



AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS



**SUMMER GENERAL MEETING**  
AND  
**AIR TRANSPORTATION CONFERENCE**

**BUFFALO, NEW YORK**  
**JUNE 22-27, 1958**

●  
**THE STATLER HILTON**

## GENERAL INFORMATION

For those who attend the Summer General Meeting this year in Buffalo, there awaits a full week of stimulating technical sessions and social entertainment. With the members of the Niagara Frontier Section as hosts, we can assure our guests a most enjoyable and well-spent week. Headquarters for the meeting is the Statler Hilton Hotel.

At our Annual Meeting, Monday afternoon, June 23rd, the Lamme Medal presentation to Harold S. Black will take place. On Thursday, June 26th, at the President's Reception and Banquet, the Honorable Donald A. Quarles, Undersecretary of Defense, will be presented with an Honorary Membership in the AIEE.

On the social side there will be an informal Sunday tea, the Niagara Panorama Trip, Melody Fair, and a President's Reception followed by an informal dinner-dance.

**Registration Fees Required.** In accordance with the policy set up by the Board of Directors, a registration fee of \$5.00 has been established for members and a fee of \$8.00 for nonmembers. This is to help make the meeting self-supporting. Student members and the immediate families of members will not be required to pay any fee.

**Information** on all features may be obtained at the registration desk. Efforts will be made to deliver telegrams and messages promptly. Members who expect to receive mail are asked to inquire frequently at the mail and registration desk.

**Technical Sessions and Discussions** are covered by the "Technical Sessions Guide," at the discretion of the presiding officers. Usually 10 minutes will be allowed for the presentation of each paper and 5 minutes for each discussion. To receive consideration for publication, discussion on TRANSACTIONS Papers in duplicate must be left with the Chairman and/or sent to Edward C. Day, Assistant Secretary, Technical Operations Department, AIEE, 33 West 39th Street, New York 18, New York, before July 11, 1958. Discussions received later may not be included, depending upon the printing schedule of the paper to which the discussion is directed. The original typewritten double-spaced copy, together with original illustrations as inked tracings should be submitted.

**Advance Copies of Papers** may be purchased by members at the Technical Papers Desk at the uniform price of \$4.00 each (\$.80 each for nonmembers). Only numbered papers are available. Mail orders, particularly from out-of-town members, are advisable inasmuch as an adequate supply of each paper at the meeting cannot be assured. Coupon Books in \$10.00 denominations are available for those who wish to avoid remittance by check or otherwise. Mail orders should be addressed to the AIEE Order Department, 33 West 39th Street, New York 18, New York. The TRANSACTIONS Papers will also be published in the Bimonthly Publications. Note: Unnumbered Conference Papers (CP.\*) may be available for sale at or after the meeting if copies are provided by the author. They are not intended for publication in the TRANSACTIONS and are not presently scheduled for reproduction in any form by the Institute.

## SCHEDULE OF EVENTS

### SUNDAY—JUNE 22

1:00 P.M.

Registration

4:00 P.M.

Welcome Tea

### MONDAY—JUNE 23

9:00 A.M.

Radio Communications & Radar Interference

Power Generation

Substations

Semiconductor Rectifiers

Transmission & Distribution

Ladies' Coffee Hour (daily)

1:00 P.M.

Ladies' Tour of Kittinger Furniture Plant

2:00 P.M.

Opening Ceremony

2:30 P.M.

Annual Meeting

### TUESDAY—JUNE 24

9:00 A.M.

Mobile Radio Systems

Electric Braking

Industrial Control

Load-Frequency Control

Magnetic Amplifiers

Section Delegates Conference

Trip to Lapp Insulator Plant

Trip to Westinghouse Electric Corporation

Trip #1 to Nike Base\* (A)

Men's Golfing

12:00 Noon

Ladies' Fashion Show & Luncheon

12:00 Noon

Luncheon—A. C. Montieth, Speaker

1:30 P.M.

Trip to Carborundum Co.

2:00 P.M. Rapid Transit  
 Conversion of Industrial Systems from 25 to 60 Cycles  
 Indicating and Recording Instruments  
 System Operation  
 Rotating Machinery  
 Magnetic Amplifiers  
 Computing Devices  
 Section Delegates Conference  
 Golf Tournament

7:15 P.M. Bus for Melody Fair

7:30 P.M. Space Vehicles, Satellites & Missiles

**WED.—JUNE 25**

9:00 A.M. Television & Aural Broadcasting  
 Aircraft—Ground Support & Lighting  
 Industrial Plant Power Systems  
 Symposium on Maintaining the Accuracy of Watthourmeters in Service  
 System Economics  
 Rotating Machinery  
 Applied Mathematics  
 Air Transportation—Machine Design  
 Niagara Panorama Trip  
 Trip to The New York Telephone Company  
 Men's Golfing

12:00 Noon Luncheon—Leston P. Faneuf, Speaker

2:00 P.M. Television Broadcasting  
 Aircraft—Materials & Testing  
 Electric Drives In The Metal Industry  
 Transmission & Distribution  
 Transformers  
 Computers in Air Traffic Control  
 Aircraft & Flight Test Instrumentation  
 Air Transportation—General Interest  
 Trip to The Bell Aircraft Corporation\*  
 Trip to The Niagara Mohawk Power Corporation

7:15 P.M. Bus for Melody Fair

**THURS.—JUNE 26**

9:00 A.M. Wire Communication Systems  
 Aircraft (Missiles - Satellites - Asteroids)  
 Transmission & Distribution  
 Transformers  
 Electrical Insulation Evaluation  
 Computers in Electrical Power Systems  
 Men's Golfing  
 Trip to Cornell Aeronautical Laboratory

9:00 A.M. Trip to The Sir Adam Beck Generating Station  
 TO Lewiston Power Project  
 5:00 P.M. The Edward Dean Adams Station

12:00 Noon Luncheon—General Marvin C. Demler, Speaker

2:00 P.M. Aircraft—Unconventional Generators  
 Sampled Data Control Systems  
 Transmission & Distribution  
 Transformers  
 Liquid & Gaseous Insulation  
 Solid—State Devices  
 Trip to Bethlehem Steel Corp.  
 Trip #2 to Nike Base\* (A)  
 Ladies' Tour—General Mills Cereal Plant

6:30 P.M. President's Reception—Ballroom Foyer

7:15 P.M. President's Banquet & Dance—Ballroom

**FRIDAY—JUNE 27**

9:00 A.M. Communication Theory  
 Aircraft—AC Systems  
 Aircraft—Hi-Temp Design Considerations  
 Hardware & Design of Feedback Control Systems  
 Insulated Conductors  
 Switchgear

2:00 P.M. Aircraft—Motors & Actuators  
 Aircraft—Parallel Systems  
 Nonlinear Feedback Control Systems  
 Insulated Conductors  
 Protective Relays & Transformers  
 Trip #3 to Nike Base\* (A)

Note: All Trips Leave From Delaware Avenue Entrance of Statler-Hilton Hotel.

\* Recommended for Air Transportation Conferees.

(A) Limited to Twenty Men per Trip.

# TECHNICAL PROGRAM

## MONDAY—JUNE 23

9:00 A.M.

MAPLE LEAF ROOM

*Chairman:*  
P. T. Sproul, Bell Telephone Laboratories

*Sponsor:*  
Radio Communications Systems Committee

9:00 A.M.

GOLDEN BALLROOM

*Chairman:*  
K. J. Granbois, Safe Harbor Water & Power Co.

*Sponsor:*  
Power Generation Committee

9:00 A.M.

GEORGIAN ROOM

*Chairman:*  
W. S. Scheering, Western Massachusetts Electric Co.

*Sponsor:*  
Substations Committee

## RADIO COMMUNICATIONS AND RADAR INTERFERENCE

CP.\* Design Characteristics of Some Existing Canadian Communication Systems Using Scatter Propagation. H. J. von Baeyer, Royal Canadian Air Force & F. M. Banks, Bell Telephone Co. of Canada.

58-816. Tropospheric Scatter System Design. L. P. Yeh, Westinghouse Electric Co.

58-383. Factors Affecting the Use of Over the Horizon Links in Telecommunication Networks. C. A. Parry, Page Communications Engineers, Inc. (Re-presented for discussion.)

58-817. Radar Interference to Microwave Communication Services. I R. D. Campbell, American Telephone and Telegraph Co.

## POWER GENERATION

58-794. The Electrical Features of the Sir Adam Beck Niagara III Pumping-Generating Station. W. D. Small, The Hydro-Electric Power Commission of Ontario.

57-939. Friction and Windage Loss Tests of McNary Generators with III Coupled and Uncoupled Turbine. D. R. Cox and R. L. Krahn, U. S. Army Corps of Engineers.

CP58-876. Electrical Features of the Upper Raquette River Power Project. W. C. Van Dyke, Niagara Mohawk Power Corp.

CP58-877. The Kelsey Hydro Electric Development on the Nelson River, Manitoba. L. M. Hovey, The Manitoba Hydro-Electric Board.

## SUBSTATIONS

CP58-872. Trends In The Welding Of Aluminum Bus Connections. M. Brenner, Penn-Union Electric Corp.

58-873. Silver Plated Aluminum Bus Conductors. C. E. Burley, Reynolds Metals Co.

CP58-874. Method of Comparing Hi-Voltage Substation Diagrams. K. R. Knights & L. M. Gordon, The Hydro-Electric Power Commission of Ontario.

58-875. Criteria For Substation Design On The British Columbia III Electric System. F. O. Wollaston, M. B. Callander and R. E. Clay, B.C. Engineering Co., Ltd.

## MON. (Continued)

9:00 A.M.

NEW YORK ROOM

*Chairman:*  
E. A. Harty, Power Equipment Co.

*Sponsor:*  
Semiconductor Metallic Rectifiers Committee

9:00 A.M.

EMPIRE STATE ROOM

*Chairman:*  
H. L. Davis, Jr., Philadelphia Electric Co.

*Sponsor:*  
Transmission and Distribution Committee

2:00 P.M.

*Chairman:*  
D. J. Munhall, Chairman  
1958 Summer General Meeting

2:30 P.M.

GOLDEN BALLROOM

*Chairman:*  
President W. J. Barrett  
New Jersey Bell Telephone Co.

## SEMICONDUCTOR RECTIFIERS

58-926. Thermal Impedance of Cooling Fins. E. J. Diebold and W. I Luft, International Rectifier Corp.

58-927. Forward Current Surge Failure in Semiconductor Rectifiers. I F. E. Gentry, General Electric Co.

58-928. The Current Limiting Fuse as Fault Protection for Semiconductor Rectifiers. F. W. Gutzwiller, General Electric Co.

CP.\* A Report on Specific Transient Voltage Problems Encountered in the Development of Power Supplies Using Silicon Rectifiers. P. E. Kolk, Bell Telephone Laboratories.

## TRANSMISSION AND DISTRIBUTION

58-824. Distribution System Primary-Feeder Voltage Control—I A III New Approach Using The Digital Computer. H. E. Lokay and D. N. Reys, Westinghouse Electric Corp.

58-891. Distribution System Primary-Feeder Voltage Control—II Digital Computer Program. D. N. Reys and G. J. Kirk, Jr., Westinghouse Electric Corp.

58-827. Distribution System Primary-Feeder Voltage Control—III Computer Program Application. H. K. Amchin, R. J. Bentzel, American Gas & Electric Service Corp., D. N. Reys, Westinghouse Electric Corp.

CP58-893. The Protection of the Customers' Service Through Isolated Transformers. P. W. Shill, H. G. Acres & Co., Ltd.

## OPENING CEREMONY

Greetings:

Milo L. Rowley, Chairman, Niagara Frontier Section.  
D. E. Garr, Vice-President, District #1.

"The Birthplace of Electrical Power"

Rob Roy MacLeod, Vice President, Niagara Mohawk Power Corp.

## ANNUAL MEETING

1. Report of the Treasurer, L. F. Hickernell.
2. Report of the President and the Board of Directors, W. J. Barrett.
3. Report of the Committee of Tellers on the Vote for Nominees for AIEE offices.
4. (a) Introduction of and presentation of President's badge to L. F. Hickernell.  
(b) Response by Mr. Hickernell.
5. Presentation of the Lamme Metal to Harold S. Black, Research Engineer, Bell Telephone Laboratories.  
(a) The Establishment of the Medal. H. I. Romnes, Chairman, Lamme Medal Committee.  
(b) The Career of the Medalist. M. J. Kelly, President, Bell Telephone Laboratories.  
(c) Presentation of the Medal & Certificate by President W. J. Barrett.
6. Other Business.

**TUESDAY—JUNE 24**

9:00 A.M.

**MAPLE LEAF ROOM**

*Chairman:*  
I. T. Corbell, General Electric Co.

*Sponsor:*  
Radio Communication Systems Committee

9:00 A.M.

**LOS ANGELES ROOM**

*Chairman:*  
L. W. Birch, Ohio Brass Co.

*Sponsor:*  
Land Transportation Committee

9:00 A.M.

**GEORGIAN ROOM**

*Chairman:*  
J. W. Picking, Reliance Electric & Engineering Co.

*Sponsor:*  
Industrial Control Committee

9:00 A.M.

**GOLDEN BALLROOM**

*Chairman:*  
N. G. Hodgman, New England Power Co.

*Sponsor:*  
System Engineering and Power Generation Committees

**MOBILE RADIO SYSTEMS**

- CP58-813. City-Wide Personal Signaling at Allentown-Bethlehem, Pa. C. R. Kraus, The Bell Telephone Co. of Pa.
- CP58-814. Pagemaster Receiver and Modulation Equipment. J. W. Young, Stromberg-Carlson Co. (Equipment demonstration will be given)
- CP.\* Systems Engineering of Personal Radio Signaling Systems. W. Strack, Bell Telephone Labs., Inc.
- 58-815. An Integrated Mobile-Microwave Communications System for the Massachusetts Turnpike. R. F. Lowe, General Electric Co.
- CP.\* VHF Transistorized Pocket Receivers for Personal Communication and Paging Services. G. A. Robertson, Radio Corp. of America.

**ELECTRIC BRAKING**

- CP.\* Electric Brakes for Transit Vehicles. B. A. Widell, H. H. Hennel, General Electric Co.
- CP.\* Regenerative Braking. A. W. Manser, London Transport Executive.
- CP58-810. The Complementary Role of Air & Dynamic Brakes in Rail Transportation, C. M. Hines, Westinghouse Air Brake Co.

**INDUSTRIAL CONTROL**

- CP58-807. Static Exciters & Voltage Regulators for Portable Alternators. D. W. Drews, Westinghouse Electric Corp.
- CP.\* A Universal Logic Symbology. E. Boote, Canadian General Electric Co., Ltd.
- CP.\* A Transistorized Static Switching Logic Element. N. L. Carlson, Canadian General Electric Co., Ltd.
- CP58-808. A Comparison of Adjustable Frequency A-C and Synchronous Systems for Synchronized Drives. A. T. Bachelor, Westinghouse Electric Corp.
- 58-809. Temperature of Conducting Ribbon Magnet Coils. J. F. H. II Douglas, Marquette Univ.

**LOAD-FREQUENCY CONTROL**

- CP58-855. A Unique System For Economic Power Dispatch. J. W. Hoag and G. W. McKnight, Minneapolis-Honeywell Regulator Co.
- CP58-931. Factors To Be Considered In Selecting A Load-Frequency Control System. W. C. Van Dyke, Niagara Mohawk Power Corp.
- CP58-930. Operation Experience With Command Type Load-Frequency Control Equipment. W. D. Wilder, Niagara Mohawk Power Corp.
- 58-932. A Speed-Setting Transducer. N. G. Alvis, Woodward Governor Co.
- 58-847. System Control Aided By Governor Transducer. R. D. Nevison, The Hydro-Electric Power Commission of Ontario.

**TUES. (Continued)**

9:00 A.M.

**NEW YORK ROOM**

*Chairman:*  
P. L. Schmidt, Bell Telephone Laboratories

*Sponsor:*  
Magnetic Amplifiers Committee

9:00 A.M.

**EMPIRE STATE ROOM**

2:00 P.M.

**LOS ANGELES ROOM**

*Chairman:*  
J. G. Inglis, Toronto Transit Commission

*Sponsor:*  
Land Transportation Committee

2:00 P.M.

**GEORGIAN ROOM**

*Chairman:*  
A. M. Killin, Union Carbide & Carbon Corp.

*Sponsor:*  
Industrial Power Systems Committee

**MAGNETIC AMPLIFIERS**

- 58-898. Transistor-Oscillator Induction—Motor Drive. W. H. Card, I Univ. of Toronto.
- CP58-899. Progress Report of the Standards Subcommittee of the AIEE Magnetic Amplifier Committee—Presented by F. G. Timmel.
- 57-776. Reactions of BiStable B-H Loops on Magnetic Amplifiers. I R. E. Morgan, General Electric Co. (Re-presented for Discussion.)
- 58-773. A-C Controlled Magnetic Amplifiers. E. W. Lehtonen and I E. A. Cronauer, Sperry Gyroscope Co. (Re-presented for Discussion.)
- 58-774. Elimination of Magnetic Amplifier Control Circuit Inductance. D. P. Chandler and R. W. Downing, North American Aviation, Inc. (Re-presented for Discussion.)
- 58-775. High Efficiency Push-Pull Magnetic Amplifier and Its Use I as a D-C Shunt Motor Drive. C. L. Boyajian, General Electric Co. (Re-presented for Discussion.)

**SECTION DELEGATES CONFERENCE****RAPID TRANSIT**

- CP58-811. Semi-Conductor Battery Charging Control System. E. W. Ames, Westinghouse Electric Corp.
- CP58-812. Progress in Control Design For Rapid Transit Subway Cars. G. R. Purifoy, Westinghouse Electric Corp.
- CP.\* Effect of High-Performance Rapid-Transit Cars Upon Traction Substations—An Exploratory Appraisal. E. J. Hogan and J. C. Price, General Electric Co.

**CONVERSION OF INDUSTRIAL POWER SYSTEMS FROM 25 TO 60 CYCLES**

- CP.\* Problems in Changing a Steel Plant Power System from 25 to 60 Cycles. C. G. Dimitt, U. S. Steel Corp.
- CP.\* The Effect of Frequency Conversion on Expansion and Modernization of the Power System in a Rubber Mill. D. Lees, Goodyear Tire & Rubber Co. of Canada and D. V. Fawcett, Canadian Westinghouse Co., Ltd.
- CP.\* New Thoughts on Industrial Power in the Niagara Frontier. T. J. Brosnan, Niagara Mohawk Power Corp.
- CP.\* Frequency Standardization of Industry in Ontario. F. O. Price, The Hydro-Electric Power Commission of Ontario.

**TUES. (Continued)**

2:00 P.M.

**WASHINGTON ROOM****Chairman:**

Dr. F. K. Harris, National Bureau of Standards

**Sponsor:**

Indicating &amp; Integrating Instruments, Recording &amp; Controlling Instruments and Special Instruments &amp; Auxiliary Apparatus Committees

2:00 P.M.

**GOLDEN BALLROOM****Chairman:**

Dr. L. K. Kirchmayer, General Electric Co.

**Sponsor:**

System Engineering Committee

2:00 P.M.

**MAPLE LEAF ROOM****Chairman:**

L. O. Dorfman, Sanderson &amp; Porter Engrs.

**Sponsor:**

Rotating Machinery Committee

**INDICATING AND RECORDING INSTRUMENTS**

- 58-933. A System For Gaging Plating Thickness. R. G. Myers, Argonne National Lab., and D. L. Waidelich, Univ. of Missouri. I
- 58-367. Magnetic Field Strength In Oersteds Near Large Rectangular Conductors. J. H. Miller, Weston Electrical Instrument Corp. (Re-presented for Discussion.) I
- 58-934. On The Application of Zener Diodes To Expanded Scale Instruments. A. J. Corson, General Electric Co. I
- CP58-935. A New Round Chart Weatherproof Recording Instrument With Sealed Inking System. D. F. Roerty and S. G. Hayter, Westinghouse Electric Corp.
- 58-850. A Triple Action Positioning Controller Using A Magnetic Modulator. C. V. Bullen, Barber-Colman Co. I

**SYSTEM OPERATION**

- 58-853. 28 Years Operating Experience of America's First Pumped Storage Hydro Plant. C. T. Hughes and C. M. MacWilliam, The Connecticut Light & Power Co. III
- 58-866. Twenty-Seven Years of Operating A Hydro Station In Connection With A Water Supply System. A. Ferreira, Western Massachusetts Electric Co. III
- 58-867. A Method Of Scheduling Optimum Operation Of Ontario Hydro's Sir Adam Beck-Niagara Generating Station. B. Bernholtz, W. Shelson and O. Kesner, The Hydro-Electric Power Commission of Ontario. III
- 58-868. Benefits of Line Capacitors Extended by Remote Automatic Control. E. M. Gordy, W. L. Ridenhour and C. Wasserman, Baltimore Gas And Electric Co. III

**ROTATING MACHINERY**

- 58-896. D-C Dynamic Braking of Double-Cage Induction Motors. O. I. Butler, Univ. of Sheffield and M. N. Abdel-Hamid, Univ. of Cairo. III
- 58-761. Induction Motor Temperature Characteristics. J. F. Heidbreder, Westinghouse Electric Corp. (Re-presented for Discussion.) III
- 58-778. Calculation of Induction Motor Torque and Power. W. H. Middendorf, Univ. of Cincinnati. III
- 58-278. Water Cooling of Turbine-Generator Stator Windings. G. V. Browning, C. H. Holley and J. F. Quinlan, General Electric Co. III

**TUES. (Continued)**

2:00 P.M.

**NEW YORK ROOM****Chairman:**

F. G. Timmel, Westinghouse Electric Corp.

**Sponsor:**

Magnetic Amplifiers Committee

2:00 P.M.

**BUFFALO ROOM****Chairman:**

C. A. R. Kagan, Western Electric Co., Inc.

**Sponsor:**

Computing Devices Committee

2:00 P.M.

**EMPIRE STATE ROOM**

7:30 P.M.

**NEW YORK ROOM****Chairman:**

D. L. Herr, Librascope, Inc.

**Sponsor:**

Feedback Control Systems Committee

**MAGNETIC AMPLIFIERS**

- 58-856. Characteristics of Magnetic Amplifiers Utilizing Square Loop Core Material and Square Wave Supply Voltage. H. H. Britten, General Electric Co. I
- 58-858. A New Control Amplifier Using a Saturable Current Transformer and a Switching Transistor. R. E. Morgan, General Electric Co. I
- 58-897. A Power Method of Measuring the Torque-Producing Output of a Magnetic Amplifier Driving One Phase of a Two-Phase Servo Motor. S. J. Reisman, Westinghouse Electric Corp. and E. H. Bowman, Sandia Corp. (Re-presented for Discussion.) I
- 58-776. Triggering in the Reversible Half-Wave Magnetic Amplifier. D. L. McMurtrie and J. P. Ward, Raytheon Mfg. Co. (Re-presented for Discussion.) I
- 58-792. A Comprehensive Study of Magnetic Amplifier Design—Part I, A Practical Design Method. R. M. Hubbard and M. M. Bishop, Boeing Airplane Co. (Re-presented for Discussion.) I
- 58-793. A Comprehensive Study of Magnetic Amplifier Design—Part II Toroidal-Core Dimensional-Ratios As a Factor In Magnetic Amplifier Design. R. M. Hubbard and M. M. Bishop, Boeing Airplane Co. (Re-presented for Discussion.) I

**COMPUTING DEVICES**

- 58-929. Magnetic Drum Components for High Storage Density. K. I. Hong, Massachusetts Institute of Technology. I
- CP.\* A Medium Speed Data Acquisition System. R. G. Lex, M. Garden, J. J. Hitt, W. G. Kieslich and W. P. West, Leeds & Northrup Co.
- CP.\* Data Acquisition Systems Employed In Rocket Motor Tests at Bell Aircraft Corp. R. C. Deegan and H. M. Conroy, Bell Aircraft Corp.

**SECTION DELEGATES CONFERENCE****SPACE VEHICLES, SATELLITES AND MISSILES**

- CP.\* The Celestial Mechanics of Space Flight—Physical Attributes and Variables of Control. I. M. Levitt, The Franklin Institute.
- CP.\* Control and Instrumentation Problems Associated with the Guidance of Space Flight Vehicles. C. S. Draper, Massachusetts Institute of Technology.
- CP.\* Problems of Dynamic Stabilization in Large Rocket Vehicles. R. Hanna, Douglas Aircraft Co.
- CP.\* Instrumentation Requirements for Altitude Control of Satellites and Space Vehicles. J. Farrior, Army Ballistic Missile Agency.
- CP.\* Inertial Control of Satellite Attitude. R. E. Roberson, North American Aviation, Inc.
- CP.\* Instrumentation of Attitude Control of Satellites and Interplanetary Vehicles. W. E. Frye, Lockheed Missile Systems Division.
- CP.\* Component and System Design for Minimum Weight and Volume, Maximum Accuracy and Reliability. J. L. Bowers, Convair-Astronautics.

**WED.—JUNE 25**

9:00 A.M.

**LOS ANGELES ROOM**

*Chairman:*

O. W. B. Reed, Jr.,  
Jansky & Bailey, Inc.

*Sponsor:*

Television and Aural  
Broadcasting Systems  
Committee

**TELEVISION AND AURAL BROADCASTING**

- CP.\* Analysis of Compatible Single Sideband System. G. A. Olive, RCA Laboratories.
- CP.\* Design Methods to Improve the Stability of AM Directional Antenna Systems. G. H. Brown, Radio Corp. of America.
- CP.\* Salient Problems in TV Receiver Transistorization. F. Mural, Philco Corp.
- CP.\* A Study of UHF TV Ghostings in a Shadowed Valley And What To Do About It. D. K. Peterson, RCA Laboratories and R. K. Blackburn, WHEC-TV.

9:00 A.M.

**EMPIRE STATE ROOM**

*Chairman:*

D. W. Exner, Boeing  
Airplane Co.

*Sponsor:*

Air Transportation  
Committee

**AIRCRAFT—GROUND SUPPORT AND LIGHTING**

- CP.\* Ground Electrical Power Support. C. B. Graff & Major H. H. Barton, Headquarters, Air Research & Development Command.
- CP58-840. Development and Application Of An Electrical Power System Analyzer. E. L. Clark and A. J. DiStio, Beech Aircraft Corp.
- 57-458. Lighting The Modern Commercial Aircraft. P. E. Massie, II Day-Ray Products, Inc. (Re-presented for Discussion.)
- 58-839. Development of A Dimmable Aircraft Fluorescent Light System. E. W. Banios, Ramo-Woolridge Corp.

9:00 A.M.

**GEORGIAN ROOM**

*Chairman:*

T. O. Zittel, Bethlehem  
Steel Co.

*Sponsor:*

Industrial Power Sys-  
tems Committee

**INDUSTRIAL PLANT POWER SYSTEMS**

- CP.\* Factors in the Design of a Steel Plant Power System. A. J. F. MacQueen, Patterson-Emerson-Comstock, Inc.
- CP.\* Problems Associated With the Conversion of Electric Smelting Furnaces From 25 to 60 Cycle Operation. T. A. Leeds, Electro-Metallurgical Co.
- CP.\* Power Systems for Electrolytic Plants. F. L. Kaestle, General Electric Co.

**WED. (Continued)**

9:00 A.M.

**WASHINGTON ROOM**

*Chairman:*

F. H. Rogers, Baltimore  
Gas & Electric Co.

*Sponsor:*

Indicating & Integrat-  
ing Instruments Com-  
mittee

9:00 A.M.

**GOLDEN BALLROOM**

*Chairman:*

G. S. Whitlow, Union  
Electric Co.

*Sponsor:*

System Engineering  
Committee

9:00 A.M.

**MAPLE LEAF ROOM**

*Chairman:*

J. S. Askey, Elliott Co.

*Sponsor:*

Rotating Machinery  
and Protective De-  
vices Committees

**SYMPOSIUM ON MAINTAINING THE ACCURACY OF  
WATTHOURMETERS IN SERVICE**

- CP58-805. Maintaining The Accuracy of Watt-Hour Meters In Service. G. B. M. Robertson, Philadelphia Electric Co.
- 58-425. Evaluation of Single-Phase Metering Practices Based on I Meter Performance and Load Characteristics. J. M. Vanderleck, The Hydro-Electric Power Commission of Ontario (Re-presented for Discussion)
- CP.\* A Discussion of Sampling Methods as Related to Testing of Watthourmeters. J. A. Morris, American Gas & Electric Service Corp.
- CP58-806. The Application of Statistical Sampling Methods of the Testing of Watthour Meters. C. V. Morey, Consolidated Edison Co. of New York, Inc.
- CP.\* An Approach to a Sampling Plan for Testing Single Phase Watthour Meters. R. D. Bader, Baltimore Gas and Electric Co.

**SYSTEM ECONOMICS**

- 58-865. Economic Operation of Variable Head Hydro Plants. A. F. III Glimm and L. K. Kirchmayer, General Electric Co.
- CP.\* Economic Complementary Operation of Hydro Storage and Steam Power in the T.V.A. System. R. N. Brudenell and J. H. Gilbreath, T.V.A.
- CP58-869. The Calculation of Incremental Transmission Losses and the "General Transmission Loss Equation." R. E. Watson and W. O. Stadlin, Leeds & Northrup Co.
- CP58-870. Power System Planning Economics. A. J. Wood, General Electric Co.

**ROTATING MACHINERY**

- 58-900. Ground Fault Protection of Unit Connected Generators. M. N. III Rajk, Sanderson & Porter Engineers.
- 58-901. Synchronous Performance of Reluctance Motors By Improved III Circle Diagrams. J. F. H. Douglas, Marquette Univ.
- 58-940. The Steinmetz Conception of The Single Phase Squirrel Cage III Motor. E. Bretch, Century Electric Co.
- 58-939. The Dilemma of Single-Phase Induction Motor Theory. P. L. III Alger, General Electric Co.
- CP58-849. Sources of Electromagnetic Vibration In Single-Phase Induction Motors. L. W. Magyar, General Motors Corp.

**WED. (Continued)**

9:00 A.M.

**BUFFALO ROOM****Chairman:**H. Sohon, Moore School  
of Electrical Engi-  
neering**Sponsor:**Basic Sciences  
Committee**APPLIED MATHEMATICS**

- 58-777. The Numerical Evaluation of Expressions Involving Complete I Elliptic Integrals. F. W. Grover, Union College.
- 58-787. A Generalization of the Calculus of Finite Differences to I Non-Uniformly Spaced Variables. G. Kron, General Electric Co.
- 58-854. Reliable Stochastic Sequential Switching Circuits. A. A. I Mullin, Univ. of Illinois.
- CP.\* Analysis of Transcendental Nonlinear Systems. A. A. Wolf, Univ. of Pennsylvania.

9:00 A.M.

**NEW YORK ROOM****Chairman:**G. A. Phillips, General  
Electric Co.**Sponsor:**Air Transportation  
Committee**AIR TRANSPORTATION—MACHINE DESIGN**

- 58-791. The Turbonator—Design and Development. J. T. Duane and II J. W. Harrison, General Electric Co.
- 58-908. Computer Analysis of A-C Aircraft Generators. J. R. M. II Alger, J. T. Duane, E. F. Magnusson and R. T. Smith, General Electric Co.
- 58-772. Effects of Operating Frequency on the Weight and Other II Characteristics of Missile Alternators And Transformers. R. E. Turkington, Radio Corp. of America.
- 58-832. Design Of An Aircraft Power-Type Circuit Breaker 600° F II Ambient. B. O. Austin, Westinghouse Electric Corp.
- CP58-909. Simulated Altitude Carbon Brush Investigations. W. H. Austry, J. E. Diehl and E. I. Shobert II, Stackpole Carbon Co.

2:00 P.M.

**LOS ANGELES ROOM****Chairman:**R. F. Guy, National  
Broadcasting Com-  
pany**Sponsor:**Television and Aural  
Broadcasting Com-  
mittee**TELEVISION BROADCASTING**

- CP.\* Chroma-Key Color Inset System. F. Gaskins and R. Ken-  
nedy, National Broadcasting Co.
- CP.\* A New Image Orthicon Color Camera. J. F. Wiggin, General  
Electric Co.
- CP.\* Recording of Color TV on Magnetic Tape, E. M. Leyton,  
RCA Laboratories.
- 58-904. A Quadruplexer Allowing the Simultaneous Transmission of  
I Two Complete Television Stations Using a Common Antenna.  
G. B. MacKimmie, RCA Victor Co., Ltd. (Re-presented for  
Discussion.)

**WED. (Continued)**

2:00 P.M.

**EMPIRE STATE ROOM****Chairman:**J. W. Allen, Bendix  
Aviation Corp.  
Eclipse Pioneer Div.**Sponsor:**Air Transportation  
Committee

2:00 P.M.

**NEW YORK ROOM****Chairman:**E. H. Browning, West-  
inghouse Electric  
Corp.**Sponsor:**Mining & Metal Indus-  
try Committee

2:00 P.M.

**MAPLE LEAF ROOM****Chairman:**E. L. Kanouse, Dept. of  
Water & Power, City  
of Los Angeles**Sponsor:**Transmission & Distri-  
bution Committee**AIRCRAFT—MATERIALS AND TESTING**

- CP58-843. Materials for Electrical Systems In High Temperature Air-  
craft. D. K. McIlvaine, Westinghouse Electric Corp.
- CP58-835. High Temperature Electrical Insulation Materials For  
Missiles And Aircraft. R. N. Evans, WADC.
- 58-845. A Discussion Of D-C High Potential Test Voltage For Air-  
II craft Electrical Insulation. L. B. Kilman and J. P. Dallas,  
Hughes Tool Co.
- 58-841. Aircraft Switch and Relay Inductive Circuit Test Loads.  
II J. P. Dallas, Hughes Tool Co.
- CP58-912. Statistics Applied To Electrical Laboratory Evaluations.  
F. Albrecht, The Martin Co.

**ELECTRIC DRIVES IN THE METAL INDUSTRY**

- CP.\* Operation of Rectifiers in Parallel With Existing Generators  
To Increase Power For Hot Strip Mill Operation, G. Ecken-  
staler, Allis-Chalmers Mfg. Co.
- CP.\* Tandem Cold Reduction Mill Electric Drive Systems. J. A.  
McCarthy, Westinghouse Electric Corp.
- CP.\* Analysis of Arc Furnace Control Using Analog Computer.  
K. G. Black and R. E. Bower, General Electric Co.
- CP58-903. An Automatic Gauge Controller for a 56 Inch Reversing  
Steel Mill. R. L. Duke and L. R. Hulls, Canadian Westing-  
house Co. Ltd.

**TRANSMISSION & DISTRIBUTION**

- CP58-795. Jervis Inlet Overhead Crossing. L. H. J. Cook, B. C. En-  
gineering Co., Ltd. and R. A. McLachlan, Dominion Bridge  
Co., Ltd.
- 58-886. Superposition of High Voltage Transmission on Existing  
III Medium Voltage Transmission Networks. J. W. Graff, Ala-  
bama Power Co.
- 58-885. New Method for Computing Bearing Capacity of Block  
III Foundations in Transmission Lines. O. D. Zetterholm and  
B. O. Pramborg, Swedish State Power Board.
- 58-779. Horizontal Bundle Spacers. R. J. Mather, Bonneville Power  
III Adm. and A. R. Hard, Washington State Institute of Tech-  
nology.
- CP58-937. Comprehensive Sag-Tension Data for Aluminum Conduc-  
tors. P. G. Malburg, Aluminum Co. of Canada Ltd. and  
W. Janischewskyj, Aluminum Laboratories Limited.



**WED. (Continued)**

2:00 P.M.

**GOLDEN BALLROOM**

*Chairman:*  
C. W. Miller, Westinghouse Electric Corp.

*Sponsor:*  
Transformers Committee

2:00 P.M.

**WASHINGTON ROOM**

*Chairman:*  
R. M. Kalb, Engineering Research Associates

*Sponsor:*  
Computing Devices Committee

2:00 P.M.

**BUFFALO ROOM**

*Chairman:*  
R. J. W. Koopman, Washington University

*Sponsor:*  
Aircraft and Flight-Test Instrumentation Committee

2:00 P.M.

**GEORGIAN ROOM**

*Chairman:*  
M. O. Johnson, Bell Aircraft Corp.

*Sponsor:*  
Air Transportation Committee

**TRANSFORMERS**

- 58-785. Progress in Routine Testing of High Voltage Bushings. D. L. III Johnston, General Electric Co.
- CP58-882. Corona and Withstand Tests in Oil. F. J. Vogel, Allis-Chalmers Mfg. Co.
- 58-780. Characteristics of Thermosiphon Flow in a Model Trans-III former Oil Circuit. J. J. Kunes, Westinghouse Electric Corp.
- CP58-936. Natural Frequencies in Transformer Windings. I. Johansen, Carnegie Institute of Technology.

**COMPUTERS IN AIR TRAFFIC CONTROL**

- CP.\* Programming Techniques In Real-Time Data Processing for CAA Air Traffic Control. G. B. Harwell, CAA Indianapolis.
- CP.\* Computers and Programming Techniques for Air Traffic Control. R. A. Finkler, General Precision Laboratory Inc.
- CP.\* Simulation of Enroute Control Operations. D. C. Lancto, International Business Machines Corp.

**AIRCRAFT & FLIGHT TEST INSTRUMENTATION**

- CP.\* A Digital Air-Ground Data Interchange System. W. W. Fisher and D. E. Wassall, Bendix Aviation Corp.
- CP.\* Use of Telemetry in Temperature Survey Work. E. J. Brown, McDonnell Aircraft Corp.
- CP58-907. Development of Automatic Plotting Equipment for Telemeter Read-Out. W. F. Sullivan, McDonnell Aircraft Corp.

**AIR TRANSPORTATION—GENERAL INTEREST**

- 58-910. The Advantages Of A Pneumatic Electrical Power System II For High Mach Number Aircraft. M. A. Slavin, General Electric Co.
- CP58-911. On The Art of Specification Writing. P. W. Franklin, Leland Electric Co.
- CP58-846. A Transistorized Warning Light System For Aircraft. W. Silbert, The Martin Co.
- 58-836. Conductors And Conductor Protection. R. Steiner, Northrup II Aircraft Inc.
- CP.\* Instrumentation For Precise Requirements Of Power Supply Characteristics. C. M. Groves, Royal Radar Establishment of England.
- CP58-938. Sequence Impedances of Airborne Three Phase Power Distribution Cables. D. S. Toffolo, U. S. Naval Research Lab.

**THURSDAY—JUNE 26**

9:00 A.M.

**GEORGIAN ROOM**

*Chairman:*  
B. R. Stachiewicz, Federal Telecommunication Lab.

*Sponsor:*  
Wire Communication Systems Committee

9:00 A.M.

**EMPIRE STATE ROOM**

*Chairman:*  
W. C. Bryant, Lockheed Aircraft Corp.

*Sponsor:*  
Air Transportation Committee

9:00 A.M.

**MAPLE LEAF ROOM**

*Chairman:*  
H. A. Frey, General Electric Co.

*Sponsor:*  
Transmission & Distribution Committee

**WIRE COMMUNICATION SYSTEMS**

- 58-386. Dial Switching of Toll Circuits in Independent Telephone Co. Areas—Transmission Considerations from the DDD Standpoint. J. N. Petrie, Automatic Electric Co. (Re-presented for Discussion.)
- 58-905. Determination of the Least First Cost of a Cable-Carrier I System. R. Krzyckowski, Westinghouse Electric Co.
- 57-1070. Insertion Loss Filter Design Applied to Transistorized Carrier System. T. Winkler, Stromberg-Carlson Co. (Re-presented for Discussion.)
- 58-906. A Transistorized Compandor. J. C. Perkins, Jr., Stromberg-Carlson Co., D. A. Perreault and A. F. Perkins, O'Hara Associates.
- 58-851. Standby Power for Pole-Mounted Equipment. D. F. Jamieson, Stromberg-Carlson Co.

**AIRCRAFT—(MISSILES—SATELLITES—ASTEROIDS)**

- CP58-913. Reliability Evaluation of Aircraft and Missile Equipment I. Theory of Small Sample Methods. B. J. Wilson, U.S. Naval Research Lab.
- CP58-837. Unconventional Electric Power Supplies and The Weapon System. Lt. R. G. Leiby, WADC.
- CP.\* Application of Reserve Batteries in Missiles. W. A. Tynan, The John Hopkins Univ.
- CP58-914. High Altitude Performance of Silicon Solar Cells. K. L. Niebauer, Boeing Airplane Co.
- CP58-915. New Sources of Secondary Power For Satellites and Missiles. H. Oman, Boeing Airplane Co.

**TRANSMISSION & DISTRIBUTION**

- 58-829. The Prestrike Theory and Other Effects in the Lightning III Stroke. S. B. Griscom, Westinghouse Electric Corp.
- 58-782. The Influence of the Prestrike on Transmission Line Lightning Performance. S. B. Griscom, J. W. Skooglund and A. R. Hileman, Westinghouse Electric Corp.
- CP58-887. Anomalous Flashovers: What are Their Fundamental Causes? P. W. Shill, H. G. Acres & Co., Ltd.
- CP.\* The Insulation Requirements of High-Voltage Transmission Lines for 115KV to 460/500 KV. P. L. Bellaschi, Portland, Oregon.

**THURS. (Continued)**

9:00 A.M.

**GOLDEN BALLROOM***Chairman:*

D. L. Levine, Commonwealth Edison Co.

*Sponsor:*

Transformers Committee

9:00 A.M.

**NEW YORK ROOM***Chairman:*

Dr. L. J. Berberich, Westinghouse Electric Corp.

*Sponsor:*

Dielectrics Committee

9:00 A.M.

**LOS ANGELES ROOM***Chairman:*

F. Maginniss, General Electric Co.

*Sponsor:*

Computing Devices and System Engineering Committees

**TRANSFORMERS**

CP58-883. Phase Angle Control Benefits Power System Interconnection. H. W. Haberl, Quebec Hydro-Electric Commission and C. E. Moorhouse, Canadian Westinghouse Co., Ltd.

58-786. Rapid Spot Test Methods for the Evaluation of Used Transformer Oil. R. E. Reinhard, W. E. Elliott and E. P. Schram, Allis-Chalmers Mfg. Co. (Re-presented for Discussion.)

58-859. Features of the Atmosol Oil Preservation System. D. R. III Baldwin, E. J. Sherman and R. J. Ringlee, General Electric Co.

CP.\* Transformer Pressure Relief Devices. J. R. Barr, General Electric Co.

**ELECTRICAL INSULATION EVALUATION**

57-257. Elongation as a Factor in Evaluating the Thermal Stability of Enameled Wire. D. C. Westervelt and E. J. Croop, Westinghouse Electric Corp. (Re-presented for Discussion.)

CP58-401. The Evaluation of Enameled Magnet Wire. H. L. Saums and W. W. Pendleton, Anaconda Wire &amp; Cable Co. (Re-presented for Discussion.)

CP58-878. Effects of Neutron and Gamma-Ray Irradiation on the Dielectric Constant and Loss Tangent of Some Plastic Materials. R. A. Weeks and D. Binder, Oak Ridge National Laboratories.

CP58-879. On the Anomaly in Residual Polarization of BaTiO Ceramics. Y. Satio and S. Yamanaka, Tokyo Institute of Technology.

**COMPUTERS IN ELECTRICAL POWER SYSTEMS**

58-890. Digital Calculation of Network Functions Used in Loss Formula Studies. R. W. Ferguson, R. W. Long and L. J. Rindt, Westinghouse Electric Corp.

58-826. Logic for Applying Topological Methods to Electrical Networks. R. T. Byerly, R. W. Long and C. W. King, Westinghouse Electric Corp.

58-892. Digital Computer Aids in Power Pool Operation Studies. H. M. McIntyre, C. W. Blake and J. S. Clubb, Bonneville Power Adm.

**THURS. (Continued)**

2:00 P.M.

**EMPIRE STATE ROOM***Chairman:*

Major R. C. Harrison, USAF, ARDC, BMD

*Sponsor:*

Air Transportation Committee

2:00 P.M.

**GEORGIAN ROOM***Chairman:*

Prof. J. R. Ragazzini, Columbia University

*Sponsor:*

Feedback Control Systems Committee

2:00 P.M.

**MAPLE LEAF ROOM***Chairman:*

J. T. Lusignan, Ohio Brass Co.

*Sponsor:*

Transmission &amp; Distribution Committee

**AIRCRAFT—UNCONVENTIONAL GENERATORS**

58-916. A Brushless D-C Generator For Aircraft Use. J. T. Duane, II General Electric Co.

58-768. Magnetic Circuit Properties of the Flux Switch Inductor II Alternator. S. E. Rauch, American Machine &amp; Foundry Co.

58-831. The Limitations of Induction Generators In Constant Frequency Aircraft Systems. E. Erdelyi, E. E. Kolatorowicz and W. R. Miller, General Electric Co.

CP58-917. Energy Conversion Properties of Induction Machines in Variable-Speed Constant-Frequency Generating Systems. M. Riaz, Massachusetts Institute of Technology.

**SAMPLED DATA CONTROL SYSTEMS**

58-770. Staggered Sampling to Improve Stability of Multiple Sampler II Feedback Systems. R. E. Andeen, Northwestern Univ.

CP58-801. Analysis of Sampled-Data Feedback Control Systems With Finite Sampling Duration. J. Tou, Purdue Univ.

CP58-802. A Technique for the Time-Domain Synthesis of Sampled-Data Systems. H. C. Torng, Cornell Univ.

58-803. Analysis of Cyclic Rate Sampled Data Feedback Control II Systems. R. E. Hufnagel, Cornell Univ.

CP.\* Transistor Circuits for an Error-Sampled Control System. C. H. Knapp, E. Shapiro and R. A. Thorpe, International Business Machines Corp.

**TRANSMISSION & DISTRIBUTION**

58-781. Investigation of Switching Surges Caused by 345-KV Disconnecting Switch Operation. H. L. Rorden, American Gas &amp; Electric Service Corp. J. M. Dils, Indiana &amp; Michigan Electric Co., S. B. Griscom, J. W. Skooglund and E. Beck, Westinghouse Electric Corp.

58-784. Analytical Studies of Overvoltages Caused by Disconnecting Switch Operation. S. B. Griscom, J. W. Skooglund and A. R. Hileman, Westinghouse Electric Corp.

CP58-888. A Resistor for Suppressing Overvoltages Caused by Disconnecting Switch Operation. C. W. Upton and C. M. Lane, Westinghouse Electric Corp.

CP58-889. Switching Transients by Transient Analyzer Techniques. K. A. Tuttle, Bonneville Power Adm.

**THURS. (Continued)**

2:00 P.M.

**GOLDEN BALLROOM**

*Chairman:*  
D. L. Levine, Commonwealth Edison Co.

*Sponsor:*  
Transformers Committee

**TRANSFORMERS**

- 58-311. "Insuldur"—Another Milestone in Transformer Insulation Development. J. G. Ford, M. G. Leonard, J. Swiss and G. C. Gainer, Westinghouse Electric Corp. (Re-presented for Discussion.)
- 58-881. Aluminum and Its Future in Power Transformers. W. W. Orr, III Canadian General Electric Co.
- 58-884. The T-Connected Three-Phase Transformer. E. W. Manning, III General Electric Co.

2:00 P.M.

**NEW YORK ROOM**

*Chairman:*  
Dr. T. W. Liao, General Electric Co.

*Sponsor:*  
Dielectrics Committee

**LIQUID AND GASEOUS INSULATION**

- CP58-880. Liquid Dielectrics in an Electric Field. W. H. Midden-dorf and G. H. Brown, Univ. of Cincinnati.
- CP.\* Further Experience with the AIEE Subcommittee Test Cell for Gaseous Dielectrics. M. L. Manning, McGraw Electric Co.
- CP58-326. Properties of Octafluorocyclobutane—A Dielectric Gas. F. W. Blodgett, E. I. du Pont de Nemours and Co. Inc.
- 57-242. The Effect of Space-Charges on the Electric Breakdown of Sulfur Hexafluoride in Nonuniform Fields. D. Berg and C. N. Works, Westinghouse Research Laboratories. (Re-presented for Discussion.)

2:00 P.M.

**LOS ANGELES ROOM**

*Chairman:*  
Dr. G. Strull, Westinghouse Electric Corp.

*Sponsor:*  
Solid State Devices Committee

**SOLID-STATE DEVICES**

- CP58-820. Magnetic Frequency Dividers. B. W. Glover, The General Electric Co. Ltd. and A. E. Maine, The de Havilland Aircraft Co. of Canada.
- CP58-821. A Non-Destructive Breakdown Phenomenon in Selenium Rectifiers. A. C. English and W. H. Tobin, General Electric Co.
- CP.\* Determination of Drift Transistor Physical Parameters. K. Y. Sih, International Business Machines Research Lab.
- CP58-822. Stability Criteria for Suppressing Thermal Runaway in Transistors. R. B. Hurley, Convair.
- CP58-941. Recovery Time of Switching Transients in Silicon Diodes. L. G. McPherson, Westinghouse Electric Corp.

**FRIDAY—JUNE 27**

9:00 A.M.

**BUFFALO ROOM**

*Chairman:*  
R. K. Hellmann, Hazeltine Corp.

*Sponsor:*  
Communication Theory Committee

9:00 A.M.

**EMPIRE STATE ROOM**

*Chairman:*  
S/L D. S. Whyte, RCAF, RCAF Hdqtrs.

*Sponsor:*  
Air Transportation Committee

9:00 A.M.

**GEORGIAN ROOM**

*Chairman:*  
J. P. Dallas, Hughes Tool Co.

*Sponsor:*  
Air Transportation Committee

**COMMUNICATION THEORY**

- 58-538. The Analysis of Redundancy Networks. F. Moskowitz, Rome I Air Development Center (Re-presented for Discussion.)
- 58-575. Operations Research In Communications. B. Harris, A. Hauptschein and L. S. Schwartz, New York Univ. (Re-presented for Discussion.)
- 58-925. On Coding for The Binary Symmetric Channel. A. B. Fontaine, International Business Machines Corp. and W. W. Peterson, Univ. of Florida.
- CP.\* The Relations Between Coding Formats and Computer Structure. J. H. Waite, Radio Corp. of America.

**AIRCRAFT—AC SYSTEMS**

- CP58-842. The Unique Generation System In The CF-100 Mark 5M Aircraft. G. W. Handforth, AVRO Aircraft Ltd.
- CP58-834. Calculation Of Steady-State Faults, Generator Excitation And Fault Torques For Aircraft Systems By Means Of A Digital Computer. J. B. Annable, H. A. Kahle and L. J. Stratton, Jack & Heintz Inc.
- 58-918. Interrelationships Among Fault Torque, Voltage Unbalance, Fault Current, And Generator Impedances of Aircraft Electrical Power Systems. N. H. Jensen and R. T. Smith, General Electric Co. (Re-presented for Discussion.)
- 58-848. Co-Ordination Of Hydraulic Transmissions And Aircraft A-C Generators. S. C. Caldwell, T. E. Coppinger and R. T. Smith, General Electric Co.
- 58-788. Frequency Transient Measurements In Power Systems. G. N. II Swanstrom, Sundstrand Machine Tool Co.

**AIRCRAFT—HI-TEMP DESIGN CONSIDERATIONS**

- 58-790. Progress In The Thermal Design of Oil-Cooled Rotating Electrical Machines. P. B. Richards, Jack & Heintz, Inc.
- 58-919. Prediction Of The Thermal Behavior Of Blast-Cooled Generators By Use Of A Digital Computer. R. M. Moroney, Massachusetts Institute of Technology.
- 58-857. External Heat Transfer From Cylindrical Self-Cooled Electrical Equipment. D. Friedman, U.S. Naval Research Lab.
- CP58-920. The Electric Analogue For Determining Temperature Distribution In Electrical Components. E. R. G. Eckert, J. P. Hartnett, T. F. Irvine and R. Birkebak, Univ. of Minnesota.

**FRI. (Continued)**

9:00 A.M.

NEW YORK ROOM

*Chairman:*

H. Chestnut, General Electric Co.

*Sponsor:*

Feedback Control Systems Committee

**HARDWARE & DESIGN OF FEEDBACK CONTROL SYSTEMS**

CP58-796. Transfer Functions of Loaded Synchronous Machine. D. Hamdi-Sepen. Technical University of Istanbul.

58-797. Synthesis of Control Systems Based on an Approximation to a Third-Order System. C. R. Hausenbauer, Univ. of Arizona and G. V. Lago, Univ. of Missouri.

CP58-798. A 6-Watt Transistor Servo Amplifier for Operation from -55C to +125C. V. Vartanian, Raytheon Mfg. Co.

CP58-799. Linear Rate Generator. L. F. Stauder, Univ. of Notre Dame.

58-800. The Design of Analog Computer Compensated Control Systems. S. C. Bigelow, Columbia Univ.

9:00 A.M.

GOLDEN BALLROOM

*Chairman:*

L. E. Fogg, Kennecott Wire & Cable Co.

*Sponsor:*

Insulated Conductors Committee

**INSULATED CONDUCTORS**

58-783. The Vancouver 230 KV Oil Filled Cables. F. O. Wollaston III and L. R. Horne, B. C. Engineering Co., Ltd.

58-871. Theory and Practice Of Soil Densification. H. F. Winterkorn, III Princeton Univ.

9:00 A.M.

MAPLE LEAF ROOM

*Chairman:*

C. A. Woodrow, General Electric Co.

*Sponsor:*

Switchgear Committee

**SWITCHGEAR**

CP.\* The Use of SF6 in High-Voltage Interruption. R. E. Friedrich and G. Bates, Westinghouse Electric Corp.

58-902. Impulse System for Arc Recovery Strength Measurements. III J. D. Cobine, E. E. Burger and G. A. Farrall, General Electric Co.

58-825. Advanced Interrupter Design for 230 KV and 345 KV Oil III Circuit Breakers. W. R. Wilson and A. L. Streater, General Electric Co.

CP.\* Influence of Linkage Flexibility on Dynamic Behavior of High Capacity Outdoor Circuit Breakers. P. Barkan and E. J. Tuohy, General Electric Co.

**FRI. (Continued)**

2:00 P.M.

EMPIRE STATE ROOM

*Chairman:*

L. R. Larson, The Martin Co.

*Sponsor:*

Air Transportation Committee

**AIRCRAFT—MOTORS AND ACTUATORS**

58-844. Equivalent Circuits For Three-Phase Four-Wire Induction II Motors Operating On Non-Symmetrical Systems. J. T. Mitchell, Westinghouse Electric Corp.

CP58-833. Design Parameters For Airborne Electric Motor Actuators. H. C. Zachmann, The Martin Co.

CP58-838. Electric Starting Of Small Aircraft Gas Turbine Engines. C. D. Fearnot, General Electric Co.

58-828. Aircraft Switching Type Static Inverter Supplying Rotating III Machines. K. M. Chirgwin, Jack & Heintz, Inc.

CP.\* Determination of Intermittent Duty Rating of an Aircraft Motor by Equivalent Thermal Circuit and a Direct Analog Computer. J. N. C. Chi, General Electric Co.

2:00 P.M.

GEORGIAN ROOM

*Chairman:*

E. F. Kotnik, Convair Div., General Dynamic Corp.

*Sponsor:*

Air Transportation Committee

**AIRCRAFT—PARALLEL SYSTEMS**

58-830. Random Paralleling of Aircraft Alternators. F. P. deMello II and H. M. Rustebakke, General Electric Co.

CP58-921. Transistorized Automatic Paralleling Circuit. A. W. Pratt, Jack & Heintz, Inc.

58-922. Analog Computer Simulation Of An Aircraft Parallel A-C II Generating System. M. Riaz, Massachusetts Institute of Technology and P. E. Smith, Jr., Conval Corp.

CP58-923. Auxiliary Power Plant Operated In Parallel With Main Generators Martin YP6M-1 Seamaster. G. O. Allen and P. J. Brennan, Jr., The Martin Co.

CP58-924. The YP6M-1 Seamaster Three Generator Parallel AC System. G. O. Allen, The Martin Co. and M. J. Powell, General Electric Co.

**FRI. (Continued)**

2:00 P.M.

**NEW YORK ROOM**

*Chairman:*  
L. F. Kazda, University  
of Michigan

*Sponsor:*  
Feedback Control Sys-  
tems Committee.

**NONLINEAR FEEDBACK CONTROL SYSTEMS**

- CP58-804. On the Nonexistence of Finite-Stage Zeroing Procedures for Certain Systems With On-Off Controls. B. A. Fleishman, Rensselaer Polytechnic Institute and B. Friedman, Univ. of California.
- 58-860. Graphical Analysis and Synthesis of Feedback Control Systems—Part I: Theory & Analysis. D. Mitrovic, Univ. of Belgrade.
- 58-861. Graphical Analysis and Synthesis of Feedback Control Systems—Part II: Synthesis. D. Mitrovic, Univ. of Belgrade.
- 58-862. Graphical Analysis and Synthesis of Feedback Control Systems—Part III: Sampled-Data Feedback Control Systems. D. Mitrovic, Univ. of Belgrade.
- 58-852. Multi-Variable Control System Synthesis. R. J. Kavanagh, Univ. of Toronto.
- 58-894. A Novel and Simple Nonlinearized Control System. J. Zaborisky, Washington Univ.
- 58-895. Frequency Response of Nonlinear Closed-Loop Feedback Control Systems—I, S. L. Mikhail, Univ. of California and G. H. Fett, Univ. of Illinois.
- 58-771. The Describing Function of Backlash Followed By A Deadzone. A. D. Gronner, American Machine & Foundry Co.

**INSULATED CONDUCTORS**

- CP58-863. Aluminum-Sheathed Paper-Insulated Cables. C. T. Hatcher and F. P. West, Consolidated Edison Co. of N. Y. Inc.
- CP.\* A Study Of The Effects Of Corona On Polyethylene. E. J. McMahon, D. E. Maloney and J. R. Perkins, E. I. du Pont de Nemours & Co., Inc.
- CP58-864. An Investigation On Elastic Sheath Pressure Cables. N. Klein, Israel Institute of Technology.

**PROTECTIVE RELAYS & TRANSFORMERS**

- 58-789. Magnetizing-Inrush Phenomena in Transformer Banks. W. K. III Sonnemann, C. L. Wagner and G. D. Rockefeller, Westinghouse Electric Corp.
- 58-818. A Transformer Differential Relay With Second Harmonic Restraint. R. L. Sharp and W. E. Glassburn, Westinghouse Electric Corp.
- CP58-819. Protection of Parallel Three-Terminal Transmission Lines. B. C. Hicks and A. B. Sturton, Shawinigan Water & Power Co.

NOTE: Unnumbered Conference Papers (CP.\*) may be available at or after the meeting, if copies are provided by the author. They are not intended for publication in the TRANSACTIONS and are not presently scheduled for reproduction in any form by the Institute.

NOTE: The TRANSACTIONS papers will be printed in the bimonthly publications as follows:

- I COMMUNICATION AND ELECTRONICS.
- II APPLICATION AND INDUSTRY.
- III POWER APPARATUS AND SYSTEMS.

**SOCIAL EVENTS****HOSPITALITY**

On Sunday, June 22nd, from 4 p.m. to 6 p.m., a Welcome Tea will be held in the New York Room on the mezzanine floor of the Statler Hilton Hotel. This will give everyone an opportunity to meet old friends and make new acquaintances before the business of the meeting starts. A Ladies' Hospitality Suite will be open throughout the week, providing an opportunity for the ladies to become acquainted with the features provided for them. Here, again, will be found an excellent opportunity for the ladies to meet with old friends and make new acquaintances.

**GENERAL PROGRAM**

Registration, ticket and paper sale will begin on June 22nd at 1:00 p.m. on the mezzanine floor. Technical meetings are planned from Monday to Friday inclusive and cover, as may be seen, a variety of subjects. The Opening Ceremony will be held at 2 o'clock on Monday in the Ballroom, officially welcoming members attending. The Annual Meeting will be held at 2:30, after the Opening Ceremony. On Tuesday, June 24th, will be held a Section Delegates' Conference at 9:00 a.m. and again at 2:00 p.m. On Wednesday, June 25th, one of the highlights of the social events will be the **Niagara Panorama Trip**, which will include ladies and will be an all-day trip from 9:00 a.m. to 5:00 p.m. Bus transportation will carry visitors across the Peace Bridge to Canada and a luncheon will be provided at the Park Hotel in Niagara Falls, Ontario. This promises to be a well-attended and interesting trip. A luncheon is planned for Tuesday, June 24th at 12:00 noon in the Empire State Room. A. C. Montieth, Vice President of Westinghouse Electric Corp., will present a plaque to Robert Adam of the Adam, Meldrum & Anderson Department Store, commemorating the first commercial use of a transformer in 1886. On Wednesday, June 25th, Leston P. Faneuf, President of the Bell Aircraft Corp., will speak at a luncheon at 12:00 noon in the Ballroom. One of the highlights of the Thursday, June 26th, program will be a noon-day luncheon in the Ballroom which will be addressed by General Marvin C. Demler, Deputy Commander for Research and Development, Air Research and Development Command of the United States Air Force. This luncheon is particularly recommended for Air Transportation Conferees.

**PRESIDENT'S RECEPTION**

Thursday, June 26th, features one of the most important events of the meeting. The President's Reception and Banquet will be held in the Ballroom Foyer starting at 6:30, with the Banquet held in the Ballroom at 7:30. The Honorable Donald A. Quarles, Undersecretary of Defense, will be present and the highlight will be the presentation of an Honorary Membership in the AIEE to Dr. Quarles by Mr. Walter J. Barrett, President of AIEE. This will be an informal affair, followed by a period for dancing.

**INSPECTION TRIPS**

A program of twelve inspection trips has been arranged to permit delegates to become familiar with engineering work being done in this Niagara Frontier Area, which includes Canada. A trip to a large **Bethlehem Steel Plant** in Lackawanna, N. Y. has been planned for Thursday, June 26th. On Tuesday, June 24th, an all-day inspection trip from 9 o'clock in the morning until 5 o'clock in the afternoon, will be made via bus transportation to the **Lapp Insulator Plant** in LeRoy, N. Y. An inspection trip to the **Carborundum Co.** is planned for 1:30 P.M. on Tuesday. On this same day, an inspection trip to the **Westinghouse Electric Corporation Motor & Control Division Plant**, in Cheektowaga, N. Y., has been planned from 9 o'clock until

noon. An extraordinary opportunity will be provided on Tuesday, Thursday and Friday, to attend inspection trips to the **Nike Base** on Grand Island, N. Y., limited to twenty men per trip. On Wednesday, June 25th, inspection trips are planned to the **New York Telephone Company** from 9 a.m. until noon, and the **Bell Aircraft Corporation** from 2 p.m. until 5 p.m. This trip to Bell Aircraft will provide some interesting surprises. Also on Wednesday, June 25th, at 2 o'clock, is being planned an inspection trip to the Huntley Steam Generating Station of the **Niagara Mohawk Power Corporation**. This will provide an opportunity to visit one of the largest steam electric stations in the United States. On Thursday, June 26th, an inspection trip is planned to the **Cornell Aeronautical Laboratory** in Cheektowaga, N. Y. It is at this laboratory that much original work is done, solving problems relative to missile development. This trip will be made from 9:00 in the morning until noon. An all-day trip, covering a visit to the **Sir Adam Beck Generating Station** in Canada and including the new **Lewiston Power Project** of the New York State Power Authority, will end with a visit to the **Edward Dean Adams Station**, which provided the first alternating current for system distribution in the United States. This trip, from 9:00 in the morning until 5:00 in the afternoon, will include a talk by Gardner H. Dales of the Niagara Mohawk Power Corporation, covering the theme of this Summer Meeting—"The Birthplace of Electrical Power."

The Ladies' Entertainment Committee, headed by Mr. and Mrs. Sigmund, is arranging a series of special events for the 1958 Summer General Meeting. Every day, from Monday through Friday, from 9 until 10 a.m., a Ladies' Coffee Hour will be held in the Grover Cleveland Room of the Statler Hilton Hotel. On Monday, from 1:00 until 5:00 p.m., a tour of the world-famous Kittinger Furniture Plant, in Buffalo, will be arranged. One of the highlights of this program for the ladies will be on Tuesday, June 24th, at 12 noon. At this time a ladies' fashion show and luncheon will be held in the Rendezvous Room of the Statler Hilton Hotel. On Thursday, June 26th, at 2 o'clock in the afternoon, a ladies' tour of the General Mills Cereal Plant will be made. As noted above, there will always be available the Ladies' Hospitality Room, where information concerning both the events and Buffalo proper may be easily obtained.

Arrangements are completed for bus transportation and availability of tickets for Tuesday, June 24th and Wednesday, June 25th, for attendance at **Melody Fair**. This provides an opportunity to attend a theater-in-the-round presentation of leading Broadway musical comedies. For the sports-minded men, a men's **golf tournament** is being set up to be held at the Country Club of Buffalo. This will be an opportunity of playing on one of the finest links in the area and will undoubtedly be enjoyed by all on Tuesday, June 24th, in the afternoon.

**LADIES' ENTERTAINMENT**

**GENERAL ENTERTAINMENT**

**OFFICERS OF AIEE 1957-1958**

**President**

Walter J. Barrett

**Past Presidents**

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W. A. Lewis, Jr.	H. H. Watson
John Meszar	Ernst Weber
A. C. Muir	

## Summer General Meeting Committees

<b>GENERAL</b>	D. J. Munhall— <i>General Chairman</i> B. S. Rice— <i>Vice Chairman &amp; Secretary</i> L. J. Murphy— <i>Treasurer</i>
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<b>REGISTRATION</b>	G. W. Eighmy— <i>Chairman</i>
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<b>PROGRAMME</b>	E. J. Rahill— <i>Chairman</i>
<b>TECHNICAL PAPERS</b>	J. P. Wood— <i>Chairman</i>
<b>INSPECTION TRIPS</b>	G. H. Dales— <i>Co-Chairman</i> R. A. Beurman— <i>Co-Chairman</i>
<b>TRANSPORTATION</b>	C. H. Sullivan, Jr.— <i>Chairman</i>
<b>SPORTS</b>	Wm. Kelly— <i>Chairman</i>
<b>LUNCHEES &amp; DINNERS</b>	C. Gaylord— <i>Chairman</i>
<b>PRESIDENT'S RECEPTION &amp; BANQUET</b>	T. J. Brosnan— <i>Chairman</i>
<b>STUDENTS</b>	C. M. Fogel— <i>Chairman</i>
<b>LADIES PROGRAM</b>	Mr. & Mrs. E. F. Sigmund— <i>Co-Chairmen</i>
<b>SPECIAL PROJECTS</b>	C. W. King— <i>Chairman</i>
<b>AIR TRANSPORTATION</b>	M. O. Johnson— <i>Liaison Representative</i>

## COMMITTEE MEETINGS

### MONDAY, JUNE 23rd

#### 9:00 A.M.

Research  
TOD Manual Subcommittee  
Sections  
Constitution and By-Laws  
Professional Conduct  
Stray Load Loss Working Group  
Periodicals and Transactions  
M.A. Controls Converters Working Group

#### 1:00 P.M.

Excitation Systems Subcommittee

#### 2:00 P.M.

Annual Meeting  
Stray Load Loss Working Group

#### 3:00 P.M.

System Planning Subcommittee

#### 4:00 P.M.

Special Publications  
District #9 Section Delegates  
Probability Applications Working Group  
Radio Communication Systems  
S.M.R. Special Applications Group

#### 6:00 P.M.

Dinner—S.M.R. Special Applications Group and Combined Magnetic & Controlled Semiconductor Devices Subcommittee

#### 7:00 P.M.

Hydroelectric Systems Subcommittee

### TUESDAY, JUNE 24th

#### 9:00 A.M.

Section Delegates Conference  
Student Branches  
Semiconductor Metallic Rectifiers  
Rotating Machinery Insulation Working Group  
Substations  
Industrial Power Systems  
TOD Administrative  
Data Communication  
Nucleonics  
Publications Department  
Recording & Controlling Instrumentation Administrative

HARTFORD ROOM  
ST. LOUIS ROOM  
BOSTON ROOM  
SHOWROOM I  
DETROIT ROOM  
SHOWROOM II  
SHOWROOM III  
SHOWROOM IV

BOSTON ROOM

GOLDEN BALLROOM  
SHOWROOM II

ST. LOUIS ROOM

SHOWROOM IV  
SHOWROOM III  
SHOWROOM I  
HARTFORD ROOM  
DETROIT ROOM

DETROIT ROOM

SHOWROOM II

EMPIRE STATE ROOM  
DETROIT ROOM  
HARTFORD ROOM  
SHOWROOM I  
ST. LOUIS ROOM  
SHOWROOM II  
BOSTON ROOM  
SHOWROOM III  
SHOWROOM IV  
B.A.C.\*  
B.A.C.\*

## COMMITTEE MEETINGS (Continued)

BOSTON ROOM  
GROVER CLEVELAND  
ROOM

BOSTON ROOM  
SHOWROOM IV  
B.A.C.\*  
B.A.C.\*

EMPIRE STATE ROOM  
B.A.C.\*  
DETROIT ROOM  
SHOWROOM III  
HARTFORD ROOM  
ST. LOUIS ROOM  
SHOWROOM I  
BOSTON ROOM  
SHOWROOM II

HARTFORD ROOM  
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SHOWROOM II  
SHOWROOM IV  
SHOWROOM I  
B.A.C.\*

BOSTON ROOM

SHOWROOM III

HARTFORD ROOM  
SHOWROOM II  
SHOWROOM I  
SHOWROOM III  
DETROIT ROOM  
SHOWROOM IV  
BOSTON ROOM  
ST. LOUIS ROOM

BOSTON ROOM  
B.A.C.\*  
HARTFORD ROOM

### 10:00 A.M.

Technical Committee Groupings  
Conference of Members of Women's Auxiliaries

### 12:00 NOON

Luncheon—Indicating & Integrating Instruments  
Luncheon—Nucleonics  
Luncheon—Communication Division  
Luncheon—Recording & Controlling Instrumentation Administrative

### 2:00 P.M.

Section Delegates Conference  
Communication Division  
Recognition Awards  
Hermetic Motor Insulation W.G. (Systems)  
Air Transportation  
Industrial Control  
Student Branches  
Power Generation  
Semiconductor Metallic Rectifiers

### 4:00 P.M.

Aircraft Electric Rotating Machinery  
Hermetic Motor Insulation Subcommittee  
Land Transportation  
Basic Sciences  
Electronics  
Dinner—Magnetic Amplifiers

### 7:30 P.M.

Power Generation

### 8:00 P.M.

Electronic Circuits and Systems Subcommittee

## WEDNESDAY, JUNE 25th

### 9:00 A.M.

Empire District Executive  
Aircraft and Flight Test Instrumentation  
F.C.S. Components Specifications Subcommittee  
Industry Division  
Administration Department  
Lightning and Insulator Subcommittee  
Professional Development & Recognition Dept.  
Power Division

### 12:00 NOON

Luncheon—TV & Aural Broadcasting  
Luncheon—Instrumentation Division  
Luncheon—Empire District Executive

SHOWROOM II

HARTFORD ROOM  
SHOWROOM III  
BOSTON ROOM  
SHOWROOM I  
SHOWROOM IV  
DETROIT ROOM  
SHOWROOM II  
PRIVATE SUITE

HARTFORD ROOM  
DETROIT ROOM

NEW YORK ROOM

BOSTON ROOM  
HARTFORD ROOM  
ST. LOUIS ROOM  
SHOWROOM I  
DETROIT ROOM  
SHOWROOM II

DETROIT ROOM

BOSTON ROOM  
ST. LOUIS ROOM

HARTFORD ROOM  
BOSTON ROOM  
ST. LOUIS ROOM  
DETROIT ROOM  
SHOWROOM I  
SHOWROOM III

HARTFORD ROOM

ST. LOUIS ROOM

HARTFORD ROOM  
DETROIT ROOM

BOSTON ROOM

HARTFORD ROOM

### 1:00 P.M.

System Economics Subcommittee

### 2:00 P.M.

Empire District Executive  
Science and Electronics Division  
Feedback Control Systems  
F.C.S. Components Specifications Subcommittee  
Electrical Systems for Commercial Buildings  
Administration Department  
System Engineering  
Institute Activities and Organization

### 4:00 P.M.

Aircraft Dielectric Testing Procedures Subcommittee  
Airborne Electric Apparatus Subcommittee

### 7:30 P.M.

Forum of Technical Committee Chairmen

## THURSDAY, JUNE 26th

### 9:00 A.M.

Technical Operations Department  
Vice-Presidents and District Secretaries  
Admissions and Advancement Department  
Arcing Fault Task Group  
Electronics Power Transformer Working Group  
Management

### 11:00 A.M.

Electronic Transformers Subcommittee

### 12:00 NOON

Luncheon—Technical Operations Department  
Luncheon—Wire Communication Systems

### 2:00 P.M.

Vice-Presidents and District Secretaries  
Communication Theory  
Power Industry Computer Application Conference  
Planning and Coordination  
Arcing Fault Task Group  
Computing Devices

### 4:00 P.M.

Aircraft Electric Systems Subcommittee

### 6:00 P.M.

Dinner—Pulse Transformer Working Group

## FRIDAY, JUNE 27th

### 9:00 A.M.

Board of Directors  
Frequency Range Transformers Working Group

### 12:00 NOON

Luncheon—Board of Directors

### 2:00 P.M.

Board of Directors

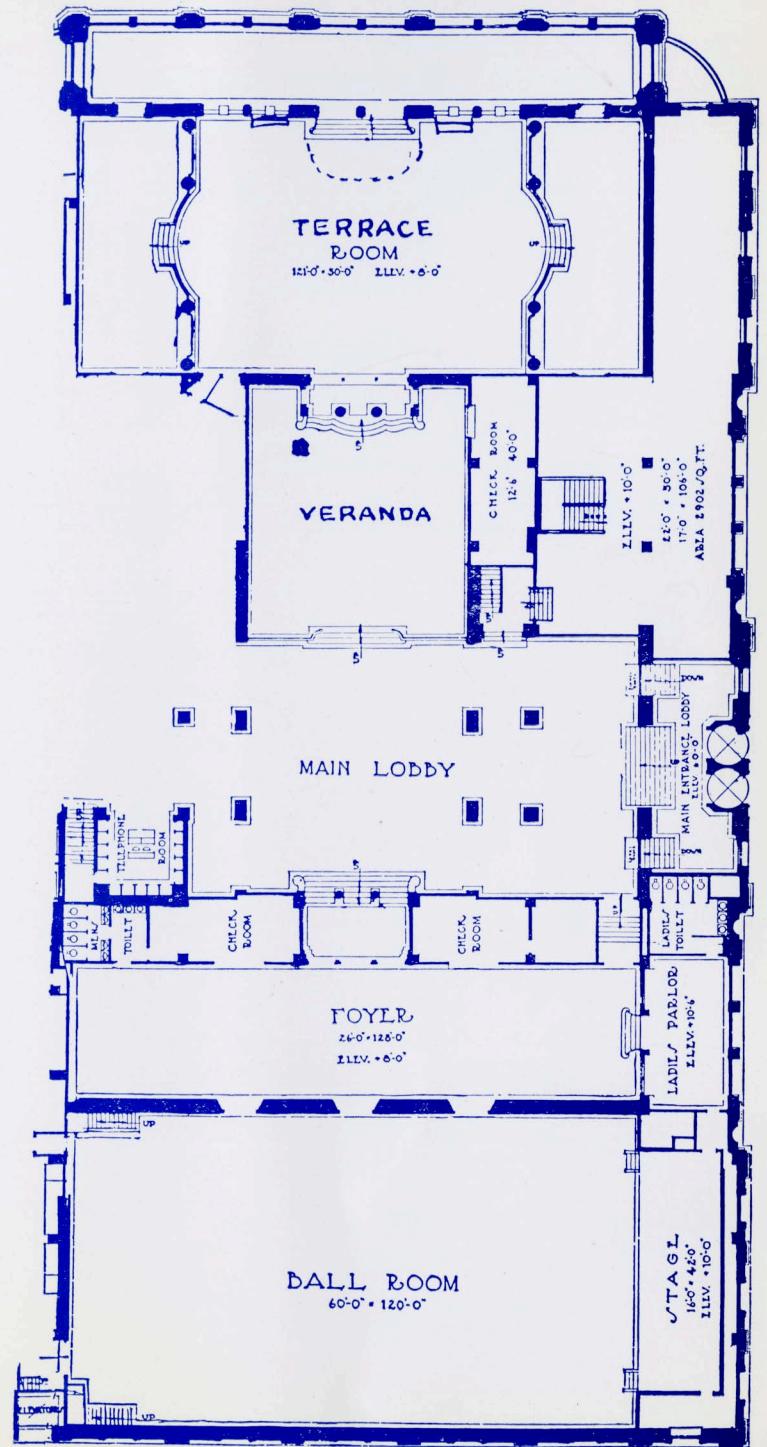
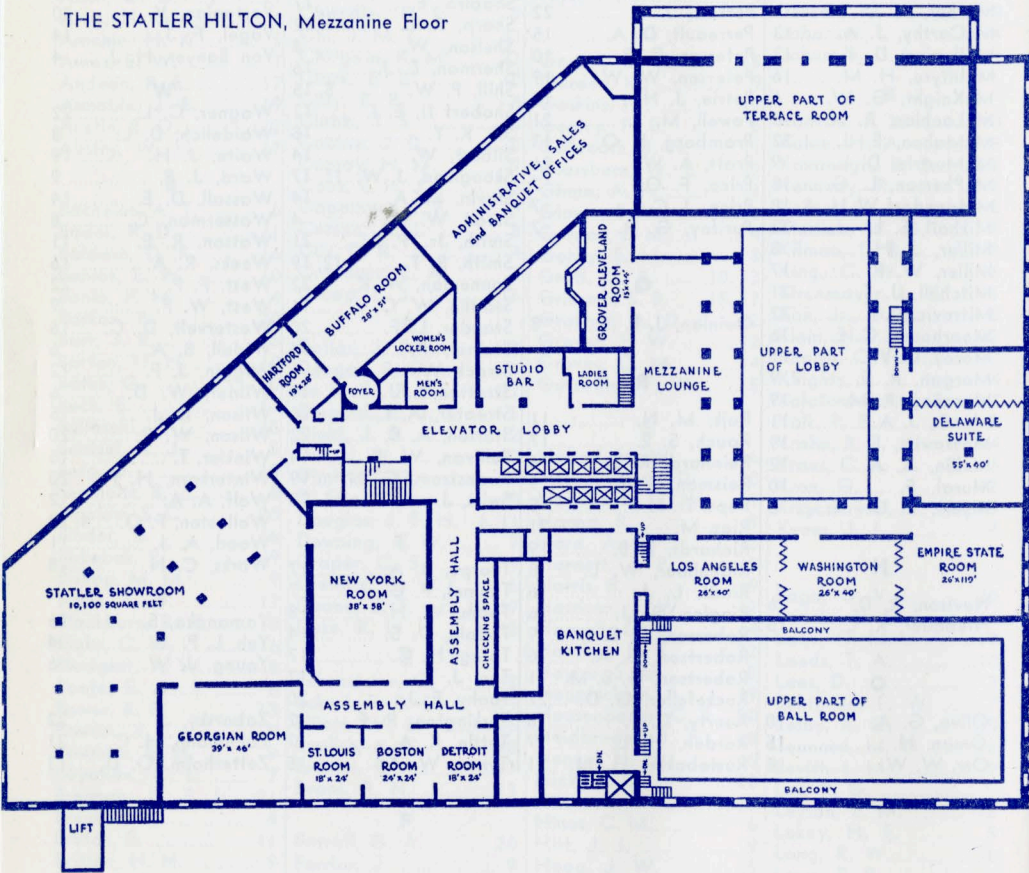
\*Buffalo Athletic Club



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THE STATLER HILTON, Mezzanine Floor



Lobby Floor  
THE STATLER HILTON, BUFFALO

An aerial photograph of a large dam and bridge structure spanning a wide river. The dam is on the right side, with water cascading over its spillway. A long bridge extends from the dam towards the left. In the background, there are forested hills and a large body of water. The entire image has a blue tint.

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