hampshire

Session No. 30
Wire Communication II - New Developments in Wire Communi-
cations
21 March 1967 - 2:00 p.m. - 4:30 p.m. - Murray Hill Suite B

Session Chairman: D. M. Atkinson
General Engineer, Transmission
Bell Telephone Co. of Canada
620 Belmont Street
Montreal, Quebec, Canada

"A New System for Continuous Wide Band Negative Impedance
Coupling for Communication Facilities" IEEE Paper No.
19CP67-1064

Paul G. Lambidakis
Rural Electrification Admin.
Telephone Standards Div.
Washington, D. C. 20250

"Power Addition of Independent Random Variables Normally
Distributed on a DB Scale" IEEE Paper No. 19CP67-1024

Matthew Derzai
American Telephone &
Telegraph Co.
195 Broadway - Rm. 1128
New York, New York 10007

"The Role of Telecommunications in Supporting Domestic Goals"
IEEE Paper No. 19CP67-1072

Col. Harold R. Johnson, USAF
Office of Telecommunications
Mgmt.
Executive Office of the President
Washington, D. C. 20504

"A New 25 MHz Transmission Measuring Set for High Capacity
Coaxial Carrier Systems" IEEE Paper No. 19CP67-1073

H. H. Freytag
D. Seidel
Siemens America, Inc.
350 Fifth Avenue
New York, New York

Session No. 39
 Advances in Data Communication, Telegraph Systems and Facsimile
 22 March 1967- 9:00 a.m. - 11:30 a.m. - Murray Hill Suite B

Session Chairman: W. G. Vieth
 Western Union Telegraph Co.
 60 Hudson Street
 New York, New York

"Advances in the Facsimile Art During 1966" IEEE Paper No. 19CP67-1065

Warren H. Bliss
 RCA, Astro-Electronics Div.
 Princeton, New Jersey

"Advances in Display Telegraphy" IEEE Paper No. 19CP67-1066

C. R. Fisher
 Stromberg-Carlson Div. of
 General Dynamics

"Advances in Printing Telegraphy" IEEE Paper No. 19CP67-1067

W. Y. Lang, Consultant

"The Touch-Tone Telephone Transmission of Digital Information" IEEE Paper No. 19CP67-1068

J. H. Soderberg
 R. R. Campbell
 Bell Telephone Labs., Inc.
 Holmdel, New Jersey
 and
 F. E. Bates
 A. T. & T. Co.
 New York, New York

Session No. 48
 Methods in High Speed Data Transmission
 22 March 1967 - 2:00 p.m. - 4:30 p.m. - Murray Hill Suite B

Session Chairman: P. J. Mertz, Consultant
 66 Leamington Lido
 Long Beach, New York

"Visual Sensors in Space" IEEE Paper No. 19CP67-1069

J. J. Dishler
 RCA-Astro-Electronics Div.
 Princeton, New Jersey

"Ternary Phase Difference Modulation for Data Transmission in Telephone Networks" IEEE Paper No. 19CP67-1070

H. H. Voss
 Siemens Aktiengesellschaft

"A Novel Technique for High Speed Transmission of Data" IEEE Paper No. 19CP67-1071

Adam Lender
 Lenkurt Electric Co., Inc.
 San Carlos, Calif. 94070

"Synchronous-Asynchronous Data Converter" IEEE Paper No. 19CP67-1007

I. Deregnacourt
 Northern Electric Co., Ltd.
 Research & Development Labs.
 Ottawa, Ontario, Canada

"The Prevention of Transmission Buffer Overflow in Telemetry Data Compressors" IEEE Paper No. 19CP67-1021

J. E. Medlin
 Lockheed Palo Alto Research
 Labs.
 Dept. 52-40, Bldg. 204
 3251 Hanover Street
 Palo Alto, California

Session No. 57
 New Services for the Telephone User
 23 March 1967 - 9:00 a.m. - 11:30 a.m. - Murray Hill Suite B

Session Chairman: D. L. Solomon
 Office of the Sec'y. of Defense
 P. O. Box 537
 Alexandria, Va. 22313

"New Services for Residential Telephone Customers" IEEE Paper No. 19CP67-1047

R. E. Fortenberry
 American Telephone & Telegraph Co.
 195 Broadway
 New York, New York

"Implementation of New Services for Residential Customers" IEEE Paper No. 19CP67-1048

W. Whitney
 Bell Telephone Labs., Inc.
 Rm. 3W29
 6200 East Broad Street
 Columbus, Ohio
 and
 A. Zarouni
 Bell Telephone Labs., Inc.
 Rm. 2F611
 Crawford Corners Road
 Holmdel, New Jersey

"Custom Calling Services" IEEE Paper No. 19CP67-1049

M. H. Bland and W. H. Stewart
 Stromberg-Carlson Corp.
 100 Carlson Road
 Rochester, New York

"New Services in PBX and Centrex Systems" IEEE Paper No. 19CP67-1050

V. W. Witkus
 American Telephone & Telegraph Co.
 195 Broadway
 New York, New York

"Implementation of New Services in PBX and Centrex Systems" IEEE Paper No. 19CP67-1051

D. L. Rodkin
 Bell Telephone Labs., Inc.
 Holmdel, New Jersey

Session No. 66
 Reliability Field Experience in Electronic Switching Systems
 23 March 1967 - 2:00 p.m. - 4:30 p.m. - Murray Hill Suite B

Session Chairman: Sherman B. Weiner
 Stromberg-Carlson Corp.
 100 Carlson Road
 Rochester, N. Y.

"Field Experience with Quasi-Electronic Telephone Switching Systems" IEEE Paper No. 19CP67-1052

H. Willrett
 Standard Elektrik Lorenz AG
 Stuttgart, Germany

"Reliability and Field Experience of Electronic Switching Systems" IEEE Paper No. 19CP67-1053

W. P. Karas
 Stromberg-Carlson Corp.
 100 Carlson Rd.
 Rochester, N. Y.

"Early No. 1 ESS Field Experiences" IEEE Paper No. 19CP67-1054

(Part 1 - Two-Wire System for Commercial Applications)
 G. Haugk
 Bell Telephone Labs.
 Naperville, Illinois
 (Part 2 - Four-Wire System for Government and Military Applications)

Howard N. Seckler
 Bell Telephone Labs.
 Naperville, Illinois

"Electronic Reliability in the Field" IEEE Paper No. 19CP67-1055

Trevor F. A. Urben
 John Lawrence
 British Post Office
 2 to 12 Gresham Street
 London, E.C. 2, England

COMMITTEE
 REPORTS



COMMUNICATION SYSTEMS DISCIPLINES

Chairman: J. E. Schlaikjer
 ITT, New York

Revised Field of Interest is announced!

Overall systems engineering, including integration, simulation, analysis, control and adaption by logical processes, economic factors, composite or unique total systems, special multiplexing methods, channel characterization, signal input/output modes, error control, and other point-to-point system aspects.

CALL FOR PAPERS

The IEEE Committee on Communications System Disciplines is endeavoring to stimulate for presentation at its sessions and for publication, a new class of papers dealing with areas that appear to be of increasing future import. It requests that each reader of this notice search his mind and, if he believes that he can supply useful information in any of the following fields, the Committee requests that he send a 50-word summary plus a 100-to-500 word abstract of his proposed paper to:

Raymond C. P. Hinton, Papers Chairman
 IEEE Committee on Communications
 System Disciplines
 Communications Systems, Inc.
 Route 17
 Paramus, New Jersey

The Group promises earliest possible presentation of such worth papers.

Areas currently of interest are:

- 1) Tactical Communication and Its Relationship to Global Networks
- 2) Improvements for HF Circuits
- 3) Error Control as Applied to Communication Networks
- 4) System Interfacing Problems for Global Networks
- 5) Interfacing Considerations for Integrated Tactical Systems
- 6) Communications for On-Line Computers with Areas Treating
 - a) Wide band digital data - 48 khz and greater
 - b) Narrow band digital data on 4 khz voice frequency lines
- 7) Media Simulators
- 8) Computers as Aids to Design of Communication Systems
- 9) Computers as Parts of Communication System

The subjects covered were:

- Characteristics of tactical communications circuits.
- Communication requirements by users of tactical communications circuits.
- Error control.
- Interface of tactical and global communications.
- Point to point communications between vehicles in motion.
- Switching in the tactical area.
- Actual experience in data transmission.
- Air-to-air, air-to-ground, ground-to-air communications.
- Airborne radio relay.
- Very large airborne relay stations.
- Command and control from airborne stations.
- Communication satellite for tactical and underdeveloped areas.
- Tests of error control over high frequency circuits.
- Antennas for tactical communications.
- Radio frequency interference problems.

A report on this workshop will be given in the next Newsletter.

TELEMETERING COMMITTEE

Chairman: F. Vinton Long
Shreveport, La.

The Telemetry Committee is sponsoring sessions at the IEEE Winter Power Conference, NTC '67 and ICC '67. We particularly need papers for ICC '67.

We are coordinating efforts in the standardization field and attended a TSCC meeting at Huntsville, Alabama last month as an observer. We have been invited to present a short resume in industrial telemetry at their next meeting.

It should be brought out that although this Committee, and the papers it sponsors and edits for the Transactions have been largely industrial, that we are interested in papers in other areas, such as Space, provided the subject matter is concerned with telemetry technology.

We are desirous of obtaining vigorous, hard-working members for this committee.

STANDARDS LIAISON

Chairman: W. Y. Lang
Towaco, N. J.

Those of us working in the field of communications know full well the need for definitions of terms which are used in our papers and in our talks with others. Only if we have good definitions which are understood by others can we communicate.

Mr. Blackmon's letter of October 11th and Mr. Anderson's letter of October 19th gave information on the revision of definitions of terms used in our technology. These letters were followed up by a letter from our Chairman, Dr. W. B. Jones to the Chairman of all Technical Committees asking that they take part in this task.

With the great expansion of the field from voice and telegraph to the use of the same facilities for data which can be from machine to machine, man to machine or vice versa, there have been many new terms introduced. In some cases they cover new items or techniques, in other cases they are new words which are already defined in C42 for a term which has been in use for years. The task which has been put up to us collectively is no simple one and we will require the help of all of the committees to do a job which will be a credit to our Group.

Some of the Technical Committees are already setting up the nucleus of working groups and it is requested that all others do likewise. If there are any questions or conflicts the Standards Liaison may get in touch with me or with Mr. J. J. Anderson at Headquarters.



CHAPTER NEWS



COMTECH CHAPTERS

Alabama
Atlanta
Baltimore (Inactive)
Boston
Canaveral
Chattanooga
Chicago
Columbus
Connecticut
Dallas
Denver-Boulder
East Tennessee
Florida West Coast
Long Island
Los Angeles (Metro)
Mohawk Valley
Nebraska
New Jersey Coast
New Orleans
New York (Metro.)
North Jersey
Oklahoma City (Inactive)
Orlando
Philadelphia
Phoenix
Sacramento
San Francisco
Seattle
Shreveport
Southeastern
Michigan
Syracuse
Toronto
Twin Cities
Vancouver, B. C.
Washington, D. C.

ALABAMA

On November 14, Mr. J. A. LeCroy of the Southern Bell Telephone Company talked on the subject of "Community Antenna Television Systems." Twenty-two people attended the meeting.

ATLANTA

Mr. P. F. Sennewald, associated with Belcomm, Inc. out of Washington, D. C., discussed the subject of a "LUNAR LANDING MISSION" at the November 28 meeting. Twenty-six people were in attendance.

At the January 16 meeting, Dr. Bernard Kaiser of RCA discussed the present and future of SPACE PORT communications which was combined with an interesting slide presentation. Approximately 100 members and guests were present. Your Associate Editor, along with Mr. J. E. Darnieder of the Teletype Corporation, had the good fortune of being in Atlanta and were invited as guests of Messrs. Mort Forrest and Eldred Huff of Southern Bell. Please accept our heartiest congratulations for a well-planned program combined with a timely subject of discussion.

CANAVERAL CHAPTER

The Canaveral Chapter of the Communication Technology Group had its last meeting on 23 January. Mr. John Berry of the Southern Bell Telephone and Telegraph Company gave a talk on WIDEBAND DATA TRANSMISSION. The technical meeting was held at Ramon's on the Causeway, Cocoa Beach, Florida, where Mr. Berry discussed the evolution of the Bell Telephone Company wideband data transmission set. A demonstration of the equipment and inspection of Bell Telephone toll facilities followed the meeting at the nearby Bell Telephone Company facility.

The next meeting of the Canaveral Chapter will be held on 27 March at the Pines Restaurant, Indian Harbor Beach, Florida, at which time Mr. B. L. Crew will give a talk on INFORMATION RETRIEVAL - NO INDEXING - NO PROGRAMMING. Mr. Crew is with General Electric Company of Daytona Beach, Florida, Data Utilization and Pattern Recognition Field.

At the meeting of 23 January a slate of officers was submitted by the Nomination Committee for the next year. Mr. Gunther Karger, Nomination Committee Chairman, presented the following names to the Chapter Chairman, and the election of officers for next year will be held during the 27 March meeting. In addition to these nominees, nominations may be submitted from the floor at this meeting. Those nominated must be members in good standing of the ComTech Group and must consent to serve.

Rollo E. Christensen - Chairman

Mr. Christensen received his BSEE from Northwestern University in 1955. He is director of Data Systems Marketing with Radiation Incorporated, which he joined in 1961 as marketing engineer, later becoming marketing manager. From 1957 to 1961, he was with Ampex Corp., as engineering representative and district manager. From 1955 to 1957, he held the position of electrical engineer at Northwestern University in the Aerial Measurement Laboratory.

His professional society memberships include AIAA, ISA, and he was a member of the IRE from 1954 to 1962. With the IEEE Communications Technology Group, Canaveral Chapter, he has been secretary and publicity chairman since 1965.

John J. Kolarcik - Vice-Chairman

Senior Communications Systems Engineer (MSEE) with RCA Service Company, Communications Project, Kennedy Space Center, Florida. Mr. Kolarcik has had more than 13 years experience in the advanced communications field. Experience includes RF transmitter, digital communications, and Command and Control systems work. Responsibilities concerned systems planning projects, tests, studies, analysis, and design in analog and digital systems from VLF to UHF.

Dr. Arnfinn M. Manders - Treasurer

Dr. Manders is associate professor in the Department of Electrical Engineers, University of Florida GENESYS. During 1962 to 1964, he was consultant for the SEC Electronics, Brooklyn, New York, and the MIT Lincoln Laboratory, Lexington, Massachusetts. Also, during this period he was assistant professor at MIT. During 1961 and 1962, he was consultant for Western Electric in New York City and instructor at Polytechnic Institute of Brooklyn. In 1959 to 1960 he worked as senior engineer for ITT Laboratories, Nutley, New Jersey.

He is a recipient of the Fulbright Travel Grant. His memberships in professional societies include: Norwegian Engineering Society, Eta Kappa Nu, Tau Beta Pi, and Sigma Xi.

William H. McElveen, Jr. - Secretary

Mr. McElveen has worked for Southern Bell Tel. and Tel. Co. since 1962 in Jacksonville, Orlando, and Cocoa, and is presently a supervising engineer for the Cocoa Beach Group of the Melbourne District. He has attended and completed the Bell System Regional Transmission Engineering Course at Colorado University in Denver. He has worked for Callaway Mill Company as a plant engineer and for the Westinghouse Electric Corp. as a design engineer.

He is a graduate of the Georgia Institute of Technology, class of 1958, and is a member of the Florida Engineering Society and the Merritt Island Kiwanis Club.

CHICAGO

Prior to the business meeting held on January 12, Mr. R. W. LeForge of the Illinois Bell Telephone Company and a member of the Wire Communications Committee of G-19, presented a short talk on the Com. Tech. story, its national organization and the role played by the local chapters.

Copies of this talk may be obtained by writing to:

George Mack HQ 23-D
c/o Illinois Bell Telephone Company
225 West Randolph Street
Chicago, Illinois 60606

Mr. John Fulenwider, Chairman of the Chicago Section G-19 opened the business meeting and asked for items from the floor. Several of these might be of interest to the other Com. Tech. Sections.

Discussion Items:

1. The Chicago Section of G-19 voted to go on record in favor of retaining the present fall election of officers schedule. This is opposed to the National Committee proposal to change officers on January 1st. The advantage of the present arrangement, it was felt, permits the officers to complete the program they have scheduled for the entire season of events. The proposed arrangement would necessitate a change of leadership half-way thru the program.
2. The Chicago Section of G-19 voted to go on record in favor of more active participation in the Com. Tech. Symposium held annually in Chicago in connection with the National Electronics Conference.
3. The Chicago Section of G-19 voted to establish an education committee. This committee will set up seminars on timely subjects in the field of communications. It is recognized that coordination with the Chapter Committee is essential to the success of this undertaking.

DALLAS

Twenty-five people were in attendance at the December 1 meeting. The speaker, Mr. N. P. Gluth of LTV Electro-systems, discussed the characteristics of "A High Reliability Miniature Airborne Page Printer."

LOS ANGELES

A symposium entitled "Computers and Communications - Their System Interaction" was held on January 19, 1967, at the Miramar Hotel in Santa Monica. This worthwhile symposium which was jointly sponsored by the IEEE Communication Technology and Computer Groups commenced with the morning plenary session at 8:30 a.m., was followed by parallel afternoon workshop sessions and was concluded with an evening panel discussion. There were over 500 in attendance. The program was as follows:

Morning Session

1. Symposium Introduction and Objectives
Mr. Irving Cohen, Symposium Chairman
Informatics, Inc.
2. Considerations in Establishing an Information Network
Mr. Harvey J. McMains
A. T. & T.
3. Problems Encountered in EDUCOM Networks Planning
Dr. J. C. R. Licklider
IBM/MIT
4. The Effect of Time-Sharing on Fourth Generation Architecture
Mr. Paul Byrnes
Sperry Rand, Univac Division
5. The Influence of Computers on Communication System Design
Mr. Kenneth Iler
General Telephone & Electronics Service Corp.

Afternoon Workshops

1. Broadband Techniques for Inter-Computer Communication
Leader: Mr. Donald Ashford
Lenkurt Electric Co., Inc.
2. Trends in Message and Circuit Switching
Leader: Mr. William Keister
Bell Telephone Labs.
3. Commercial Time-Sharing Systems
Leader: Mr. James Babcock
Allen-Babcock Computing Corp.
4. Models for Time-Shared Processing
Leader: Dr. Leonard Kleinrock
U. C. L. A. Engineering Department
5. The Architecture of Computer Hardware and Software for Communications Environment
Leader: Dr. Gene Arndahl
IBM - San Jose
6. Economic Factors of Information Network Planning
Leader: Mr. Robert L. Francisco
Western Union
7. The Social Effects on Computer Networks
Leader: Dr. Marvin Adelson
System Development Corp.
8. Console Design
Leader: Dr. Douglas C. Engelbart
Stanford Research Institute

Evening Panel Discussion

The Information Network Concept
Moderator: Dr. J. C. R. Licklider
IBM/MIT
Panelists: Morning Speakers and Workshop Leaders

NEW JERSEY COAST

The programs for the first three meetings of the 1966-67 season were as follows:

October 19, 1966: Dr. W. Y. Pan of RCA's Advanced Communications Laboratory gave a talk on "UHF and Microwave Microelectronic Techniques." The meeting, held in the Little Silver Fire House, Little Silver, N. J., and the pre-meeting dinner were well attended.

December 14, 1966: Dr. William H. Ninke of the Information Processing Research Department at Bell Telephone Labs spoke on "Man-Machine Communications." This meeting, attended by 34, was held in the Little Silver Borough Hall, Little Silver, N. J. and the pre-meeting dinner was held at the Crystal Brook Inn, Eatontown, N. J.

January 18, 1967: (Joint Section/ComTech meeting)
Dr. Richard G. Smith of the Solid State Devices Laboratory of Bell Telephone Labs at Murray Hill discussed "Nonlinear Optical Effects" and their application to laser technology. The meeting and dinner, held at the same locations as above, were also well attended with 8 at the dinner and 30 at the meeting.

The final two meetings of the season will be held on May 17 and June 21.

Our chapter has been honored this year by the fellow award to two of its members for outstanding achievements as follows: H. H. Abbot, for contributions to PBX switching systems and J. S. Mayo, for contributions to development of PCM systems. Our heartiest congratulations to both.

NEW ORLEANS

Inadvertently, the names listed in our October 1966 issue were those of the New Orleans Section Officers. The following listing covers the New Orleans Communication Technology Group Officers:

Chairman: Mr. Glen E. Bell
South Bell Telephone and
Telegraph Company
Room 553
1215 Prytania Street
New Orleans, Louisiana 70140

Vice Chairman: Mr. A. J. Benintende
Southern Bell Telephone and
Telegraph Company
6405 Ithaca Street
Metairie, Louisiana 70003
504-529-9608

Secretary: Cdr. G. P. Sherburne
c/o Commanding Officer
8th Coast Guard District
Customs House
New Orleans, Louisiana 70130

Group Activity

On October 13, 1966, Mr. W. J. Gleason, Engineering Director - Gulf Coast Telephone Company, spoke to the New Orleans Chapter on "An Off Shore Communication System." Mr. Gleason's subject dealt with the unique communication system being developed in the Gulf of Mexico to serve the Petro-Chemical industries located along the Coast of Louisiana. There were 64 members and guests in attendance.

At the December 15, 1966, meeting - Mr. J. D. Styers, Senior Staff Engineer, Southern Bell Telephone and Telegraph Company, will discuss the Electronic Switching System currently being introduced into the Bell System Tele-Communications network.

NEW YORK

Switching Systems and Their Applications

The lectures for the last two dates of the Education Committee's winter series of "Switching Systems and Their Applications" have been rearranged. The six part winter series started on January 17, 1967.

Mr. S. Levine will discuss "Electronic Central Office Systems" on February 14, 1967. Mr. Levine graduated from CCNY in 1952 and joined the Western Electric Company as Equipment Engineer. In 1961, he was loaned to the Bell Telephone Laboratories to work on No. 1 ESS. Returning to Western Electric in 1963, he became instructor at their Graduate Engineering Education Center specializing in ESS courses. In 1966, he was promoted to Department Chief.

Mr. R. G. Palla will lecture on Electronic PBX Systems on February 21, 1967. Mr. Palla graduated from the Union College in Schenectady with a BSEE in 1947. Since 1952, he has held various positions in the Bell System. At present, he is with the AT&T Company Customer Engineering and is primarily concerned with 101 ESS.

The first four lectures on Application of System Building Blocks, Memory, Electronic System Elements and Programs will be presented by Professor R. A. Anderson of the Newark College of Engineering. For Professor Anderson's biographical sketch, see the October issue of Monitor.

Anyone desiring further information on the Education Committee series please write Mr. K. I. Iler, General Telephone and Electronics Service Corporation, 730 Third Avenue, New York, New York 10017.

Inspection Trip

A trip through some of the operations of the Long Lines Department of the American Telephone and Telegraph Company at 32 Avenue of the Americas, New York City, is being sponsored by the Communications Technology Group of the New York Section IEEE for February 17, 1967 at 9:45 a.m.

The trip, which will last about 2-1/2 hours, will include a visit to the Network Management Control Center responsible for the operation of the vast communication network of circuits and switching equipment that serves customers with 81 million telephones and about 60,000 teletypewriter machines. On an average day, this means handling more than three and a half million messages. In order to explain the operation of the Center, the visit will include demonstration, slide talks and exhibits.

Energy Sources for Communications

A series of five lectures on "Energy Sources For Communications" will be presented by the Communication Technology Group, New York Section, IEEE, on Monday nights beginning March 27. The lectures will cover theory of operation, available devices, application, advantages and limitations and economics of various energy sources.

Schedule of Lectures:

- 1 - March 27 - Fuel Cells
- 2 - April 3 - Solar Cells
- 3 - April 10 - Thermoelectric Devices
- 4 - April 17 - Thermionic Devices
- 5 - April 24 - Nuclear Techniques

The lectures will be held in the "Little Theatre" on the street floor of the New York Telephone Company at 140 West Street, New York City, from 7:00 to 9:00 P.M.

Registration is limited to 60 persons and must be made in advance. Registration fees for the series are \$5.00 for IEEE (or professional society) members, \$8.00 for non-members and \$1.00 for full-time students. To register, send a check or money order made payable to Communication Technology Group, New York Section IEEE to F. E. Sellinger, ADT Company, Inc., 155 Sixth Avenue, New York, 10013. A stamped addressed envelope must be included.

ORLANDO

The last reported meeting was held on November 29 with 34 members and guests in attendance. Dr. Elie Baghdady of AdCom, Inc., Boston, Massachusetts, was the guest speaker conducting a seminar on "Modulation Techniques."

PHILADELPHIA

Mr. J. A. Sosnowski, associated with the Philco-Ford Corporation at Blue Bell, Pennsylvania, discussed "Recent Developments in Vocoders" at the November 7 meeting. Twenty members and guests were in attendance.

SACRAMENTO

The Sacramento Com Tech Chapter has sponsored two meetings in its first year as an active chapter.

The first meeting held on October 13, 1966, featured a presentation by James Lashbrook, Section Technical Officer for the FAA, on the subject of RAPCON, Radar Approach Control. The talk was followed by a tour of the RAPCON facility at McClellan Air Force Base. Mr. Lashbrook explained that RAPCON was designed as an air traffic control aid which can pinpoint aircraft within a 60 mile radius.

The second meeting on December 8th featured a talk by Sergeant Dick Dolmseth of the California Highway Patrol. He discussed Auto-Stat, the Automatic Statewide Auto Theft Inquiry System, and provided a tour of the System at Sacramento. Auto-Stat uses a central memory-computer data processing unit which provides immediate access to stored data on automobiles, and was designed to improve the capability of the Highway Patrol in apprehension of auto thieves and recovery of stolen vehicles.

SAN FRANCISCO

"Steady-State Noise in Telecommunications" was the subject of the November 16th ComTech meeting at the Lockheed auditorium in Palo Alto. A panel of four speakers provided a presentation of basic concepts involved in an understanding of steady-state noise in telecommunications systems. The four speakers were Don Jones, Staff Engineer, Pacific Telephone and Telegraph Co., San Jose; Donald Green, Manager of Development Engineering, Lynch Communication Systems, Inc., San Francisco; Maurice Harp, Senior Staff Engineer, Lenkurt Electric Co. Inc., San Carlos; and Myron Ferguson, Senior Engineering Specialist, Electronic Defense Laboratories, Sylvania Electric Products, Mountain View.

This panel of four speakers provided a one-hour presentation of basic concepts involved in an understanding of steady-state noise in telecommunication systems. First, Mr. Don Jones discussed message channel noise in the telephone plant followed by Mr. Donald Green who talked about Carrier System Noise; Mr. Harp then discussed noise in the Microwave Radio System and Myron Ferguson concluded the series with a discussion of Communication Satellite noise considerations. A lively discussion followed the four talks.

On January 18, David Wright, Manager of Laser Advance Development at Spectra-Physics, Inc., Mountain View, California, addressed the Communication Technology Group on the subject of "Laser Potential, Real and Imaginary." The meeting was held at the Pacific Telephone Auditorium in San Francisco.

Mr. Wright discussed the fundamental characteristics of lasers and present day applications which include measurement, surgery, solving of special problems, and guidance of such operations as the Bay Area Rapid Transit tunnel across the San Francisco bay. He reviewed the properties of laser radiation and mentioned a few special communications applications.

SEATTLE

"Aircraft Communications Via Satellite" was discussed by Mr. L. Campbell of Boeing at the meeting on December 15, 1966. He pointed out the problems associated with the potential application of satellite communication relays to long-range aircraft communication and traffic control. He described one technique for providing a world-wide aircraft communication capability.

On January 26th, Mr. Wesley A. Bull of T.I.C. Engineers, Inc., addressed the ComTech group on the subject "Communications for Large Aperture Seismic Array (LASA) Project." He discussed the communication requirements of the "LASA" installation (in Montana) for the detection of underground nuclear tests.

SHREVEPORT

On November 22, a tour of the Precision Measurement Equipment Laboratory at the Barksdale Air Force Base was conducted by Sr. M/Sgt. Staley. Ten members and guests were in attendance.

SYRACUSE

The last reported meeting was held on October 18 with 28 members and guests in attendance. The guest speaker, Mr. Roy Anderson of General Electric Company, Syracuse, spoke on the subject "Satellite in Air Traffic Control."

The above meeting was preceded by a Syracuse Section meeting where Mr. David W. Holmes of the National Environmental Satellite Center gave a presentation on operational meteorized satellite programs.

TWIN CITIES

At the November 22 meeting, Mr. Royal T. McArdeell of Univac discussed the Northwest Airlines Communication and Reservation System. A tour of the Northwest Airlines Facility at the Twin Cities Metropolitan Airport was also included in the program. Twenty-seven members and guests were in attendance.

VANCOUVER

Mr. F. Anderson, associated with Cascade Electronics, Port Moody, B. C., discussed the subject of a "Cable Television System" at the November 28 meeting. Twenty-six people were in attendance.

WASHINGTON, D. C.

A meeting is planned for February 21, at which time Mr. Edwin Dyke of Radio Science Company will discuss the subject of "Loading and Prototype System Parameters for Bit Error Rate Prediction." The meeting will be held at the Pepco Auditorium preceded by a dinner at the O'Donnell's Sea Grill.

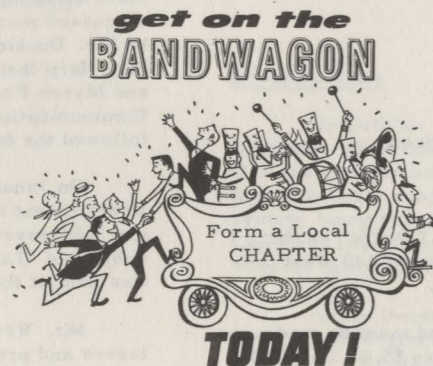
The speaker, Mr. Edwin Dyke, a well known designer of microwave relay and troposcatter equipment and systems, will discuss the problem of adapting normalized, standardized, system design criteria to a particular set of system requirements. As an example, it is often difficult to predict bit error rate of a working system. Occasionally there is difficulty in using imprecise definitions and graphical aids that have been published for normalized SNR including loading, threshold, etc. For the specialist who is wise in these matters, there remains a dual problem, (a) identifying the prototype system to which all standard BER calculations apply, and (b) identifying the system departures from prototype, and the effect of these nonprototype parameters on BER.

The prototype and non-prototype parameters involved encompass the modulation scheme, types of transmitter and receiver, all kinds of diversity, the noise distributions, and modern propagation factors.

Mr. Dyke was the first engineer to design microwave relays with klystrons, waveguides, passive reflectors, R. F. multiplex, waveguide diversity combining, and many other units which are now standard in the microwave relay. He has several published papers and numerous patents on the design of communications equipment and antennas. Other recent specialization includes propagation studies, service probability (in terms of \$ risk) and digital error rate predictions.

After his BSEE degree at University of California, he received a graduate diploma in business administration at the University of Chicago. He has been a member of eleven national or international technical committees, some of the most recent of these are CCIR, EIA, and Operational Fixed Microwave Council.

Mr. Dyke heads the consulting firm, RADIO SCIENCE COMPANY, in McLean, Virginia, which provides communications engineering support to industry in the Washington-to-Philadelphia area.



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+ THE NETWORK HOTLINE +
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Robert P. Henderson has been promoted to director, aerospace systems engineering of Radiation Inc.'s systems division.

The promotion was announced by Harold E. O'Kelley, vice president-general manager of the division.

Henderson, 36, formerly was section head for the aerospace systems engineering department. He has been employed by Radiation since 1963.

In his new job, Henderson will supervise the engineering and production of all airborne and spaceborne systems designed by Radiation.

GENERAL NEWS

JTAC ANNUAL PROCEEDINGS

THE JOINT TECHNICAL ADVISORY COMMITTEE sponsored by the Institute of Electrical and Electronics Engineers, Inc., and the Electronic Industries Association today released its Annual Proceedings (Volume XXVI) for the year 1965/66.

The volume consists of a comprehensive review of the activities of the Committee. It includes both correspondence and minutes, as well as pertinent articles dealing with problems of current interest in the area of radio frequency spectrum utilization.

The JTAC was established in July 1948 to "obtain and evaluate information of a technical or engineering nature relating to the radio art for the purpose of advising Government bodies and other professional and industrial groups."

The Committee has advised the FCC on many occasions--recommendations from two of its most recent reports are now being effected. Microwave diversity tests are being conducted as recommended in the JTAC report "Microwave Radio Relay System Reliability." And, as recommended in the JTAC report "Mobile Radio Services," the FCC has established an Advisory Committee for testing the sharing of TV channels by stations in the land mobile radio services.

In the national and international interests, JTAC has dedicated its efforts to improve and increase the utilization of the electromagnetic spectrum. Included in the Proceedings is a history of the Committee -- "JTAC Through the Years" which lists the past and present studies of the Committee, including its recent book RADIO SPECTRUM UTILIZATION prepared to present "a current view of our present state of knowledge of the electromagnetic spectrum as a natural resource and to present some of the problems... for the world community to solve if continued growth of spectrum use is to be developed...."

The JTAC PROCEEDINGS also includes two significant articles by Richard P. Gifford, Chairman of the JTAC Subcommittee on Electromagnetic Compatibility. The articles are titled, "EMC Revisited - 1966," and "Is it Time to Charge for the Free Ride?"

In the first article, Mr. Gifford describes recent JTAC activities in EMC. He examines a kaleidoscope of spectrum problems and concurrently details the technical or analytical tools that could be used in radio spectrum administration. He then takes a good look at the problem of spectrum pollution and the monitoring of "side-effects" -- a term derived by the JTAC EMC Subcommittee to describe those problems of community living other than interference in communication, arising from electromagnetic radiation.

In his second article, "Is it Time to Charge for the Free Ride?" Mr. Gifford develops further some of the concepts on spectrum utilization outlined in his previous article. He demonstrates in a succinct and graphic way that "dimensioning, and dollar value assignments can ease analysis of how best to plan for the future, and to see that the entire nation gets best total value from this so-called free natural resource."

Membership of JTAC is comprised of eight members: Mr. Dorman D. Israel (Chairman), Emerson Television and Radio Co.; Mr. Richard P. Gifford (Vice Chairman), GE; Dr. Harold H. Beverage; Mr. David R. Hull, EIA; Dr. John A. Pierce, Harvard U.; Dr. Emanuel R. Piore, IBM; Dr. Herbert Trotter, Jr., McGraw-Hill; and Mr. H. Edward Weppler, AT&T.

Copies of this publication are available from the JTAC Secretariat, 345 East 47 Street, New York, N. Y. 10017. The price is \$5 per copy.

Program

Monday, 22nd May Address of welcome by Mr. R. Gnägi,
Federal Councillor, head of the Department of Transport, Communications and Power

Survey of current problems of television technology, in national and international perspective

Tuesday, 23rd May Transmission Techniques:
Transmitting methods
Satellite television

Programme techniques:
Receiving methods
Communal aerials
Further projects and installations

Wednesday, 24 May TV as an aid to science and technology
Special applications, in particular
Eidophor demonstrations

Thursday, 25th May Studio techniques:
Programme production
Pick-up techniques
Recording
Relations with the film industry

Friday, 26th May Man, television and science
Looking toward the future (technical, sociological, educational aspects, with special regard to the developing countries)

In view of the growing interest raised by the Montreux Television Symposium, the Swiss Federal Government has deemed it advisable to discuss topical television problems on the ministerial level on the opening day.

Further information may be obtained from the Patronizing Committee:

- G. A. Wettstein
President of General Directorate of Swiss PTT, Berne
- E. Aisberg
President of the "Union Internationale de la Presse Radiotechnique at Electronique", Paris
- M. Bezencon
Director General of the Swiss Broadcasting Corporation, Berne
- J. Bourquin
President of the "Association Internationale des Etudes et Recherches sur l'Information", Lausanne
- Minister J. Burckhardt
President of the Swiss Schoolboard, Zurich
- R. Hyde
Chairman of the Federal Communications Commission, Washington, D. C.
- M. I. Krivosheev (USSR)
- M. B. Sarwate
Secretary-General of the International Telecommunication Union, Geneva

A special feature of the programme as outlined above will be the presence at the opening ceremony of the communications ministers of Switzerland's four neighbouring countries, who have been officially invited by Mr. R. Gnägi, Federal Councillor, to attend this event.

Membership Open on Education, Telecommunication Committees

Membership applications now are being received for two new NAM policy committees, authorized at the September meeting of the Board of Directors.

For your convenience, a form is included here.

Member companies with interests in the development of educational policy or telecommunications policy are urged to participate in the committees named.

Return to:
John McGraw, Secretary
National Association of Manufacturers
277 Park Avenue
New York, New York 10017

* Committee members must be employed by the member-company.

Please list as a member of the EDUCATION COMMITTEE *

Name _____ Title _____
Company _____
Address _____
City _____ State _____ Zip Code _____

Please list as a member of the TELECOMMUNICATIONS COMMITTEE*

Name _____ Title _____
Company _____
Address _____
City _____ State _____ Zip Code _____



* 1967 URSI Spring Meeting *
* Ottawa, Ontario, Canada *
* May 22-25, 1967 *

The 1967 URSI Spring Meeting will be held in Ottawa, Ontario, Canada during the period May 22-25, 1967 and will be co-sponsored by the U.S. National Committee and the Canadian National Committee of URSI. Papers are solicited in all the fields of interest to the Commissions of URSI:

1. Radio Measurement Methods and Standards
2. Radio Propagation in Non-Ionized Media
3. Ionospheric Radio
4. Magnetospheric Radio
5. Radio and Radar Astronomy
6. Radio Waves and Transmission of Information
7. Radio Electronics

Authors are invited to submit 200-word abstracts in duplicate, plus, if possible, 1000-word summaries (include one or two key graphs if necessary). The deadline for receipt of abstracts is March 15, 1967 and they should be sent to:

Prof. George Sinclair
Dept. of Electrical Engineering
University of Toronto
Toronto 5, Ontario, Canada

or to:

Prof. Alan Waterman
S. E. L.
Stanford University
Stanford, California 94305

Persons attending the Spring Meeting in Ottawa may wish to plan a visit to EXPO 67, Canada's World's Fair being held in Montreal, Quebec. As accommodations may be difficult to obtain in Montreal, arrangements should be made immediately to reserve rooms there. For information, write to:

LOGEXPO
EXPO 67
Cite du Havre
Montreal, P.Q., Canada

Information on room reservations in Ottawa for the Spring Meeting will be furnished at a later date.

1967 Sixth Symposium on Adaptive Processes
October 23-25, 1967 - Chicago, Illinois

The Sixth Symposium on Adaptive Processes, sponsored jointly by the IEEE Groups on Automatic Control, Information Theory, and Systems Science and Cybernetics, will be held in conjunction with the 1967 National Electronics Conference. Papers on various aspects of adaptive processes such as pattern recognition, mathematical models for adaptive and learning systems, adaptive sampling, automata theory, cybernetics, artificial intelligence, application of adaptive and learning processes to control, communication, and data processing, etc., are solicited. Authors are invited to submit five copies of complete manuscripts to:

Professor Lloyd M. Benningfield
Chairman, Sixth Symposium on Adaptive Processes
Department of Electrical Engineering
University of Missouri-Columbia
Columbia, Missouri 65201

before April 1, 1967. Each paper will automatically be reviewed for possible publication in the IEEE G-AC, G-IT, or G-SSC and C Transactions as well as for the Sixth Symposium. Authors are to indicate their choice of the above Group of Transactions for review purposes. Manuscripts prepared according to Transaction standards will encounter fewer delays and revisions in case of acceptance for publication in the Transactions. Successful authors will be notified before June 15, 1967. Papers accepted for the Sixth Symposium on Adaptive Processes will be published as part of the 1967 NEC Proceedings.



IEEE

COMMUNICATION TECHNOLOGY GROUP

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC.
345 EAST 47TH STREET, NEW YORK, NEW YORK 10017

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Institute of Electrical and Electronics Engineers

Group on Communication Technology

Special Announcement

To provide members of the IEEE Group on Communication Technology with the opportunity to get together and to meet newly elected Fellows of the ComTech Group, an informal luncheon will be held on Tuesday, March 21, 1967, during the 1967 IEEE International Convention in New York City, beginning at Noon. The luncheon will be held at the:

Hickory House
144 West 52nd Street
New York City,

located in the vicinity of the New York Hilton Hotel, headquarters of the Convention. It will be hosted by the New York Chapter of ComTech.

If you are interested in attending the luncheon, kindly submit the following form to:

Dr. A. B. Giordano
Secretary of ComTech

by March 10, 1967.

TO: Dr. A. B. Giordano
333 Jay Street
Brooklyn, New York 11201

I am planning to attend the ComTech Luncheon on Tuesday, March 21, 1967. A check for \$5.00 (payable to Anthony B. Giordano) is enclosed to cover the luncheon cost.

Name _____

Address _____

Tel. No. _____

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