

**American Institute of
Electrical Engineers**



WINTER

GENERAL

MEETING

Program

*Please retain for use during
entire meeting*

NEW YORK, N. Y.

JANUARY 31 - FEBRUARY 4

1955

Meeting Headquarters

HOTEL STATLER

GENERAL INFORMATION

This 1955 Winter General Meeting features a well diversified program of technical and social activities. A group of inspection trips has also been arranged closely allied with the technical sessions. On the social side, there will be a dinner-dance, a smoker, theater tickets for out-of-town members, and special entertainment for the ladies.

Brig. General David Sarnoff will deliver the principal address at the General Session to be held at 2:30 p.m. Monday, January 31, 1955. At this session also, the John Scott Medal will be presented to Dr. Marvin Camras and the Institute Paper Prizes will be presented. President A. C. Monteith will preside.

Due to the large number of technical sessions, it has been necessary to schedule several to be held in the Hotel Governor Clinton, 7th Avenue and 31st Street.

REGISTRATION FEES REQUIRED. As instituted several years ago, a registration fee of \$3.00 has been established for members and \$5.00 for nonmembers. These fees have made the meetings self-supporting and have been largely responsible for postponing the need for raising the annual dues. Enrolled students 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. Press headquarters will be in the Sutton Room. Efforts will be made to deliver telegrams and messages promptly. Members who expect to receive mail are asked to collect same promptly at the mail and telegram desk. Please check this desk frequently. The Institute rooms and offices on the 10th floor of the Engineering Societies Building are open to all members.

BROADCAST TICKETS have been obtained for many of the principal broadcasts in various evenings during the week. These are available at the entertainment desk. Some prior reservations and theater tickets are still available.

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, discussions in duplicate of numbered papers must be sent to Edward C. Day, Assistant Secretary for Technical Papers, Committee on Technical Operations, 33 West 39th Street, New York 18, New York, before February 18, 1955. Discussions received later may be returned 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 glossy photographs and inked tracings should be submitted.

Authors and discussors should make their presentation as effective as possible. Remember your audience. Stress the salient features of the paper which are new or novel. When using slides, please turn toward the audience before speaking and raise your voice. Extemporaneous delivery is preferable to reading unless done slowly and emphasis is put in the proper places.

ADVANCE COPIES OF PAPERS may be purchased by members at the registration desk at the uniform price of \$.30 each (\$.60 each to nonmembers). Some Conference Papers may be 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 \$9.00 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, N. Y. Most of the numbered papers will ultimately be published in the Bimonthly Publications and in the TRANSACTIONS. Conference papers denoted by CP.** are intended for presentation only.

SCHEDULE OF EVENTS
For Entertainment, Inspection Trips and Points of Interest, See Separate Folder

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
<p>10:00 A.M. Switchgear <i>Grand Ballroom</i></p> <p>Transformers <i>Georgian Room</i></p> <p>Special Communications Applications <i>Penn Top North</i></p> <p>Electrochemical Processes <i>Skytop</i></p> <p>Conference on Fields <i>East Room</i></p> <p>Electric Space Heating and Heat Pumps <i>Penn Top South</i></p> <p>Semi-Conductor Devices <i>Keystone Room</i></p>	<p>9:30 A.M. Switchgear <i>Grand Ballroom</i></p> <p>Section Delegates Conference <i>Penn Top North</i></p> <p>Electronic Power Converters <i>West Room</i></p> <p>Transformers <i>Georgian Room</i></p> <p>Antennas and Propagation <i>Chelsea Room*</i></p> <p>Thermal Aging of Insulation <i>Skytop</i></p> <p>Basic Concepts <i>Greeley Room*</i></p> <p>Insulated Conductors <i>Keystone Room</i></p> <p>Land Transportation <i>East Room</i></p> <p>Direct Current Machines <i>Florentine Room*</i></p> <p>Transistor Reliability— <i>Governor Room*</i></p> <p>Safety <i>Penn Top South</i></p>	<p>9:30 A.M. Switchgear <i>Governor Room*</i></p> <p>Wire Communications <i>East Room</i></p> <p>Petroleum Industry <i>Chelsea Room*</i></p> <p>Electronic Aids to Navigation <i>Florentine Room*</i></p> <p>Symposium on Liquid Dielectrics <i>Penn Top North</i></p> <p>Circuit Theory <i>Greeley Room*</i></p> <p>Feedback Control Systems <i>Penn Top South</i></p> <p>Synchronous Machines <i>Keystone Room</i></p> <p>Magnetic Amplifiers <i>Skytop</i></p> <p>Computing Devices <i>Georgian Room</i></p> <p>System Engineering <i>Grand Ballroom</i></p> <p>Engineering Code of Ethics <i>West Room</i></p>	<p>9:30 A.M. Carrier Current <i>Florentine Room*</i></p> <p>Communication Switching <i>Chelsea Room*</i></p> <p>Industrial Control <i>East Room</i></p> <p>Solid Dielectrics <i>Skytop</i></p> <p>Semiconductors <i>Penn Top South</i></p> <p>Computing Devices <i>Governor Room*</i></p> <p>Transmission & Distribution <i>Grand Ballroom</i></p> <p>Relays and Syn. Mach. <i>Georgian Room</i></p> <p>Instruments <i>Greeley Room*</i></p> <p>Education <i>West Room</i></p> <p>Substations <i>Keystone Room</i></p> <p>Electron Equipment Reliability—I <i>Penn Top North</i></p>	<p>9:30 A.M. Physics in the Electrical Engineering Curriculum <i>Penn Top South</i></p> <p>Basic Sciences <i>East Room</i></p> <p>Transmission and Distribution <i>Grand Ballroom</i></p> <p>Power Generation <i>Georgian Room</i></p> <p>Telegraph Systems <i>West Room</i></p> <p>Induction Machines <i>Keystone Room</i></p> <p>Instrumentation <i>Penn Top North</i></p> <p>Electronic Circuitry <i>Skytop</i></p>

*Located in Hotel Governor Clinton

<p>2:30 P.M. General Session <i>Grand Ballroom</i></p>	<p>1:45 P.M. Presentation of the John Fritz Medal to Harry A. Winne <i>Georgian Room</i></p> <p>2:30 P.M. Switchgear <i>Grand Ballroom</i></p> <p>Section Delegates Conference <i>Penn Top North</i></p> <p>Transformers <i>Georgian Room</i></p> <p>Color Television <i>Chelsea Room*</i></p> <p>Catholic Protection <i>Greeley Room*</i></p> <p>Insulation <i>Skytop</i></p> <p>Insulated Conductors <i>Keystone Room</i></p> <p>Land Transportation <i>East Room</i></p> <p>Direct Current Machines <i>Florentine Room*</i></p> <p>Transistor Reliability— Session II—Circuits <i>Governor Room*</i></p> <p>Preventing Fires <i>West Room</i></p> <p>Magnetic Amplifiers <i>Penn Top South</i></p>	<p>1:45 P.M. Presentation of the Edison Medal to Oliver E. Buckley <i>Georgian Room</i></p> <p>2:30 P.M. Switchgear and Substations <i>Governor Room*</i></p> <p>Wire Communications <i>East Room</i></p> <p>Industrial Power Systems <i>West Room</i></p> <p>Research <i>Grand Ballroom</i></p> <p>Dielectrics <i>Penn Top North</i></p> <p>Chemical Industry <i>Florentine Room*</i></p> <p>Transmission & Distribution <i>Chelsea Room*</i></p> <p>Feedback Control Systems <i>Penn Top South</i></p> <p>Synchronous Machines <i>Keystone Room</i></p> <p>Magnetic Amplifiers <i>Skytop</i></p> <p>Computers & Instrumentation <i>Greeley Room*</i></p> <p>Management <i>Georgian Room</i></p>	<p>2:00 P.M. Radio Communications <i>Skytop</i></p> <p>Industrial Control <i>East Room</i></p> <p>Nucleonics <i>Florentine Room*</i></p> <p>Computing Devices <i>Governor Room*</i></p> <p>Transmission and Distribution <i>Grand Ballroom</i></p> <p>Measurements <i>Greeley Room*</i></p> <p>Synchronous Machines <i>Keystone Room</i></p> <p>Relays <i>Georgian Room</i></p> <p>Electron Equipment Reliability—II <i>Penn Top North</i></p> <p>X-Ray Equipment <i>Chelsea Room*</i></p> <p>Semi-Conductor Energy Converters <i>Penn Top South</i></p> <p>Power Engineering <i>West Room</i></p>	<p>2:00 P.M. Basic Sciences <i>East Room</i></p> <p>Transmission and Distribution and Protective Devices <i>Grand Ballroom</i></p> <p>Power Generation <i>Georgian Room</i></p> <p>Telegraph Facsimile Systems <i>West Room</i></p> <p>Dielectric Measurements <i>Keystone Room</i></p>
---	---	---	---	--

*Located in Hotel Governor Clinton

Monday, January 31

10:00 a.m.—Switchgear

Committee on Switchgear
Grand Ballroom
J. D. WOOD, Presiding

- 55-213. The Results of Seven Years' Experience with High Capacity Outdoor Oil Breakers. C. J. Balentine and K. G. Darrow, General Electric Co.
- 55-216. Dynamics of High Capacity Outdoor Oil Breakers. Philip Barkan, General Electric Co.
- 55-219. Application of Volume Theory of Dielectric Strength to Oil Circuit Breakers. W. R. Wilson, A. L. Streater and E. J. Tuohy, General Electric Co.
- 55-220. Capacitance-Switching Facilities at the Switchgear Development Laboratory, R. L. Williams, L. L. Mankoff and H. N. Schneider, General Electric Co.

10:00 a.m.—Transformers

Committee on Transformers
Georgian Room
J. A. ADAMS, Presiding

- 55-43. Evaluation and Application of Silicone-Organic Resin Combinations for Dry-Type Transformer Insulation. G. F. Simmons and A. L. Scheideler, General Electric Co.
- 55-44. Functional Temperature Endurance Tests on a Silicone Glass Fiber Insulation System for Dry-Type Transformers. M. L. Manning, Pennsylvania Transformer Co.
- 55-34. Epoxy Resin Casting of Dry-Type Current Transformers. W. C. Farneth and George Gallousis, Allis-Chalmers Mfg. Co.
- CP.** Functional Life Expectancy Tests for Liquid Filled Distribution Transformers. A. M. Lockie, Westinghouse Electric Corp.

10:00 a.m.—Special Communications Applications

Committee on Special Communications Applications
Penn Top North
E. C. CHAMBERLIN, JR., Presiding

- 55-177. A Tapered Strip Transmission Line for Pulse Transformer Service. F. G. Primozych, North American Aviation, Inc., E. R. Schatz and J. B. Woodford, Carnegie Institute of Technology.
- CP55-178. Wartime Telecommunications Experiences. A. C. Kovats, Northern Electric Co.
- 55-179. Economic Design of Saturating Reactor Magnetic Pulsers. R. A. Mathias and E. M. Williams, Carnegie Institute of Technology.

10:00 a.m.—Electrochemical Processes

Committee on Chemical, Electrochemical and Electrothermal Applications
Skytop
W. E. GUTZWILLER, Presiding

- 55-138. Application of Germanium Power Rectifiers. R. M. Crenshaw, General Electric Co. Re-presented for discussion.
- CP.** Lightning Protection at Chalmette, La. Aluminum Reduction Plant, G. B. Scheer, Kaiser Engineers.
- CP.** Report on Latest Operating Experience with Mechanical Rectifiers. Kenneth McCaskill, Hooker Electrochemical Co.
- CP.** Report on Operating Experience with Glass Bulb Type Rectifiers. A. F. Paskevich, O'Donnell Electric Co.
- CP.** Symposium: Routine Maintenance of Large Rectifier Substations in Electrolytic Plants.

MON. (contd.)

10:00 a.m.—Conference on Fields

Committee on Basic Sciences
East Room
M. G. MALTI, Presiding

- CP.** Solution of Field Problems with the Aid of Distributed Circuit Parameter Concepts. S. A. Schelkunoff, Bell Telephone Labs., Inc.
- CP.** Effects of Random Variations on the Patterns of Discreet Antennae Arrays. E. N. Gilbert and S. P. Morgan, Jr., Bell Telephone Labs., Inc.
- 55-104. An Automatic Field Plotter. R. Gelfand, B. J. Shinn and F. B. Tuteur, Yale University.
- 55-105. Improving Field Analogues Through Conformal Mapping. H. K. Farr and W. A. Keen, Jr., General Electric Co.

10:00 a.m.—Electric Space Heating and Heat Pumps

Committee on Domestic and Commercial Applications
Penn Top South
CONSTANTINE BARY, Presiding

- CP.** A Glance at the Progress of the Heat Pump. E. R. Ambrose, Chairman, Joint AEIC-EEI Heat Pump Committee.
- CP55-233. A Brief Description of the Design and Operation of Four Heat Pump Installations in the Tennessee Valley, B. H. Martin, Tennessee Valley Authority and C. L. Carter, Celanese Corp.
- CP.** Earth Source Heat Pumps Characteristics, Design and Operation. E. A. Freund and G. S. Whitlow, Union Electric Co. of Missouri.
- CP.** NEC Provisions for Fixed Electrical Space Heating. J. M. Turnbull, Western Massachusetts Electric Co.
- CP.** Load Characteristics of the Residential Consumer Using Electricity for House Heating. W. R. New, Tennessee Valley Authority.
- 55-232. Residential Electric Space Heating in Detroit for 1952-1953 Heating Season. A. E. Bush and R. P. Woodward, The Detroit Edison Co. Re-presented for discussion.
- CP55-237. Alternating Current Release of Thermal-Electric Devices. P. L. Betz, Consolidated Gas, Electric and Power Co. of Baltimore.

10:00 a.m.—Semi-Conductor Devices

Committee on Electronics
Keystone Room
J. P. JORDAN, Presiding

- CP.** Switching Transistor Control System for a Magnetic Amplifier. W. G. Hall and R. I. VanNice, Westinghouse Electric Corp.
- CP.** Silicon Transistor. A. D. Rittmann, Philco Corporation.
- CP.** Advances in Design and Application of the Double-Base Diode. J. J. Suran, R. W. Aldrich, I. A. Lesk, General Electric Co.
- CP.** Forming Techniques and Measurements on Gold-Bonded Transistors. M. W. Aarons, W. E. Bulman and E. B. Dale, Battelle Memorial Institute.

2:30 p.m.—General Session

Grand Ballroom
President A. C. MONTIETH, Presiding

- "Address". President A. C. Monteith.
- Presentation of the Institute paper prizes.
- Presentation of the John Scott Medal to Dr. Marvin Camras.
- "Address". Brig. General David Sarnoff.

Tuesday, February 1

9:30 a.m.—Switchgear

Committee on Switchgear
Grand Ballroom
J. C. WOODS, Presiding

- 55-13. High-Current Testing of Air-Disconnect Switches. B. F. Gostin, Tennessee Valley Authority.
- 55-9. Results of High-Current Tests on 161-Kv Disconnecting Switches. A. M. McNerney, Tennessee Valley Authority.
- 55-11. Behavior of High Voltage Busses and Insulators During Short Circuits. R. M. Milton and Fred Chambers, Tennessee Valley Authority.
- 55-217. Ribbon Elements for High Voltage Current Limiting Fuses. A. H. Powell and C. L. Schuck, General Electric Co.
- CP.** Report of International Electrotechnical Commission. V. L. Cox, General Electric Co.

9:30 a.m.—Section Delegates Conference

Committee on Sections
Penn Top North
W. R. HOUGH, Presiding

9:30 a.m.—Electronic Power Converters

Committee on Electronic Power Converters
West Room
C. A. LANGLOIS, Presiding

- 55-39. Field Tests on a 100-Megawatt Rectifier Installation. J. K. Dillard, C. S. Hague, Westinghouse Electric Corp. and John Kiefer, Reynolds Metals Co.
- 55-45. Regulation Curves and Transient Currents of Double-Way and Double-Wye Rectifiers. L. E. Jensen and C. E. Rettig, General Electric Co.
- CP.** Safety, Experience and Practice, in the Operation of Mercury Arc Rectifiers in an Aluminum Plant. R. N. Wagner and J. P. Pitman, Aluminum Co. of America.
- CP.** Amplistat Regulators for Mercury Arc Rectifiers. M. M. Morack and A. Schmidt, Jr., General Electric Co.

9:30 a.m.—Transformers

Committee on Transformers
Georgian Room
J. R. MEADOR, Presiding

- 55-31. Recent Contributions to Transformer Audible Noise Control. W. B. Conover and R. J. Ringlee, General Electric Co.
- 55-26. An Anechoic Chamber for Noise Tests on Large Power Transformers. A. W. Benoit (retired), R. T. Hemmes and M. W. Schulz, Jr., General Electric Co.
- 55-12. An Experimental Gas-Insulated 138 KV Current Transformer. G. Camilli, General Electric Co.

9:30 a.m.—Antennas and Propagation

Committee on Television and Aural Broadcasting Systems
Chelsea Room, Hotel Governor Clinton
D. B. SINCLAIR, Presiding

- CP.** TV Assignment Rules and Policies. C. B. Plummer, Federal Communications Comm.
- CP.** UHF Wave Propagation. R. P. Wakeman, Allen B. DuMont Labs.
- CP.** Performance of Sectionalized Broadcasting Towers. C. E. Smith, Carl E. Smith Consulting Engineers, D. B. Hutton, Federal Communications Comm. and W. G. Hutton, Goodyear Aircraft Corp.

TUES. (contd.)

- 55-139. Television Receiver Signal Overload. C. Masucci, CBS-Columbia.

9:30 a.m.—Thermal Aging of Insulation

Committee on Basic Sciences
Skytop
L. J. BERBERICH, Presiding

- 55-46. A Method for Evaluation of Thermal Stability of Magnet Wire Enamel. G. C. Currin and J. F. Dexter, Dow Corning Corp. Re-presented for discussion.
- 55-47. Determination of Thermal Life of Enameled Wire by Laboratory Test Methods. F. A. Sattler, Westinghouse Electric Corp. Re-presented for discussion.
- CP.** Heat Resistant Magnet Wire. W. F. Gilliam, E. M. Boldebuck and J. R. Elliott, General Electric Research Lab.
- CP.** Heat Resistant Insulation for Motors. J. H. Clawson, C. J. Herman and K. N. Mathes, General Electric Co.
- 55-48. Functional Evaluation of Magnet Wire Insulation. E. L. Brancato and R. S. Phillips, Naval Research Lab.
- CP.** Thermally Stable Wire Enamel. F. A. Sattler, J. Swiss and C. B. Leape, Westinghouse Research Labs.

9:30 a.m.—Basic Concepts

Committee on Basic Sciences
Greeley Room, Hotel Governor Clinton
V. P. HESSLER, Presiding

- CP.** Comments on Definition and Measurement of Physical Quantities with Particular Reference to Rationalized, Non-rationalized, and Gaussian Forms of Maxwells Equations. S. A. Schelkunoff, Bell Telephone Labs., Inc.
- 55-49. Recommendations of I.E.C. Technical Committee No. 24 on Electric and Magnetic Magnitudes and Units (E.M.M.U.). J. J. Smith, General Electric Co.
- CP.** The Definition of Voltage. W. R. LePage, C. R. Cahn and D. W. Spence, Syracuse University.
- CP.** The Definition of Magnetic Vector Potential. W. R. LePage, Syracuse University.

9:30 a.m.—Insulated Conductors

Committee on Insulated Conductors
Keystone Room
M. H. McGRATH, Presiding

- 55-32. Oil Flow and Pressure Calculations for Pipe-Type Cable Systems. AIEE Working Group on Pipe-Type Cable Hydraulics.
- 55-50. Gas Pressurized, 120 KV and 161 KV, Pipe Type Cables in Ontario. S. Kozak, Canada Wire & Cable Co., Ltd. and C. Prescott, Hydro Electric Power Commission of Ontario.
- CP55-240. Freezing Pipe Type Cable. E. J. Merrell, Phelps Dodge Copper Products Corp.
- CP.** Charging Current Limitations on Power Output of High Voltage Cable Lines. C. S. Schifreen and W. C. Marble, Philadelphia Electric Co.
- 55-51. An Improved Approximate Technique for Calculating Cable Temperature Transients. F. C. Van Wormer, General Electric Co.

9:30 a.m.—Land Transportation

Committee on Land Transportation
East Room
R. L. KIMBALL, Presiding

- 55-202A. Ignitron Multiple-Unit Cars for the New Haven Railroad. E. W. Ames, Westinghouse Electric Corp. and V. F. Dowden, New York, New Haven and Hartford RR Co.

TUES. (contd.)

- 55-203. Considerations in Applying D-C Traction Motors on Rectified Single-Phase Power. M. Simon, General Electric Co.
- 55-204. Thermal Stability of a New Insulating Material Used in Traction Motors. R. W. Finholt, General Electric Co.
- 55-205. A New Power Supply for Railway Cars. E. F. Bredenberg, General Electric Co.

9:30 a.m.—Direct Current Machines

Committee on Rotating Machinery
Florentine Room, Hotel Governor Clinton
A. T. McCLINTON, Presiding

- 55-106. Correlation of Temperature Measurements on D-C Armatures. D. D. Gerbetz and J. W. Ewing, Reliance Electric & Engineering Co.
- 55-107. A Circuit Approach to the Analysis of a Two Stage Dynamo-Electric Amplifier. R. W. Burtness, La Grange Park, Illinois.
- CP55-108. Metadyne Transients. K. A. Fegley, University of Pennsylvania.
- 55-109. D-C Machines: Response to Impact Excitation. J. J. Brockman and C. E. Linkous, General Electric Co.

9:30 a.m.—Transistor Reliability—Session I—Devices

Committee on Electronics
Governor Room, Hotel Governor Clinton
H. L. OWENS, Presiding

- CP.** A Survey of the Scientific Aspects of Transistor Reliability. Part A—G. W. Pratt, Massachusetts Institute of Technology. Part B—J. E. Thomas, Massachusetts Institute of Technology.
- CP.** A Reliable Point Contact Transistor for Military Operations. N. J. Herbert, Bell Telephone Labs., Inc.
- CP.** Reliability of Hermetically Sealed Junction Transistors. C. H. Zierdt, General Electric Co.

9:30 a.m.—Safety

Committee on Safety
Penn Top South
W. T. ROGERS, Presiding

- S-69. Bibliography on Electrical Safety—1930-1953. J. A. Gienger, Eastman Kodak Co. and R. L. Lloyd, National Bureau of Standards. Re-presented for discussion.
- CP55-239. Practical Effects of Electricity on the Heart. S. A. Talbot, The Johns Hopkins Hospital.
- 55-95. Electric Defibrillation. W. B. Kouwenhoven and W. R. Milnor, The Johns Hopkins University.
- 55-87. Field Current Sources for Electric Defibrillation. P. L. Betz, Consolidated Gas Electric Light and Power Co. of Baltimore.

1:45 p.m.—Presentation of the John Fritz Medal to Harry A. Winne

Georgian Room
T. G. LeCLAIR, Presiding

The John Fritz Medal. W. M. Peirce, Past President, AIME. The Career of the Medalist. C. H. Lang, General Electric Co. Presentation of the Medal. T. G. LeClair, Chairman John Fritz Medal Board of Award.
Response by the Medalist. Harry A. Winne.

2:30 p.m.—Switchgear

Committee on Switchgear
Grand Ballroom
J. D. WOOD, Presiding

- 55-218. A 69 KV Compressed Air Circuit Breaker for 5,000,000 KVA. R. E. Kane and J. K. Walker, Westinghouse Electric Corp.

TUES. (contd.)

- 55-215. High Current Arc Erosion of Electric Contact Materials. W. R. Wilson, General Electric Co.
- 55-221. Short-Circuit Currents and Circuit Breaker Recovery Voltages Associated with Two-Phase-to-Ground Short-Circuits. W. F. Skeats, General Electric Co.
- 55-222. Field Tests on a 138 KV High Speed Oil Circuit Breaker at Philip Sporn Power Plant. O. Naef, American Gas & Electric Co. and R. D. Hambrick, Federal Pacific Electric Mfg. Co.

2:30 p.m.—Section Delegates Conference

Committee on Sections
Penn Top North
W. R. HOUGH, Presiding

2:30 p.m.—Transformers

Committee on Transformers
Georgian Room
M. H. PRATT, Presiding

- 55-30. Magnetization of Transformer Cores During Impulse Testing. M. F. Beavers, J. E. Holcomb and L. C. Leoni, General Electric Co.
- 55-29. Oscillations of Coupled Windings. P. A. Abetti, G. E. Adams and F. J. Maginniss, General Electric Co.
- 55-52. Thyrite Protection for Series Windings of Autotransformers. J. W. Albright, General Electric Co.
- CP55-27. Impulse Tests on the Low-Voltage Windings of Distribution Transformers. J. E. Holcomb, General Electric Co.

2:30 p.m.—Color Television

Committee on Television and Aural Broadcasting Systems
Chelsea Room, Hotel Governor Clinton
R. E. SHELBY, Presiding

- CP.** Design for Production of Color Television Receivers. J. P. Vandune, Westinghouse Electric Corp.
- CP.** Chromacoder. P. C. Goldmark and J. F. Bambara, Columbia Broadcasting System.
- CP.** Development of the RCA 21-Inch Metal Envelope Color Kinescope. H. R. Seelen, H. C. Moodey, D. D. Van Ormer and A. M. Morrell, Radio Corp. of America.
- CP.** Deflection and Convergence of the RCA 21-Inch Color Kinescope. M. J. Obert, Radio Corp. of America.

2:30 p.m.—Cathodic Protection

Committee on Chemical Electrochemical and Electrothermal Applications
Greecley Room, Hotel Governor Clinton
R. M. WAINWRIGHT, Presiding

- 55-111. Electrical Grounding Systems and Corrosion. L. P. Schaefer, The Hinchman Corp.
- 55-113. Underground Corrosion on Rural Electric Distribution Lines. O. W. Zastrow, Rural Electrification Administration.
- CP.** Panel Discussion on Electrical Grounding in Cathodically Protected Systems.
- 55-110. Electrical Grounding and Cathodic Protection at the Fairless Works. W. E. Coleman and H. G. Frostick, U. S. Steel Corp. Re-presented for discussion.

2:30 p.m.—Thermal Aging of Insulation

Committee on Basic Sciences
Skytop
T. W. DAKIN, Presiding

- CP.** Screening Tests for the Thermal Stability of Magnet Wire. W. W. Wareham, General Electric Co.
- CP.** Magnetic and Electrical Properties of Polymers Subjected to Thermal Aging. F. H. Winslow, W. O. Baker and W. A. Yager, Bell Telephone Labs., Inc.

TUES. (contd.)

- CP55-234. Appraisal of High Temperature Behavior Laminates with Time. G. E. Power, Formica Co.
- CP.** Heat Aging of Teflon Tetrafluoroethylene. G. McMahon and B. E. Ely, E. I. duPont de Nemours and Co., Inc.
- 55-35. Insulation Aging Characteristics as Measured by Shearing Modulus. L. C. Whitman and A. L. Scheideler, General Electric Co.
- CP.** Measurement of Thermal Aging of Insulation Over Varying Temperature Cycles. H. M. Philofsky, F. A. Sattler and T. W. Dakin, Westinghouse Research Labs.

2:30 p.m.—Insulated Conductors

Committee on Insulated Conductors
Keystone Room
M. W. CHEN, Presiding

- 55-53. Aluminum Sheathed Power Cable. W. A. Del Mar and E. J. Merrell, Phelps Dodge Copper Products Corp.
- 55-54. Mineral-Insulated Metallic-Sheathed Cables. C. A. Jordan and G. S. Eager, Jr., General Cable Corp.
- 55-55. An Analog Solution of Cable Heat Flow Problems. E. deHaas, P. J. Sandiford and A. W. W. Cameron, Hydro Electric Power Commission of Ontario.
- 55-56. The Co-Ordination of Power and Communication Cable Characteristics. H. D. Short, Canada Wire & Cable Co.

2:30 p.m.—Land Transportation.

Committee on Land Transportation
East Room
M. C. SWANSON, Presiding

- 55-206. Rectifier Locomotives for the New York, New Haven and Hartford Railroad. F. D. Gowans, General Electric Co.
- CP55-207. Multiple Unit Rectifier Motive Power Inductive Coordination Considerations on the New York, New Haven and Hartford Railroad. L. J. Hibbard, Westinghouse Electric Corp.; F. T. Garry, Southern New England Telephone Co.; and G. N. Loomis, New York, New Haven and Hartford Railroad.
- 55-208. Considerations in the Development of a High-Power Rectifier Locomotive. H. S. Ogden, General Electric Co.
- 55-209. Graphic Aids for Calculating Rectifier Locomotive Performance. R. D. Charlton, General Electric Co.
- 55-210. An Electric Drive for Rotary Snow Plows. A. J. Hoffer and R. E. Willhite, General Electric Co.

2:30 p.m.—Direct Current Machines

Committee on Rotating Machinery
Florentine Room, Hotel Governor Clinton
E. P. SMITH, Presiding

- 55-112. D-C Machines—A Method for Short-Circuit Calculation. John Cybulski and J. P. O'Connor, Naval Research Lab.
- 55-114. D-C Machines—Short Circuit Calculation and Test Results. J. P. O'Connor and John Cybulski, Naval Research Lab.
- CP55-228. D-C Power Systems—Short Circuit Calculations and Test Results. John Cybulski and J. P. O'Connor, Naval Research Lab.
- 55-115. The Induction Machines with Solid Iron Rotor. H. M. McConnell and E. F. Sverdrup, Carnegie Institute of Technology.

2:30 p.m.—Transistor Reliability—Session II—Circuits

Committee on Electronics
Governor Room, Hotel Governor Clinton
J. E. THOMAS, Presiding

- CP.** Small Signal Low Frequency Transistor Amplifiers. F. M. Dukat, Raytheon Mfg. Co.

TUES. (contd.)

- CP.** Transistor Radio Circuits. N. B. Saunders, Consulting Engineer.
- CP.** Junction Transistor Switching Circuits. R. H. Baker, Massachusetts Institute of Technology.
- CP.** Point Contact Transistor Switching Circuits. J. A. DiGiorgio and A. W. Carlson, AF Cambridge Research Center.

2:30 p.m.—Preventing Fires from Electrical Causes

Committee on Safety
West Room
Merwin Brandon, Presiding

- CP.** Electrical Fire Loss Statistics. C. L. Smith, National Fire Protection Association.
- CP.** Prevention of Fires from Electrical Causes in Plant and Building Wiring. W. H. Biester, Jr., Electro Construction Co.
- CP.** Reduction of Fire Hazard in the Design and Application of Electric Motors. Sol London, General Electric Co.
- CP.** Preventing Fires from Electrical Causes in the Design and Manufacture of Appliances. H. A. Strickland, Jr. and R. A. Ackerman, Hotpoint Co.
- CP.** Preventing Fires from Electrical Causes in the Design and Manufacture of Radio and Television Receivers. H. T. Heaton, General Electric Co.

2:30 p.m.—Magnetic Amplifiers

Committee on Magnetic Amplifiers
Penn Top South
A. B. HAINES, Presiding

- 55-57. A Fast Response Magnetic Servo Amplifier. J. W. Kallander, Naval Research Lab.
- 55-58. A New Full-Wave Magnetic Amplifier Output Stage. P. W. Barnhart, Feedback Controls, Inc.
- 55-59. Elimination of Asymmetry Zero-Drift Errors in Magnetic Servo Amplifiers. W. A. Geyger, U. S. Naval Ordnance Lab.
- 55-60. Magnetic-Amplifier Control of D-C Motors. A. Kusko, Massachusetts Institute of Technology and J. G. Nelson, Minneapolis-Honeywell Regulator Co.
- 55-61. 160,000 Ampere, High Speed Magnetic Amplifier Design. A. B. Rosenstein, University of California.

Wednesday, February 2

9:30 a.m.—Switchgear

Committee on Switchgear
Governor Room, Hotel Governor Clinton
J. D. WOOD, Presiding

- 55-102. Analysis of Fault Currents for High Voltage Circuit Breaker Interruption. M. J. Lantz, Bonneville Power Administration.
- 55-223. Design Problems and Field Tests Concerning Circuit Breakers for Switching Long 230 Kv Lines. E. M. Umphrey and D. J. Marsden, Federal Pacific Electric Co.
- 55-212. Test Circuits for Capacitance Switching Devices. K. G. Darrow, V. E. Phillips, A. J. Schultz and R. B. Shores, General Electric Co.
- 55-224. Some Fundamentals on Capacitance Switching. I. B. Johnson, A. J. Schultz, N. R. Schultz and R. B. Shores, General Electric Co.

WED. (contd.)

9:30 a.m.—Wire Communications

Committee on Wire Communication Systems
East Room
I. M. ELLESTAD, Presiding

- 55-229. Telephone Lines for Rural Subscriber Service. L. Hochgraf and R. G. Watling, Bell Telephone Labs., Inc.
- CP.** A Subscriber Carrier Telephone System, Description, Equipment and Utilization, James MacDowell, North Electric Mfg. Co.
- CP.** Recent Developments in Subscriber Carrier Equipment. W. Fingerle, Budelman Radio Corp.
- CP.** Type S (FM) Subscriber Carrier Equipment. Clem Boucher and Wendell Boucher, McElroy Mfg. Corp.
- CP.** Use of Subscriber Line Carrier Equipment in the Design of Rural Telephone Systems. W. T. Smith and J. M. Flanigan, Rural Electrification Administration.
- CP.** Problems and Promises of Rural Carrier. H. R. Huntley, American Telephone and Telegraph Co. and J. W. Emling, Bell Telephone Labs.

9:30 a.m.—Petroleum Industry

Committee on Petroleum Industry
Chelsea Room, Hotel Governor Clinton
J. Z. LINSNMEYER, Presiding

- CP55-62. Modernization of the Electrical Distribution System—Tide Water Associated Oil Company-Avon Refinery. W. H. East, Tide Water Associated Oil Co., and G. R. Dunbar, Westinghouse Electric Corp.
- CP55-20. Lighting a Modern Refinery Process Unit. E. A. Clarke, Humble Oil & Refining Co.
- 55-63. Basic Circuitry for Electrically Powered Pipeline Pump Stations Under Automatic or Remote Control. M. A. Hyde and W. A. Derr, Westinghouse Electric Corp. Re-presented for discussion.
- CP.** Operating Experience with Electrical Transducers for Pipe Line Pressure and Flow Measurements and Controls. R. S. Cannon and W. W. Holt, Plantation Pipe Line Co.

9:30 a.m.—Electronic Aids to Navigation

Committee on Electronics
Florentine Room, Hotel Governor Clinton
H. R. MIMNO, Presiding

- CP.** Long-Distance Navigation—Past, Present and Future. J. A. Pierce, Harvard University.
- CP.** Electronic Navigation Over Land Areas. Vernon Weihe, Air Transport Association of America (and) Melpar, Inc.
- CP.** Electronic Guidance of Aircraft in the Vicinity of Airports. Peter Sandretto, Federal Telecommunications Labs.

9:30 a.m.—Symposium on Liquid Dielectrics

Committee on Basic Sciences
Penn Top North
F. M. CLARK, Presiding

- CP55-64. Properties of Oil Affecting Its Use in Apparatus. F. J. Vogel, Allis-Chalmers Mfg. Co.
- 55-65. Empirical Formulas for the 60 Cycle Sparkover Gradients in Commercial Oil. W. F. Gauster, North Carolina State College.
- 55-66. Gas and Moisture Equilibria in Transformer Oil. R. B. Kaufman, E. J. Shimanski and K. W. MacFadyen, General Electric Co.
- CP.** Some Factor Influencing Electric Breakdown in Liquids. A. H. Sharbaugh, General Electric Co.

WED. (contd.)

- CP55-103. The Effect of Gamma Radiation on Liquid Dielectrics. T. D. Callinan, U. S. Naval Research Lab.

- CP.** Characteristics of Corona Discharges in Liquid Dielectrics. T. W. Dakin, D. Berg, Westinghouse Electric Corp.

9:30 a.m.—Circuit Theory

Committee on Basic Sciences
Greeley Room, Hotel Governor Clinton
W. R. LePAGE, Presiding

- 55-140. A Supplement to the Brune Synthesis. F. M. Reza, Massachusetts Institute of Technology. Re-presented for discussion.
- CP.** Mathematical Properties of Root Loci for Control-System Design. F. Reza, Massachusetts Institute of Technology.
- CP.** A Note on Network Approximation Functions. N. Balabanian, Syracuse University.
- CP.** Is the Impulse Function Necessary or Desirable in Network Theory? M. B. Reed and C. L. Coates, University of Illinois.
- CP.** Response of Certain Basic Circuits to a Sine-Squared-Loop Voltage Pulse. T. J. Higgins, University of Wisconsin and O. H. Bieck, Allen Bradley Corp.

9:30 a.m.—Feedback Control Systems

Committee on Feedback Control Systems
Penn Top South
J. R. RAGAZZINI, Presiding

- 55-185. Further Effects of the Pole and Zero Locations on the Step Response of Fixed, Linear Systems. A. H. Zemanian, New York University.
- 55-186. The Effect of Pole and Zero Locations on the Transient Response of Sampled-Data Systems. E. I. Jury, University of California.
- 55-187. An Analytical Method for the Design of Relay Servomechanisms. J. E. Hart, Naval Research Lab.
- 55-188. A Method for Evaluating Nonlinear Servomechanisms. M. V. Mathews, Massachusetts Institute of Technology.
- 55-202. Conditional Feedback Systems—A New Approach to Feedback Control. G. Lang, Ferranti Electric, Ltd. and J. M. Ham, University of Toronto.
- 55-189. Analysis of Errors in Sampled-Data Feedback Systems. J. Sklansky and J. R. Ragazzini, Columbia University. Re-presented for discussion.
- 55-190. Transient Analysis of A-C Servomechanisms. S. S. L. Chang, New York University. Re-presented for discussion.
- 55-15. Analysis of Backlash in Feedback Control Systems with One Degree of Freedom. L. M. Vallese, Polytechnic Institute of Brooklyn. Re-presented for discussion.

9:30 a.m.—Synchronous Machines

Committee on Rotating Machinery
Keystone Room
L. O. DORFMAN, Presiding

- 55-116. Operation of Hydrogen Cooled Turbine Generators. C. C. Sterrett and R. A. Towne, Westinghouse Electric Corp.
- 55-117. Turbine Generator, Operation and Maintenance Practice of Philadelphia Electric Co. E. I. Gallagher, Philadelphia Electric Co.
- 55-118. Turbine Generator Stator Winding Temperatures at Various Hydrogen Pressures. J. R. M. Alger, C. E. Kilbourne, D. S. Snell, General Electric Co.

WED. (contd.)

55-119. Steam Turbine-Generator Operating and Maintenance Methods of the Southern California Edison Company. C. L. Sidway and C. M. Clevenger, Southern California Edison Co.

CP.** Operation and Maintenance of Hydrogen Systems for Turbine Generators. S. C. Barton and W. H. M. Olson, General Electric Co.

9:30 a.m.—Magnetic Amplifiers

Committee on Magnetic Amplifiers

Skytop

H. W. LORD, Presiding

55-68. An Analysis of Optimum Core Configuration for Magnetic Amplifiers Introducing a Simplified Method. B. D. Bedford, G. C. Dodson, General Electric Co. and C. H. Willis, Princeton University.

55-21. Inductive Load Instability in Magnetic Amplifiers, H. I. Leon and A. B. Rosenstein, University of California.

55-69. Analysis and Design of a Magnetic Frequency Multiplier. O. J. M. Smith and J. T. Salihi, University of California.

55-70. An All-Magnetic Audio Amplifier System. J. J. Suozzi and E. T. Hooper, U. S. Naval Ordnance Lab.

CP55-71. Voltage Gain of a Resonant Dielectric Amplifier. E. A. Sack, Westinghouse Electric Corp. and G. W. Penney, Carnegie Institute of Technology.

9:30 a.m.—Computing Devices

Committee on Computing Devices

Georgian Room

G. D. McCANN, Presiding

CP.** Transfer Function Synthesis with Computer Amplifiers and Passive Networks. M. V. Mathews and W. W. Seifert, Massachusetts Institute of Technology.

CP.** Simulation by Modelling Techniques. Norman Irvine, Aerojet Corp.

CP.** The Evolution of the Electric Analog Computer. G. D. McCann, California Institute of Technology.

55-5. Computer for Automatizing Network-Analyzer Operation. A. Kusko, Massachusetts Institute of Technology and P. N. Heller, Raytheon Mfg. Co.

9:30 a.m.—System Engineering

Committee on System Engineering

Grand Ballroom

E. E. GEORGE, Presiding

55-25. The Determination of Incremental and Total Loss Formulas from Functions of Voltage Phase Angles. C. R. Cahn, Syracuse University.

55-90. A General Transmission Loss Equation. E. D. Early, G. L. Smith, Southern Services, Inc. and R. E. Watson, Leeds & Northrup Co.

55-141. An Incremental Cost of Power Delivered Computer. E. D. Early, Southern Services, Inc., W. E. Phillips and W. T. Shreve, Leeds & Northrup Co.

55-24. Load-Phase-Tie Line Energy Control of Interconnected Power Systems. F. Cahen, Electricite de France.

9:30 a.m.—Engineering Code of Ethics

Committees on Code of Principles of Professional

Conduct and Registration of Engineers

West Room

P. L. ALGER and R. C. WARNER, Presiding

CP.** The Professional Engineer Has a Personal Responsibility. T. M. Linville, General Electric Co.

WED. (contd.)

CP.** The Ethical Standards of the Engineering Profession. H. A. Wagner, Consulting Engineer.

CP.** Canons of Ethics for Engineers—Their History and Future Importance. R. E. Argersinger, Stone & Webster Engineering Corp.

1:45 p.m.—Presentation of the Edison Medal to Dr. Oliver E. Buckley

Georgian Room

President A. C. MONTEITH, Presiding

Establishment of the Edison Medal. James F. Fairman, Chairman, Edison Medal Committee.

Career of the Medalist. O. B. Blackwell (Edison Medalist 1950) American Tel. and Tel. Co., New York, retired.

Presentation of Medal and Certificate. President Monteith. Response of the Medalist. Dr. Oliver E. Buckley.

2:30 p.m.—Switchgear and Substations

Committees on Substations and Switchgear

Governor Room, Hotel Governor Clinton

J. D. WOOD and I. S. MENDENHALL, Presiding

55-225. Pittsburgh Downtown 69 KV Power Supply—Part I—Planning. V. E. Hill, Duquesne Light Co.

55-226. Pittsburgh Downtown 69 KV Power Supply—Part II—Substation. E. M. Gue, Duquesne Light Co.

55-214. Pittsburgh Downtown 69 KV Power Supply—Part III—Switchgear. P. R. Pierson, Westinghouse Electric Corp.

CP55-227. An Air Supply System for Compressed Air Circuit Breakers. J. E. Schrameck, Westinghouse Electric Corp.

2:30 p.m.—Wire Communications

Committee on Wire Communication Systems

East Room

C. M. MAPES, Presiding

55-230. A Transatlantic Telephone Cable. M. J. Kelly, G. W. Gilman, Bell Telephone Labs., Inc., Sir W. Gordon Radley and R. J. Halsey, Post Office of the United Kingdom.

55-231. Open-Wire Carrier Systems in South Africa. C. F. Boyce, Government Post Office, Pretoria, South Africa.

CP.** Frequency Shift Signaling Circuit for 45 Type Carrier Systems. R. S. Caruthers and K. E. Appert, Lenkurt Electric Co.

CP.** Cable Dancing. N. Aamodt, Bell Telephone Labs.

CP.** Experiences with "B" Rural Distribution Wire. J. C. Leffel, Michigan Bell Telephone Co.

2:30 p.m.—Industrial Power Systems

Committee on Industrial Power Systems

West Room

C. C. SAUNDERS, Presiding

55-142. Time Variation of Industrial System Short-Circuit Currents and Induction Motor Contributions. W. C. Huening, Jr. General Electric Co.

CP55-244. Surge Protection on Industrial Systems. C. L. Wagner, Westinghouse Electric Corp.

CP55-143. Directional Relays Provide Differential Type Protection on Large Industrial Plant Power System. M. M. Gilbert and R. N. Bell, E. I. Du Pont de Nemours & Co.

WED. (contd.)

2:30 p.m.—Symposium: How Can the Utilities Best Make Use of Modern Science?

Committee on Research
Grand Ballroom
J. A. HUTCHESON, Presiding

55-144. Implementation of a Research Program for the Electric Utility Industry. J. E. Hobson, M. S. Oldacre, Stanford Research Institute and W. A. Lewis, Illinois Institute of Technology.

55-145. Research in the Electric Power Industry. L. R. Gaty, Philadelphia Electric Co.

CP55-245. The Role of the Manufacturer in Utility Research. E. E. Parker and J. Baird, General Electric Co.

CP55-40. Educating Electrical Engineers to Exploit Science. G. S. Brown, Massachusetts Institute of Technology.

2:30 p.m.—Liquid and Gaseous Dielectrics

Committee on Basic Sciences
Penn Top North
L. J. BERBERICH, Presiding

55-72. Phenomena Accompanying Transient Low-Voltage Discharges in Liquid Dielectrics I. Anode Phenomena at Low Currents. E. M. Williams and R. E. Smith, Carnegie Institute of Technology.

55-36. The Propagation Mechanism of Impulse Creepage Discharges over Oil-Immersed Surfaces. J. G. Anderson and T. W. Liao, General Electric Co.

CP55-241. The Dielectric Behavior of Some Fluorogases and Their Mixtures with Nitrogen. G. Camilli, T. W. Liao and R. E. Plump, General Electric Co.

CP.** Dielectric Breakdown of Perfluorocarbon Vapors and Gases and their Mixtures with Nitrogen. L. J. Berberich, C. N. Works and E. W. Lindsey, Westinghouse Electric Corp.

55-10. Some Electrical and Thermal Characteristics of Helium and Sulfur-Hexafluoride Mixtures. J. D. Cobine, General Electric Research Lab.

55-37. Significant Factors in Thermal Aging Tests on Flexible Sheet Insulation. T. W. Dakin, H. M. Philofsky and W. C. Divens, Westinghouse Electric Corp. Re-presented for discussion.

2:30 p.m.—Chemical Industry

Committee on Chemical, Electrochemical and Electrothermal Applications
Florentine Room, Hotel Governor Clinton
J. N. FOGG, Presiding

CP55-238. Emergency Power Supply in Chemical Manufacturing Operations. R. F. Shumar, Dow Chemical Co.

CP.** Modern Trends in Design of Electrical Distribution Systems in Chemical Plants. G. B. Jamison, Crouse-Hinds Co.

CP.** Training Program to Qualify Plant Electricians as Satisfactory High Voltage Cable Splicers. T. O. Wood, Dow Chemical Co.

CP.** Lightning Protection of Chemical Plant Structures. A. M. Opsahl, Westinghouse Electric Corp.

2:30 p.m.—Transmission and Distribution

Committee on Transmission and Distribution
Chelsea Room, Hotel Governor Clinton
T. J. BROSANAN, Presiding

55-91. Automatically Switched Capacitors in Steps on a Single Distribution Feeder. W. C. Fowler, Sangamo Electric Co. and C. W. Thomas, Public Service Co. of Oklahoma.

WED. (contd.)

55-146. Balancing Double-Wye High Voltage Capacitor Banks. O. R. Compton, Virginia Electric and Power Co.

55-41. Fundamental Relations of System Voltage Drop and System Loads. G. M. Miller and L. W. Robbins, General Electric Co.

55-89. A Simplified Method of Calculating Voltage Regulation Using Unit Impedance Power-Reactive Diagrams. R. M. Butler, General Electric Co.

2:30 p.m.—Feedback Control Systems

Committee on Feedback Control Systems
Penn Top South
H. W. CORY, Presiding

55-191. Frequency Response from Experimental Nonoscillatory Transient-Response Data. H. Thal-Larsen, University of California.

55-192. A Series Method of Calculating Control System Transient Response from the Frequency Response. D. V. Stallard, Massachusetts Institute of Technology.

55-193. A Method for the Preliminary Synthesis of a Complex Multi-Loop Control System. D. J. Povejsil and A. M. Fuchs, Westinghouse Electric Corp.

55-194. Design of Control Systems for Minimum Bandwidth. G. C. Newton, Massachusetts Institute of Technology.

CP.** The Use of Short-Time Memory Units in Feedback Control Systems. T. W. Sze and J. F. Calvert, Northwestern University.

55-195. A General Theory for Determination of the Stability of Linear Lumped-Parameter Multiple-Loop Servomechanisms (and other Feedback Systems). T. S. Amlie, U. S. Naval Ordnance Test Station and T. J. Higgins, University of Wisconsin. Re-presented for discussion.

55-196. Design and Application of a Peak Voltage Detector to Industrial Control Systems. L. W. Allen, International Business Machines Corp. Re-presented for discussion.

2:30 p.m.—Synchronous Machines

Committee on Rotating Machinery
Keystone Room
E. I. POLLARD, Presiding

55-120. Operation of Turbine-Generators During Off-Peak High Power-Factor Periods—Practices of One Utility in a Metropolitan Area. W. J. Roberts and R. L. Webb, Consolidated Edison Co. of N. Y., Inc.

CP.** Operation of Turbine Generators. J. H. Carter and R. E. Gorman, General Electric Co.

55-121. Eccentricity, Vibration and Shaft Currents in Turbine Generators. L. T. Rosenberg, Allis-Chalmers Mfg. Co.

CP55-122. Proposed Guide for Maintenance of Turbine-Generators. J. W. Jones, Philadelphia Electric Co.

55-123. Test Report on a Fully Supercharged Generator. S. Beckwith, B. M. Koetting, L. T. Rosenberg and G. W. Staats, Allis-Chalmers Mfg. Co.

2:30 p.m.—Magnetic Amplifiers

Committee on Magnetic Amplifiers
Skytop
W. J. DORNHOEFER, Presiding

55-67. Transistor Demodulator for High-Performance Magnetic Amplifiers in A-C Servo Applications. R. O. Decker, Westinghouse Electric Corp.

- 55-73. A Switching Transistor D-C to A-C Converter Having an Output Frequency Proportional to the D-C Input Voltage. G. H. Royer, Westinghouse Electric Corp.
- 55-74. A High-Accuracy Static Time Delay Device Utilizing Transistors. G. F. Pittman, Jr., Westinghouse Electric Corp.
- 55-75. A Variable Frequency Magnetic-Coupled Multivibrator. R. L. Van Allen, Naval Research Lab.
- CP55-76. The Level Comparator. H. Estrada, Jr. and J. P. Ward, Westinghouse Electric Corp.

2:30 p.m.—Computers and Special Instrumentation

Committees on Computing Devices and Instruments and Measurements
Greeley Room, Hotel Governor Clinton
C. F. SAVAGE, Presiding

- 55-180. Electronic Computer for Color Printing. H. E. Rose, Radio Corp. of America.
- CP.** The Thermal Printer. Herman Epstein, Burroughs Corp.
- CP55-181. Raydist Systems for Radiolocation and Tracking. J. M. Benson and J. E. Swafford, Hastings Instrument Co.
- CP55-182. An Azimuth and Elevation Photorecording Theodolite. S. W. Silverman, Boeing Airplane Co.

2:30 p.m.—Management

Committee on Management
Georgian Room
F. K. McCUNE, Presiding

- CP.** An Engineering Society's Responsibilities in the Management Field. L. E. Newman, General Electric Co.
- CP.** Economic Counsel and Modern Management. J. R. Haas, Lionel D. Edie & Co.

Thursday, February 3

9:30 a.m.—Carrier Current

Committee on Carrier Current
Florentine Room, Hotel Governor Clinton
S. C. LEYLAND, Presiding

- 55-77. A Method of Measurement of Carrier Characteristics on Power Cables. B. J. Sparlin and J. D. Moynihan, Westinghouse Electric Corp.
- 55-78. Design of the Adjustable Lin-O-Phase Filter. Reuben Lee, Westinghouse Electric Corp.
- 55-79. An Investigation of the Capture Effect in a Narrow Band Frequency Modulated System. C. D. Hedges, Westinghouse Electric Corp.
- 55-42. Recommendations for Improving Reliability of Standby Engine Generators for Microwave Communications Systems. N. B. Tharp, Westinghouse Electric Corp.

9:30 a.m.—Communication Switching Systems

Committee on Communication Switching Systems
Chelsea Room, Hotel Governor Clinton
WILLIAM KEISTER, Presiding

- CP.** Electronic Music Synthesizer. H. F. Olson and Herbert Belar, RCA Laboratories, Inc.
- CP.** Little Audrey—A Voice Controlled Logic Machine. G. R. Frost, Bell Telephone Labs., Inc.
- CP.** The Outguesser and Other Semi-Intelligent Machines. D. W. Hagelbarger, Bell Telephone Labs., Inc.
- CP.** A Demonstration of Common Control Telephone Switching Principles. V. F. Bleafary, Bell Telephone Labs., Inc.

THURS. (contd.)

9:30 a.m.—Industrial Control

Committee on Industrial Control
East Room
H. L. PALMER, Presiding

- CP.** Utilizing the Magnetic Amplifier for Processing Line Loop Control. K. S. Yamamoto, Clark Controller Co.
- CP.** Computer Analysis of Industry Control Regulating Systems. W. W. Bolander and J. T. Bradford, General Electric Co.
- 55-80. Eddy Current Press Drives. F. L. Hopf and T. R. LaVallee, Dynamatic Corp.
- CP.** Automatic Positioning of a Rotary Turret Punch Press. D. B. Schneider, General Electric Co.

9:30 a.m.—Solid Dielectrics and Miscellaneous

Committee on Basic Sciences
Skytop
L. J. BERBERICH, Presiding

- 55-81. Surface and Volume Dielectric Losses. J. J. Chapman, L. F. Blickley and E. A. Szymkowiak, The Johns Hopkins University.
- 55-82. Dielectric Failure of Volume and Surface Types. J. J. Chapman, L. J. Frisco and J. S. Smith, The Johns Hopkins University.
- CP.** The Underwater Spark: A Photographic Light Source of High Brilliance. H. C. Early and E. A. Martin, University of Michigan.
- CP.** Velocities of Magnetically Driven Arcs in Air and Helium up to 30 Atmospheres. R. C. Walker and H. C. Early, University of Michigan.
- 55-83. A Continuous Flow Moisture Detector. M. F. Beavers, E. J. Shimanski and E. F. Timpane, General Electric Co.

9:30 a.m.—Recent Developments in Semiconductors

Committee on Basic Sciences
Penn Top South
E. M. CONWELL, Presiding

- CP.** Thermoelectric Properties of Semiconductors. T. H. Geballe, Bell Telephone Labs., Inc.
- CP.** Carrier Extraction in Germanium. Ralph Bray, Purdue University.
- CP.** Cyclotron and Other Resonance Effects in Silicon and Germanium. J. H. Zeiger, Massachusetts Institute of Technology.
- CP.** Organic Semiconductors. George Goldsmith, Purdue University.

9:30 a.m.—Computing Devices

Committee on Computing Devices
Governor Room, Hotel Governor Clinton
V. G. SMITH, Presiding

- CP.** A Self-Checking Card-to-Magnetic-Tape Converter. E. I. Blumenthal, Remington Rand Inc.
- CP55-243. A New Magnetic Memory Device for Business Machines. S. J. Begun, Clevite-Brush Development Co.
- 55-147. An Electronic System for Processing Air Traffic Control Information. R. M. Kalb, Engineering Research Associates.
- 55-148. Data Transfer and Display Equipment for a Proposed System of Air Traffic Control. G. E. Fenimore, Civil Aeronautics Administration.

THURS. (contd.)

9:30 a.m.—Transmission and Distribution

Committee on Transmission and Distribution
Grand Ballroom
F. V. SMITH, Presiding

- 55-22. Voltage Gradients on High Voltage Transmission Lines. G. E. Adams, General Electric Co.
- 55-98. Measurement of Resistance and Reactance of Expanded ACSR. J. Tompkins, B. L. Jones and P. D. Tuttle, Aluminum Co. of America.
- 54-501. Practical Application of Sag and Tension Calculations to Transmission Line Design. J. Lummis and H. D. Fischer, Jr., Southern California Edison Co.
- 55-149. Investigation of European Practices in Power Line Design. Eduard Fritz, Day & Zimmerman, Inc.

9:30 a.m.—Relays and Synchronous Machinery

Committees on Relays and Rotating Machinery
Georgian Room
W. K. SONNEMANN, Presiding

- CP.** The Physical Effect of Thermal Cycling on Insulation for Long Stator Coils in Turbine Generators. J. S. Johnson, Westinghouse Electric Corp.
- CP.** Experience in DC Testing of AC Generator Insulation. A. Pletenik, General Electric Co.
- 55-3. Effect of Synchronous-Machines Transient Rotor Saliency on Changes in Terminal Voltage. C. Concordia, General Electric Co.
- 55-124. A Transductor Type Field Ripple Detector for Synchronous Generators. H. M. McConnell, Carnegie Institute of Technology.
- 55-125. Detection of Grounds in Generator Field Windings. J. E. Barkle, C. C. Sterrett and L. L. Fountain, Westinghouse Electric Corp.

9:30 a.m.—Instruments

Committee on Instruments and Measurements
Greeley Room. Hotel Governor Clinton
J. H. MILLER, Presiding

- 55-2. An Airborne Temperature Indicator. W. R. Clark, W. G. Amey and G. C. Mergner, Leeds and Northrup Co.
- 55-155. An Elliptical Polarization Synthesizer. G. H. Friedman, Franklin Institute Laboratories. Re-presented for discussion.
- 55-14. The Ring Modulator as a Polarized Rectifier. A. J. Hermont, Shell Development Co.
- 55-1. A Novel Circuit for Electronic Power-Factor Meters and Wattmeters and a Novel Division Device. M. Abdel-Halim Ahmed, Cairo University. Presented by E. I. Jury.

9:30 a.m.—Education

Committee on Education
West Room
GUY KLEIS, Presiding

Panel Discussion: The ASEE Report on Evaluation of Engineering Education—Its Relationship to Electrical Engineering.

- (1) The Background of the Report and Its Conclusions. L. E. Grinter, University of Florida.
- (2) Implications for Electrical Engineering Curricula. J. F. Calvert, University of Pittsburgh.
- (3) Implications for Industry. G. E. Moore, Westinghouse Electric Corp.
- (4) Implications for the Professional Engineer. R. G. Warner, United Illuminating Co.

THURS. (contd.)

9:30 a.m.—Substations

Committee on Substations
Keystone Room
I. S. MENDENHALL, Presiding

- 55-127. Control Circuitry for Remotely Operated Electric Utility Substations. W. A. Derr and W. L. Metz, Westinghouse Electric Corp.
- 55-128. Supervisory Control and Associated Telemetering Equipment. Working Group of the Automatic and Supervisory Control Subcommittee.
- CP55-17. Automatic Switching of Substation Static Capacitor Banks by a Current Biased Induction Disc Type Voltage Relay. W. C. Osteen and J. J. McCullough, Southern California Edison Co.
- CP55-169. Methods of By-Passing Distribution Substation Equipment. D. J. Hubert and J. A. Smith, General Electric Co.

9:30 a.m.—Electron Equipment Reliability—I

Committee on Electronics
Penn Top North
A. B. MUNDEL, Presiding

- 55-151. Science, Statistics and Reliability Engineering. J. C. Bear, Aeronautical Radio, Inc.
- CP.** Integrating Statistical and Probability Methods to Engineering Design. E. B. Ferrell, Bell Telephone Labs., Inc.
- CP.** The Application of Statistical Techniques to Electron Tubes for Use in a 4000-Mile Transmission System. W. VanHaste and B. J. Kinsburg, Bell Telephone Labs., Inc.

2:00 p.m.—Radio Communications

Committee on Radio Communication Systems
Skytop
R. D. CAMPBELL, Presiding

- CP55-199. FDM Subcarrier. A. R. Vallarino and C. Greenwald, Federal Telecommunication Labs.
- 55-200. Coaxial Cavity Filters for Multiplexing of 900 Megacycle Radio Relay Systems. M. H. Kebby, Lenkurt Electric Co.
- 55-201. A Communications System for the New York State Thruway. D. S. DeWire, New York Telephone Co. and H. A. Evans, New York State Thruway Authority.
- CP.** VHF Radio Link from Puerto Rico to the Virgin Islands. R. McSweeny, Mackay Radio and Telegraph Co.

2:00 p.m.—Industrial Control

Committee on Industrial Control
East Room
L. H. MATTHIAS, Presiding

- 55-84. An Eddy Current Braking Crane-Hoist Controller with Variable Brake Excitation. H. J. Rathbun, The Electric Controller & Mfg. Co.
- 55-85. Transient Analysis of a DC Electromagnet with Cut-Out Switch. T. H. Lee, General Electric Co.
- CP.** Safety in Industrial Controls. T. C. Beeman and R. J. Kantner, Clark Controller Co.
- 55-86. An Adjustable Speed Power Selsyn System. S. Y. Merritt, Aluminum Co. of America.

2:00 p.m.—Nucleonics

Committee on Nucleonics
Florentine Room,
J. G. HUTTON, Presiding

- CP.** Brookhaven Design Study for a 25 Bev Proton Synchrotron. J. P. Blewett, Brookhaven National Lab.

American Institute of Electrical Engineers

THURS. (contd.)

- CP.** The Electrostatic Accelerator Today. Alfred Burrill, High Voltage Engineering Corp.
- CP.** The Bevatron—The World's Highest Energy Particle Accelerator. C. A. Harris, University of California.
- CP.** The Argonne Cyclotron. W. J. Ramler, Argonne National Lab.
- CP.** Milestones of Progress in Nuclear Machines. R. N. Edwards, General Electric Co.

2:00 p.m.—Computing Devices

Committee on Computing Devices
Governor Room, Hotel Governor Clinton
MORRIS RUBINOFF, Presiding

- CP.** Cyclic Decimal Codes for Analogue to Digital Converters. J. A. O'Brien, Radio Corp. of America.
- CP.** Special Purpose Magnetic Core Circuits. R. D. Kodis, Raytheon Manufacturing Co.
- CP.** Magnetic Elements in Arithmetic and Control Circuits. I. L. Auerbach and S. B. Disson, Burroughs Corp.
- CP.** Junction Transistor Flip-Flop Design Methods for Computer Applications. T. P. Bothwell, Radio Corp. of America.

2:00 p.m.—Transmission and Distribution

Committee on Transmission and Distribution
Grand Ballroom
E. L. KANOUSE, Presiding

- CP.** 115 Kv Transmission Conductor Bundling—Pennsylvania Electric Company. P. L. Lumtizer, Pennsylvania Electric Co.
- CP55-153. Joint Testing for High Voltage Transmission Lines. A. S. Runciman, The Shawinigan Water & Power Co.
- CP.** Field Treatment of Existing Poles. L. E. Lockwood and J. C. Bice, Commonwealth Edison Co.
- CP.** Service Life of Creosoted Pine Poles. J. A. Rawls, Virginia Electric and Power Co.
- CP.** The Physical Life of Wood Poles. G. Q. Lumsden, Bell Telephone Labs., Inc.

2:00 p.m.—Measurements

Committee on Instruments and Measurements
Greeley Room, Hotel Governor Clinton
J. C. REID, JR., Presiding

- CP55-242. Temperature Errors in a Dragmagnet Eddy-Current Disk Type of Tachometer Indicator. L. T. Akeley and J. J. Fraizer, General Electric Co.
- 55-150. A New Test Board for Portable Watthour Meter Standards. F. J. Levitsky, New England Power Service Co.
- 55-211. Rapid Measurement of Impedance and Admittance. B. Salzberg and J. W. Marini, Naval Research Lab.

2:00 p.m.—Synchronous Machines

Committee on Rotating Machinery
Keystone Room
W. L. RINGLAND, Presiding

- CP55-129. New Viewpoints on Old Machines. G. A. Bekey and D. L. Trautman, University of California.
- 55-6. A New Approach to the Calculation of Synchronous Machine Reactances—Part I. M. E. Talaat, Elliott Co.
- 55-130. Stray Losses in the Armature End Iron of Large Turbine Generators. R. L. Winchester, General Electric Co.

Winter General Meeting

THURS. (contd.)

- 55-131. Improved Field Conductor Materials for Turbine-Generators. C. H. Holley and R. E. Savidge, General Electric Co.
- 55-132. Rewinding A.C. Generators for Improved Performance. W. G. Seline, The Shawinigan Water and Power Co.

2:00 p.m.—Relays

Committee on Relays
Georgian Room
FANK von ROESCHLAUB, Presiding

- 55-88. Line and Transformer Bank Relaying Systems. J. L. Blackburn and G. D. Rockefeller, Westinghouse Electric Corp.
- 55-99. Some Utility Ground-Relay Problems. H. C. Barnes, American Gas & Electric Co. and A. J. McConnell, General Electric Co.
- 55-97. Effect of Shock and Vibration on Relays. Project Committee Report.
- 55-100. Improved Fast-Acting Thermal Relay and Its Application as a Cage Winding Protective Relay for Synchronous Machines. John Baude, Allis-Chalmers Mfg. Co.
- 55-93. Bibliography of Relay Literature—1950-1952. E. T. B. Gross, Illinois Institute of Technology. Re-presented for discussion.

2:00 p.m.—Electron Equipment Reliability—II

Committee on Electronics
Penn Top North
J. R. STEEN, Presiding

- 55-154. Machine Testing for Deviation of Data from a Poisson Distribution. F. A. Hadden, The Rand Corp.
- CP.** Complexity and Reliability in Automatic Equipment. Robert Lusser, Redstone Arsenal.
- CP.** The Problem of Measurements Errors. R. G. Devine, Eastman Kodak Co.

2:00 p.m.—X-Ray Equipment

Committee on Electronics
Chelsea Room, Hotel Governor Clinton
R. F. WILSON, Presiding

- CP.** Use of Proportional Counters in X-Ray Diffraction. H. Laird and M. J. Zunick, General Electric Co.
- CP.** A.C. X-Ray Tubes. Z. J. Atlee, Dunlee Corp.
- CP.** Radiation Gages for Inspection and Control. J. W. Ranftl, General Electric Co.
- CP.** A Survey of Industrial X-Ray Apparatus. T. H. Rogers, Machlett Labs.
- CP.** Multi-Section High Voltage X-Ray and Electron Beam Vacuum Tubes. G. R. Mahn and M. J. Zunick, General Electric Co.

2:00 p.m.—Semi-Conductor Energy Converters

Committee on Basic Sciences
Penn Top South
GEORGE WARFIELD, Presiding

- CP.** Properties of P-N Junctions. W. C. Dunlap, Jr., General Electric Co.
- CP.** Solar Batteries. D. M. Chapin, Bell Telephone Labs., Inc.
- CP.** Conversion of Nuclear Energy Using P-N Junctions. J. W. Moyer, Knolls Atomic Power Lab.
- CP.** Thermoelectric Generators. Maria Telkes, New York University.
- 55-152. Properties of Silicon Power Rectifiers. E. F. Losco, Westinghouse Electric Corp. Re-presented for discussion.

2:00 p.m.—Power Engineering

Committees on Power Generation and System Engineering

West Room

E. L. MICHELSON, Presiding

- 55-33. Coordination of Hydro and Steam Generation. C. W. Watchorn, Pennsylvania Water and Power Co.
- 55-183. An Investigation of the Economic Size of Steam-Electric Generating Units. L. K. Kirchmayer, A. G. Mellor, J. F. O'Mara, and J. R. Stevenson, General Electric Co.
- 55-184. A Look to the Future of Power Transmission in the West. H. D. Hunkins, Bureau of Reclamation. Re-presented for discussion.

Friday, February 4

9:30 a.m.—Physics in the Electrical Engineering Curriculum

Committee on Education

Penn Top South

E. M. STRONG, Presiding

- CP.** Overall Problem with Special Attention to Pre-college Training. R. Seeger, National Science Foundation.
- CP.** Point of View of the Electrical Engineering School, Including Graduate Study. E. Weber, Polytechnic Institute of Brooklyn.
- CP.** The Physics Point of View. E. Hutchisson, Case Institute of Technology.
- CP.** Physics in Engineering—A Problem in Appraisal. J. D. Ryder, Michigan State College.

9:30 a.m.—Basic Sciences

Committee on Basic Sciences

East Room

W. R. LePAGE, Presiding

- 55-126. Equations for the Inductance and Short-Circuit Forces of Three-Phase Busses Comprised of 120° Angles. J. W. Maier, Bell Aircraft Corp. and T. J. Higgins, University of Wisconsin. Re-presented for discussion.
- 55-156. Junction Transistors Used as Switches. R. L. Bright, Westinghouse Electric Corp.
- 55-157. Switching Transistors Used as a Substitute for Mechanical Low-Level Choppers. A. P. Kruper, Westinghouse Electric Corp.
- 55-8. Theory of Magnetic Cross Valves. W. H. Higa, Jet Propulsion Lab.

9:30 a.m.—Transmission and Distribution

Committee on Transmission and Distribution

Grand Ballroom

E. R. HENDRICKSON, Presiding

- 55-19. Power Distribution System Parameters. A. H. Kidder and J. H. Neher, Philadelphia Electric Co.
- 55-158. Distribution-Substation and Primary-Feeder Planning. W. J. Denton and D. N. Reps, Westinghouse Electric Corp.
- 55-159. A Method for Determining Economical ACSR Conductor Sizes for Distribution Systems. A. W. Funkhouser and R. P. Huber, Indianapolis Power & Light Co.
- 55-160. The Use of Probability in the Design and Operation of Secondary Network Systems. N. M. Neagle and D. R. Nelson, General Electric Co.
- 55-161. Coincident-Outage Probability in Secondary-Network Vaults. D. N. Reps, Westinghouse Electric Corp.

FRI. (contd.)

9:30 a.m.—Power Generation

Committee on Power Generation

Georgian Room

F. L. LAWTON, Presiding

- 55-162. Production and Installation of Vertical Waterwheel Generators. W. D. Houser, W. Hindle and J. A. Tyerman, Canadian Westinghouse Co., Ltd.
- 55-163. Mechanical Alignment of Vertical Shaft Hydroelectric Units as Practiced by Tennessee Valley Authority. C. L. Norris, Tennessee Valley Authority.
- 55-164. Pumped Storage and Hydro Generation at Flatiron Power Plant. S. M. Denton and H. O. Britt, Bureau of Reclamation.
- 55-28. Principles and Application of the Ultrasonic Flowmeter. R. C. Swengel and S. K. Waldorf, Pennsylvania Water and Power Co., W. B. Hess, Safe Harbor Water Power Corp.
- 55-165. Development of Small Hydro Electric Sites in Western North Carolina. H. H. Gnuse, Jr., Nantahala Power & Light Co. Re-presented for discussion.

9:30 a.m.—Telegraph Systems

Committee on Telegraph Systems

West Room

E. F. WATSON, Presiding

- 55-166. A Portable Telegraph Bias and Distortion Measuring Instrument. W. D. Cannon, Western Union Telegraph Co.
- 55-38. A New Telegraph Serviceboard Using Electronic Circuits. J. R. Davey, M. R. Purvis, Bell Telephone Labs., Inc., and F. H. Hanley, American Telephone & Telegraph Co.
- 55-167. A Fully-Selective Telemetry System Employing Telegraph Facilities. C. W. Smith, American Telephone and Telegraph Co. and M. E. Forrest, Jr., Southern Bell Telephone & Telegraph Co.
- 55-94. A New Audio Telegraph Carrier Terminal. C. A. Higgins and E. A. Gilbert, Radio Frequency Laboratories, Inc.

9:30 a.m.—Induction Machines

Committee on Rotating Machinery

Keystone Room

J. G. NOEST, Presiding

- 55-133. Vibration in 2-Pole Induction Motors Related to Slip Frequency. E. W. Summers, Westinghouse Electric Corp.
- CP55-134. Noise Reduction in Large Rotating Machines. J. M. Shulman, Westinghouse Electric Corp.
- CP.** International Motor Standards. C. W. Falls, General Electric Co.
- CP55-135. Comments on the NEMA Suggested Standards for Future Design of Integral Horsepower Induction Motors. F. W. Baumann, General Electric Co.
- CP.** The "How" and "Why" of the Rerate Program. S. F. Henderson, Westinghouse Electric Corp.

9:30 a.m.—Instrumentation

Committee on Instruments and Measurements

Penn Top North

E. A. LYNCH, Presiding

- 55-168. A Survey of Non-Contacting Vibration Pickups Using Electric Fields. H. F. Clarke, Boeing Airplane Co.
- 55-23. A Circuit for Measuring the Resistance of Energized AC Windings. R. E. Seely, General Electric Co.

FRI. (contd.)

- S-68. A Bibliography on Telemetry. AIEE Group Subcommittee on Telemetry. Re-presented for discussion.
- CP.** A Glossary of Some Telemetry Terms. October 1954. Report of the Joint AIEE/IRE Subcommittee on Telemetry Terminology.
- 55-4. Eddy-Current Mutual-Inductance Transducers with High-Conductivity Reference Plates. H. M. Joseph, ACF Electronics and N. Newman, National Bureau of Standards.

9:30 a.m.—Electronic Circuitry

Committee on Electronics
Skytop
H. L. FLOWERS, Presiding

- CP.** A Static-Magnetic Data-Storage Unit. R. H. Fuller, Massachusetts Institute of Technology.
- CP.** An Automatic Random Programmer. G. A. Roberts, University of Michigan.
- 55-197. Cold-Cathode Counting Circuits. H. L. Foote, Stromberg-Carlson Co.
- 55-7. On the Optimum Design of Cathode Followers. L. M. Vallese, Polytechnic Institute of Brooklyn.
- CP.** Stable Transistor Oscillator. E. Keonjian, General Electric Co.
- CP55-18. Low Frequency Amplifier Design. S. I. Rambo, Westinghouse Electric Corp.
- 55-198. Shielding of Communication Cables. F. H. Gooding and H. B. Slade, The Okonite Co. Re-presented for discussion.

2:00 p.m.—Basic Sciences

Committee on Basic Sciences
East Room
L. J. BERBERICH, Presiding

- 55-170. Some Properties of Magnetic Fluids. J. E. Coolidge and R. W. Halberg, Borg-Warner Central Research Lab.
- 55-171. Effects of Transverse Compressional Stress on Magnetic Laminations. R. E. Fischell, Naval Ordnance Lab.
- CP55-172. A Simple Electrical Analogy of Heat Transfer. F. L. Putzrath, Radio Corp. of America.
- CP.** Accurate Determination of the Capacitance of a Thin Rectangular Plate. D. K. Reitan and T. J. Higgins, University of Wisconsin.

2:00 p.m.—Transmission and Distribution and Protective Devices

Committees on Transmission and Distribution and Protective Devices
Grand Ballroom
E. G. NORELL, Presiding

- 55-101. Direct Stroke Protection of High-Voltage Switching Stations and Transformers. S. B. Griscom, J. K. Dillard and A. R. Hileman, Westinghouse Electric Corp.
- 55-136. Transient Durability Testing of Valve Type Lightning Arresters. J. W. Kalb and A. G. Yost, Ohio Brass Co.
- CP.** Surge Attenuation in Power Cables. W. W. Valentine, Potomac Electric Co., J. K. Dillard, J. M. Clayton, Westinghouse Electric Corp.
- CP55-137. Analysis of Gradient Data Under Thunder Clouds. J. F. H. Douglas, Marquette University.

FRI. (contd.)

2:00 p.m.—Power Generation

Committee on Power Generation
Georgian Room
J. E. BARKLE, Presiding

- 55-96. Transfer of Steam-Electric Generating Station Auxiliary Buses. D. G. Lewis and W. D. Marsh, General Electric Co.
- CP55-92. Transfer Tests on Station Auxiliary Buses. L. E. Backer, P. Barth, R. A. Huse and D. W. Taylor, Public Service Electric & Gas Co.
- 55-173. Maximum Short Circuit and Faulty Synchronizing Torques on Generator Foundations. V. W. Ruskin, Canadian-Brazilian Services, Ltd. Represented for discussion.

2:00 p.m.—Telegraph Facsimile Systems

Committee on Telegraph Systems
West Room
E. F. WATSON and A. G. COOLEY, Presiding

- 55-174. Textile Automation by Signal Control. Louis Casper, Electrotex Corp.
- CP55-175. A Polar Relay Using Momentum Transfer. H. L. Garbarino and K. E. Bisshopp, Armour Research Foundation of Illinois Institute of Technology.
- CP.** Electrolytic Recording for Facsimile. J. W. Smith, A. H. Mones and J. V. L. Hogan, Hogan Labs., Inc.
- CP.** Times Facsimile Recording Papers. H. R. Dalton and A. G. Cooley, Times Facsimile Corp.

2:00 p.m.—Dielectric Measurements

Committee on Instruments and Measurements
Keystone Room
E. B. CURDTS, Presiding

- 55-176. Progress in the Evaluation of Solid Core High Voltage Bushings. H. H. Brustle, D. L. Johnston and A. L. Scheideler, General Electric Co.
- CP.** Corona Tests in the Field on High Voltage Insulation. F. C. Doble, F. S. Oliver and E. H. Povey, Doble Engineering Co.
- CP.** Corona Studies—In Relation to Insulation. T. W. Liao, J. R. Nye, J. G. Anderson and H. H. Brustle, General Electric Co.
- CP55-235. Measurement Pitfalls Encountered in D-C Dielectric Testing in the Field. C. W. Ross and E. B. Curdts, James G. Biddle Co.
- CP55-236. Report of Dielectric Tests on a Large Hydro Generator. C. A. Duke, Tennessee Valley Authority; C. W. Ross, James G. Biddle Co.; and J. S. Johnson, Westinghouse Electric Corp.
- CP55-16. A Versatile High Voltage D-C Insulation Tester. H. T. McLean, General Electric Co.

CP.** Conference paper; no advance copies are available; not intended for publication in Transactions.

OFFICERS OF AIEE 1954-55

President

A. C. MONTEITH

Past Presidents

D. A. QUARLES E. B. ROBERTSON

Vice Presidents

C. P. ALMON, JR. J. P. NEUBAUER
 A. S. ANDERSON C. M. SUMMERS
 G. J. CROWDES S. M. SHARP
 G. D. FLOYD G. C. TENNEY
 W. B. MORTON J. R. WALKER

Directors

F. R. BENEDICT R. E. KISTLER
 D. I. CONE T. M. LINVILLE
 R. F. DANNER E. S. LAMMERS
 D. D. EWING A. C. MUIR
 J. H. FOOTE C. S. PURNELL
 L. F. HICKERNELL E. W. SEEGER

Treasurer

W. J. BARRETT

Secretary

N. S. HIBSHMAN

COMMITTEE ON TECHNICAL OPERATIONS

J. D. TEBO, *Chairman*

W. R. Clark <i>Vice Chairman</i>	Hendley Blackmon <i>Secretary</i>
E. C. Day <i>Assistant Secretary</i> <i>Technical Papers</i>	R. S. Gardner <i>Assistant Secretary</i> <i>Technical Activities</i>
H. A. Affel	J. A. Hutcheson
L. W. Birch	Guy Kleis
W. R. Brownlee	E. U. Lassen
J. B. Coleman	L. J. Linde
C. E. Ganther	F. K. McCune
E. I. Green	A. C. Muir
G. W. Heumann	B. G. A. Skrotzki
L. F. Hickernell	R. C. Sogge
M. D. Hooven	S. R. Warren, Jr.

WINTER GENERAL MEETING COMMITTEES

General

A. J. Cooper, *Chairman*

D. M. Quick, *Vice Chairman*

J. J. Anderson <i>Secretary</i>	W. G. Vieth <i>Hotel Accommodations</i>
C. S. Purnell <i>Budget Coordinator</i>	J. V. O'Connor <i>Inspection Trips</i>
J. P. Neubauer <i>Vice-President District 3</i>	Morris Brenner <i>Registration</i>
J. D. Tebo <i>Chairman, Committee on</i> <i>Technical Operations</i>	R. W. Gillette <i>Smoker</i>
R. T. Ferris <i>Chairman, Committee on</i> <i>Public Relations</i>	R. T. Weil <i>Monitors</i>
J. R. Kerner <i>General Session</i>	S. Friend, Jr. <i>Theatre and Broadcast Tickets</i>
A. H. Gould <i>Dinner-Dance</i>	Mrs. M. M. Brandon <i>Ladies Committee</i>
	C. T. Hatcher <i>(Past Chairman)</i>

Smoker

R. W. Gillette, *Chairman*

C. F. Bolles	C. S. Purnell
R. E. Clisdell	D. M. Quick
J. G. Derse	H. O. Saunders
D. Halloran	J. F. Sievers
J. B. Harris, Jr.	H. B. Snow
F. H. Kasten	D. W. Taylor
H. W. Marquardt	E. F. Thrall
E. G. D. Patterson	W. G. Vieth

Theatre-Radio-Television Tickets Committee

S. Friend, Jr. *Chairman*

D. C. Aker	F. J. Karaus
F. W. Beckman	H. A. Mehrtens
A. R. Cairone	F. B. Morgan
C. Davis	D. S. Papanou
L. J. Hollander	

Ladies Entertainment

Mrs. M. M. Brandon, *Chairman*

Mrs. E. S. Banghart, Ex-Officio	Mrs. R. A. Jones
Mrs. A. J. Cooper	Mrs. J. R. Kerner
Mrs. J. Derse	Mrs. G. J. Lowell
Mrs. H. E. Dralle	Mrs. D. S. MacCorkle
Mrs. E. P. Dunlaevy	Mrs. H. E. Martin
Mrs. Sidney Friend, Jr.	Mrs. J. V. O'Connor
Mrs. R. W. Gillette	Mrs. C. S. Purnell
Mrs. A. H. Gould	Mrs. D. M. Quick
Mrs. C. T. Hatcher	Mrs. D. W. Taylor
Mrs. N. S. Hibshman	Mrs. E. R. Thomas
Mrs. L. F. Hickernell	Mrs. W. G. Vieth
Mrs. M. D. Hooven	Mrs. H. H. Weber
	Mrs. R. T. Weil

Inspection Trips

J. V. O'Connor, *Chairman*

J. A. Mulligan, *Secretary*

R. E. Bedworth	H. Koch
W. J. Brown	E. J. Lassen
T. F. Cofer	W. McConnachie
J. J. Duncan	H. W. Meswarp
R. Giani	A. Portnoy
D. Halloran	H. Simon
W. C. Henchy	J. L. Spencer

Dinner-Dance

Avery H. Gould, *Chairman*

W. F. Anselm	L. W. Eighmy
E. S. Banghart	P. T. Gross
J. M. Comly	W. E. Morrison
T. E. Davis	J. Nesmith
J. G. Derse	E. J. Doyle
R. L. Dhuy	H. H. Sheppard

Registrations

Morris Brenner, *Chairman*

F. L. Williams, *Vice Chairman*

T. S. Banghart	H. R. Maine
J. L. Bialous	T. J. Martin
J. E. Chamberlain	T. C. Oliver, Jr.
A. H. Donahoe	H. B. Rose
E. E. Grazda	L. C. Sclafani
F. H. Kasten	F. P. West
Irving Kolodny	

Hotel Accommodations

W. G. Vieth, *Chairman*

D. V. Buchanan, *Vice Chairman*

J. L. Davidson, Jr.	Martin Lennig
F. A. DeArcangelis	H. E. Martin
E. J. Doyle	John T. McSweeney
E. L. Fuss	A. L. Swensk
T. A. Griffin	D. E. Winslow

COMMITTEE MEETINGS

Monday, January 31

9:30 a.m.—Electrical Techniques in Medicine and Biology.....	Schuyler Room
9:30 a.m.—Standard No. 32 Revision Working Group.....	Parlor C
9:30 a.m.—Metallic Power Rectifier Subcommittee....	Town Room
9:30 a.m.—Transmission Substations Subcommittee...	Boston Room
9:30 a.m.—Textile Industry Standard Practices Subcommittee	Hudson Room
9:30 a.m.—Switching Surges Working Group.....	Buffalo Room
9:30 a.m.—Nominating Committee	Parlor B
10:00 a.m.—Sections	Parlor A
10:00 a.m.—Research	Empire Suites I & II
12:00 noon—Luncheon—Sections	Parlor A
12:00 noon—Luncheon—Research.....	Empire Suites I & II
12:00 noon—Press Reception	East Room
12:00 noon—Luncheon—NEMA Joint Committee on Regulators	Town Room
12:30 p.m.—Luncheon—General Session	Parlor C
4:00 p.m.—Special Communications Applications....	Schuyler Room
4:00 p.m.—Dielectrics Subcommittee	Town Room
4:00 p.m.—AIEE-IRE-ISA Medicine and Biology Executive	Parlor A
4:00 p.m.—Low Voltage Air Circuit Breaker Subcommittee	Village Room
4:00 p.m.—Electrochemical Processes Subcommittee..	Buffalo Room
4:00 p.m.—D.C. Short Circuit Calculations Working Group Empire Suite II	
4:00 p.m.—Digital Computer Comparisons Subcommittee.....	Hudson Room
4:30 p.m.—Capacitor Subcommittee	Empire Suite I
5:30 p.m.—Sections Get-Together	Parlors B & C

Tuesday, February 1

8:15 a.m.—Canadian Breakfast	Parlors A & B
8:30 a.m.—Breakfast—General Industry Applications...	Town Room
8:30 a.m.—Breakfast—Chemical, Electrochemical and Electrothermal	Parlor C
9:00 a.m.—Core Matching & Grading Working Group ...	Room J*
9:30 a.m.—Power Division	Parlor B
9:30 a.m.—Planning and Coordination	Parlor A
9:30 a.m.—Lightning and Insulator Subcommittee....	Buffalo Room
9:30 a.m.—Distribution Subcommittee	Room S*
9:30 a.m.—Student Branches	Hudson Room
9:30 a.m.—Sections Delegates Conference.....	Penn Top North
9:30 a.m.—Mining and Metal Industry	Boston Room
9:30 a.m.—Industrial Power Systems Executive Subcommittee	Herald Room*

American Institute of Electrical Engineers

- 9:30 a.m.—Instruments and Measurements.....Empire Suites I & II
9:30 a.m.—Metallic Rectifiers Technical Information
SubcommitteeRoom K*
9:30 a.m.—Distribution Substations Subcommittee.....Room E*
9:30 a.m.—M. R. Semi-Conductors Subcommittee....Schuyler Room
9:30 a.m.—General Systems SubcommitteeRoom T*
9:30 a.m.—Magnetic Amplifier Theory Subcommittee....Room D*
10:00 a.m.—Communications DivisionVillage Room
12:00 noon †Luncheon—Electrostatic Processes Subcom-
mitteeRoom J*
12:00 noon †Luncheon—D.C. Machines Subcommittee
14Room T*
12:00 noon †Luncheon—Domestic & Commercial
ApplicationTown Room
12:00 noon †Luncheon—Random Wound Machines Insulation
Evaluation Working Group.....Schuyler Room
12:00 noon—Luncheon—Instruments and
MeasurementsEmpire Suites I & II
12:00 noon †Luncheon—Industrial Power SystemsParlor B
12:00 noon †Luncheon—Electronic Power Converters..Herald Room*
12:00 noon—Luncheon—John Fritz MedalParlor C
12:00 noon †Luncheon—Planning & CoordinationParlor A
12:00 noon †Luncheon—Communications Division....Village Room
2:00 p.m.—Feedback Control SystemsRoom K*
2:00 p.m.—High Frequency Conductors, Cables and
ConnectorsParlor C
2:00 p.m.—Science and Electronics Division.....Boston Room
2:00 p.m.—Student BranchesHudson Room
2:00 p.m.—Sections Delegates Conference.....Penn Top North
2:00 p.m.—Textile SubcommitteeBuffalo Room
2:00 p.m.—Metallic Rectifiers Magnetic Amplifier
SubcommitteeEmpire Suite I
2:00 p.m.—Conversion Substations SubcommitteeRoom E*
2:00 p.m.—Arc Furnaces Working GroupRoom D*
3:30 p.m.—Towers, Poles and Conductors Subcommittee...Room S*
4:00 p.m.—Hydro-Electric Systems Subcommittee....Village Room
4:00 p.m.—Cathodic Protection Subcommittee.....Empire Suite II
4:00 p.m.—High Voltage Machines Insulation
Evaluation W.G.Parlor C
4:30 p.m.—Dinner—ElectronicsParlor B

Wednesday, February 2

- 8:00 a.m.—Breakfast—Industry Division.....Parlor C
8:00 a.m.—Breakfast—Revision of Code 503.....Village Room
9:00 a.m.—AIEE-IRE Student Branches See Info. Desk
9:30 a.m.—Transmission and DistributionBoston Room

Winter General Meeting

- 9:30 a.m.—Land TransportationParlor B
9:30 a.m.—SafetyBuffalo Room
9:30 a.m.—Lamme MedalHudson Room
9:30 a.m.—Specialty Transformer Insulating Materials
W. G.....Empire Suite II
9:30 a.m.—Metallic RectifiersRoom E*
9:30 a.m.—MembershipParlor A
9:30 a.m.—Substations Executive SubcommitteeRoom D*
9:30 a.m.—Industrial Control Test Codes
SubcommitteeTown Room
9:30 a.m.—Resistance Welding Instrumentation
SubcommitteeRoom K*
9:30 a.m.—Eta Kappa Nu BridgeRoom J*
10:00 a.m.—Limiter Task Group, Insulated Conductor....Room T*
10:00 a.m.—ManagementVillage Room
10:00 a.m.—Power GenerationSchuyler Room
12:00 noon †Luncheon—Television and Aural
BroadcastingVillage Room
12:00 noon †Luncheon—Induction Machines Subcommittee.Room S*
12:00 noon †Luncheon—Technical OperationsParlor B
12:00 noon—Luncheon—Engineering RegistrationRoom T*
12:00 noon †Luncheon—ASA C-57 TransformerParlor A
12:00 noon—Luncheon—System Planning
SubcommitteeEmpire Suite I
12:00 noon—Luncheon—Edison MedalParlor C
12:00 noon—Luncheon—Public RelationsHerald Room*
12:00 noon—Luncheon—Chemical Industry Subcommittee .Room J*
12:00 noon—Luncheon—NucleonicsRoom D*
2:00 p.m.—Electron Tube Subcommittee.....Schuyler Room
2:00 p.m.—Limiter Tank Group, Insulated Conductor...Room T*
2:00 p.m.—A.S.A. C-57 TransformerParlor A
2:00 p.m.—Members-for-Life FundEmpire Suite I
2:00 p.m.—Metallic RectifiersRoom E*
2:00 p.m.—Specialty Transformer Insulating Materials
W. G.....Empire Suite II
2:00 p.m.—System Engineering SubcommitteesParlor C
2:00 p.m.—TransfersHudson Room
2:00 p.m.—Resistance Welding Instrumentation Sub-
committeeRoom K*
2:00 p.m.—RelaysBoston Room
2:00 p.m.—Industrial ControlBuffalo Room
2:00 p.m.—Industrial Control Test Codes
SubcommitteeTown Room
4:00 p.m.—System EngineeringParlor C

American Institute of Electrical Engineers

- 4:00 p.m.—Synchronous Machines SubcommitteeRoom S*
4:00 p.m.—Basic SciencesBuffalo Room
4:00 p.m.—R. M. Test Code Coordination Subcommittee..Room D*
4:30 p.m.—Computing Devices Room J*
4:30 p.m.—Wire Communications SystemsVillage Room
4:30 p.m.—Vocational Guidance CommitteeHerald Room*
5:00 p.m.—Johns Hopkins Alumni.....Penn Top North
7:30 p.m.—Forum of Technical Committee
ChairmenGeorgian Room
8:00 p.m.—Harvard Engineering SocietyHarvard Club

Thursday, February 3

- 9:00 a.m.—Board of DirectorsRoom 1001**
9:30 a.m.—Fundamental Arc Research
SubcommitteeSchuyler Room
9:30 a.m.—Rotating MachineryParlor A
9:30 a.m.—Industrial X-Ray SubcommitteeBoston Room
9:30 a.m.—Radio Communications Systems.....Hudson Room
9:30 a.m.—Dielectric Test Subcommittee.....Empire Suite I
9:30 a.m.—Magnetic AmplifiersBuffalo Room
9:30 a.m.—Electric Heating Technical Data
SubcommitteeRoom E*
9:30 a.m.—Lighting Protective Devices
SubcommitteeTown Room
9:30 a.m.—ASA C-34 Standards Revision W. G.Room S*
9:30 a.m.—Transformer Material Life Working Group...Parlor B
9:30 a.m.—Production and Application of LightRoom D*
12:00 noon—Luncheon—General Applications
DivisionHerald Room
12:00 noon †Luncheon—Dielectric Test
SubcommitteeEmpire Suite I
12:00 noon †Luncheon—R. M. Administrative Subcom-
mitteeEmpire Suite II
2:00 p.m.—Board of DirectorsRoom 1001**
2:00 p.m.—Electric WeldingParlor B
2:00 p.m.—Communication Switching Systems.....Hudson Room
2:00 p.m.—SubstationsBoston Room
2:00 p.m.—EducationBuffalo Room
2:00 p.m.—Fault Limiting Devices Subcommittee....Village Room
2:00 p.m.—Lightning Protective Devices
SubcommitteeSchuyler Room
2:00 p.m.—Dielectric Amplifiers Subcommittee.....Town Room
2:00 p.m.—Magnetic Amplifier Standards Subcommittee...Room D*

Winter General Meeting

- 2:00 p.m.—ASA C-34 Standards Revision W. G.Room S*
2:00 p.m.—AIEE-IRE-ISA-IAS Telemetering Executive..Room T*
2:00 p.m.—Carrier Radiation SubcommitteeRoom K*
4:00 p.m.—Carrier CurrentParlor A
4:00 p.m.—Electric Coupling SubcommitteeTown Room
4:00 p.m.—Dinner—Electronic Control
SubcommitteeHerald Room*

Friday, February 4

- 9:30 a.m.—PublicationsParlor C
9:30 a.m.—Protective DevicesParlor A
9:30 a.m.—Automatic Supervisory Control Subcommittee..Parlor B
2:00 p.m.—PublicationsParlor C
4:00 p.m.—Telegraph SystemsParlor A

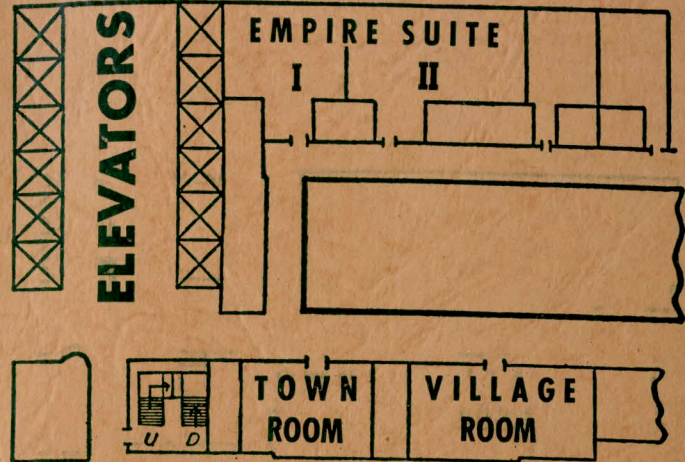
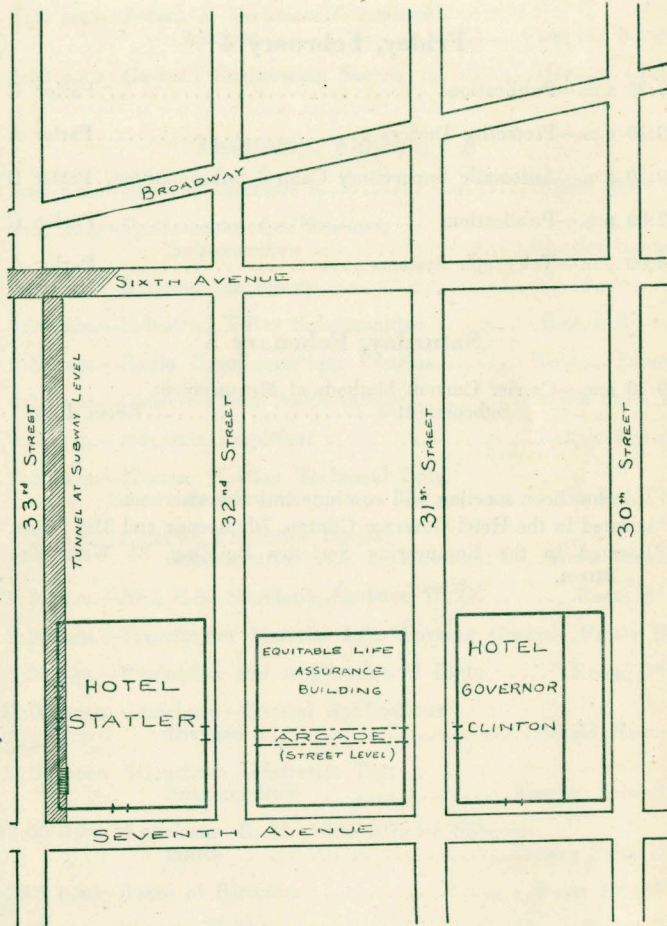
Saturday, February 5

- 9:30 a.m.—Carrier Current Methods of Measurement
SubcommitteeRoom 1001**

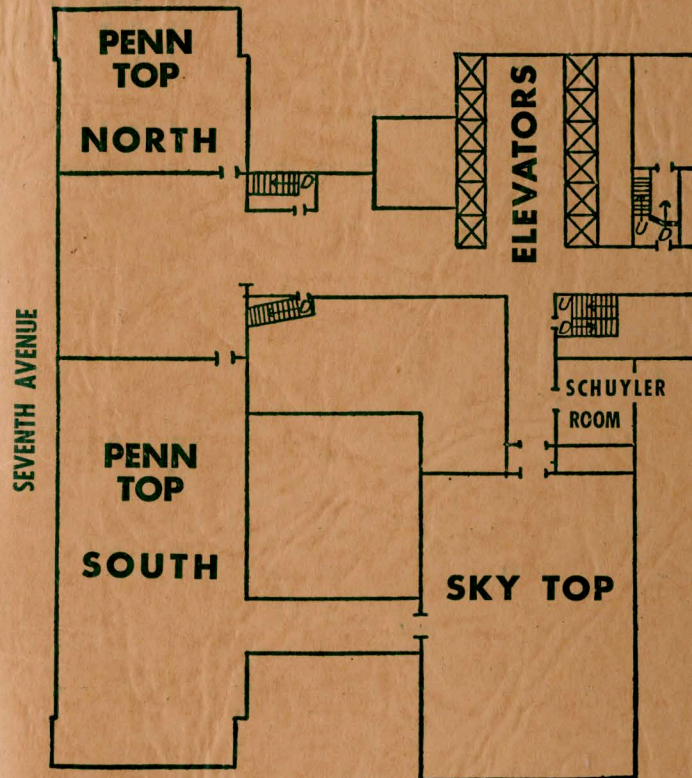
†This luncheon meeting will continue into the afternoon.

*Located in the Hotel Governor Clinton, 7th Avenue and 31st Street.

**Located in the Engineering Societies Building, 33 West 39th Street.

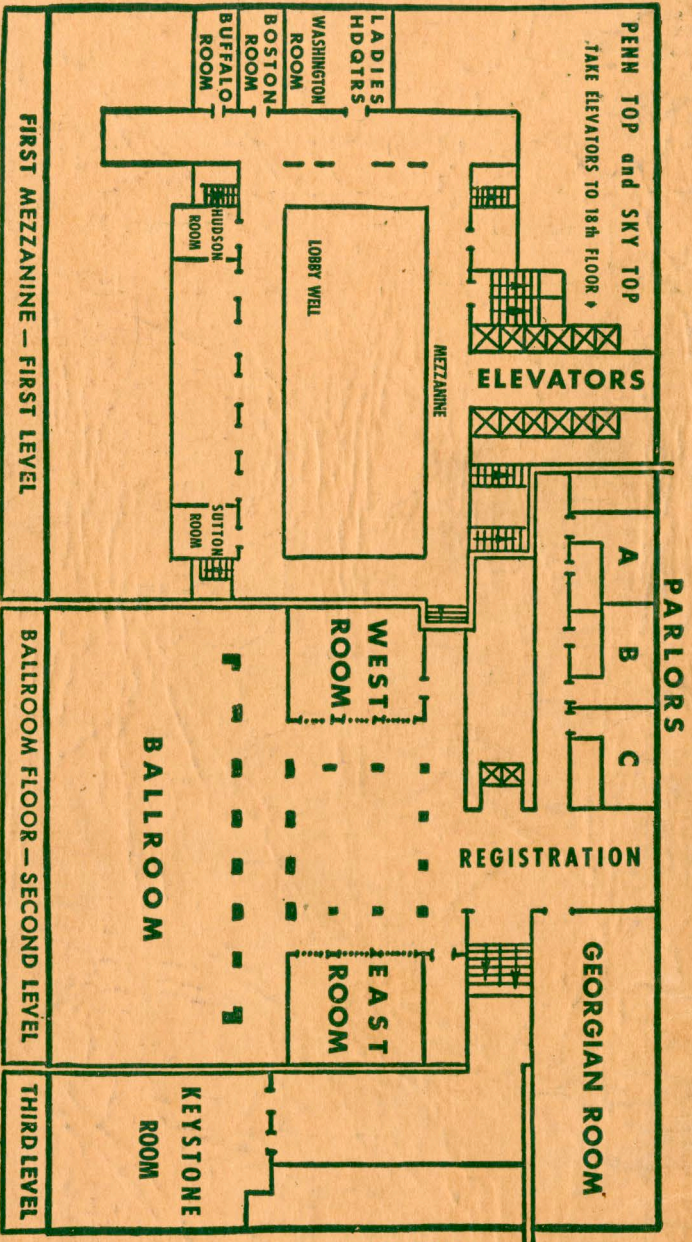


FIRST GUEST ROOM FLOOR



18th FLOOR

SEVENTH AVENUE



PLAN OF HOTEL STATLER