

**American Institute of
Electrical Engineers**



SUMMER

GENERAL

MEETING

Program

*Please retain for use during
entire meeting*

SWAMPSCOTT, MASS.

JUNE 27 – JULY 1

1955

Meeting Headquarters

NEW OCEAN HOUSE

GENERAL INFORMATION

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

At our Annual Meeting, Monday morning June 27, Mr. A. M. deBellis will be presented with the Lamme Medal. The election of the new officers will also take place.

On the social side there will be an informal social hour on Sunday, an old fashioned barn dance Monday evening and the Banquet and the President's Reception on Wednesday evening. On Tuesday and Thursday evenings there will be informal dancing.

Registration Fees Required. In accordance with the policy as set up by the Board of Directors, a registration fee of \$3.00 has been established for members and a fee of \$5.00 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, discussions in duplicate must be left with the chairman and/or sent to Edward C. Day, Assistant Secretary, Committee on Technical Operations, AIEE, 33 W. 39th Street, New York 18, N. Y., before July 15, 1955. 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 photographs or inked tracings should be submitted.

Advance Copies of Papers may be purchased by members at the registration desk at the uniform price of \$.40 each (\$.80 each to 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, N. Y. The TRANSACTIONS Papers will also be published in the Bimonthly Publications. 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.

Summer General Meeting

SCHEDULE OF EVENTS

For more detailed information, see separate folder.

SUNDAY, JUNE 26

2:00 p.m. Registration

4:00 p.m. Social Hour

MONDAY, JUNE 27

9:00 a.m. Registration

10:00 a.m. Annual Meeting

2:00 p.m. Chemical Industry
Communication Switching Systems
Insulated Conductors
System Engineering and Relays
Conference on Ethics
Trip to Champion International Paper Company

3:00 p.m. Ladies Acquaintance Tea

9:00 p.m. Old Fashion Barn Dance

TUESDAY, JUNE 28

9:30 a.m. Color Television
Insulated Conductors
System Engineering and Power Generation
Section Delegates Conference
Computing Devices
Safety
Trip to GE Co. Generator and Gear Department
Ladies Trip to Boston and Luncheon at MIT

2:00 p.m. Satellite TV Transmitters
Insulated Conductors
System Engineering
Section Delegates Conference
Computing Devices
Trip to Harvard University, Massachusetts Institute
of Technology and Boston
Trip to GE Co. Measurements Laboratory

WEDNESDAY, JUNE 29

9:30 a.m. Radio Communications
Transmission and Distribution
Power Generation
Management
Basic Sciences
Trip to Saugus Iron Works Restoration (Ladies
Invited)

- 2:00 p.m. Feedback Control Systems
Wire Communications
Transmission and Distribution
Electronic Reliability
Trip to Charlestown Navy Yard
Ladies Tour of Marblehead
- 6:15 p.m. President's Reception and Banquet

THURSDAY, JUNE 30

- 9:30 a.m. Conference on Textile Industry
Telegraph Systems
Protective Devices
Magnetic Amplifiers
Basic Sciences
Trip to Sylvania Electric Products, Inc.
Ladies Luncheon Tour of Rockport, Salem and
Hammond Castle
- 2:00 p.m. Textile Industry
Rotating Machinery
Land Transportation
Magnetic Amplifiers
Industrial Power Systems and Switchgear
Instruments and Measurements
Transmission and Distribution
Trip to Salem Coast Guard Station
Trip to General Radio Co.
- 7:30 p.m. Forum of Technical Committee Chairmen

FRIDAY, JULY 1

- 9:30 a.m. Rotating Machinery
Carrier Current and Microwave
Switchgear
Theory of Rectifiers
Instruments and Measurements
Transformers
Magnetic Amplifiers
- 2:00 p.m. Transformers
Switchgear
Metallic Rectifiers
Instruments and Measurements
Transmission and Distribution

Monday, June 27

10:00 a.m.—Annual Meeting

Ballroom, New Ocean House
PRESIDENT A. C. MONTEITH, Presiding

1. Report of the President, A. C. Monteith.
2. Report of the Board of Directors, N. S. Hibshman, Secretary.
3. Report of the Treasurer, W. J. Barrett.
4. Report of Committee of Tellers on vote for nominees for AIEE offices.
5. (a) Introduction of, and presentation of President's badge to M. D. Hooven.
(b) Response by Mr. Hooven.
6. Presentation of Lamme Medal to A. M. deBellis, Consolidated Edison Co. of New York, Inc.
(a) The Establishment of the Medal. S. B. Crary, Chairman, Lamme Medal Committee.
(b) The Career of the Medalist. J. F. Fairman, Consolidated Edison Co. of New York, Inc.
(c) Presentation of the Medal and Certificate by President A. C. Monteith.
(d) Response by Mr. deBellis.
7. Introduction of District Student Paper First Prize Winners.
8. Any other business that may be presented.

2:00 p.m.—Chemical Industry

Committee on Chemical, Electrochemical and Electrothermal Applications
Colonial Room, New Ocean House
R. W. SCOTT, Presiding

- CP.** Application of Polyethylene Insulated High Voltage Power Cable in Chemical Plants. S. J. Rosch, Anaconda Wire and Cable Co.
- CP.** A-C/D-C Conversion Equipment in the Electro-Chemical Industry. H. H. Zielinski, General Electric Co.
- CP.** Factors Affecting Selection of Insulated Cable. R. C. Graham, Rome Cable Corp.
- CP.** System Neutral Grounding for Chemical Plant Power Systems. H. N. Hickok and D. S. Brereton, General Electric Co.
- CP55-470. Thermal Protection of Motors. G. R. Horcher, The Dow Chemical Co.
- 55-555. Operating Experience with a Mechanical Rectifier. J. Chamulak, J. W. Tracht, Pennsylvania Salt Mfg. Co. and W. C. McCullough, ITE Circuit Breaker Co. re-presented for discussion.

2:00 p.m.—Communication Switching Systems

Committee on Communication Switching Systems
Dining Room, Preston Hotel
A. E. FROST, Presiding

- 55-431. Engineering Multi-Stage Diode Logic Circuits. B. J. Yokelson and W. Ulrich, Bell Telephone Labs., Inc.
- 55-466. The Appraisal of Delays in Gate Type Operation. I. Molnar, I Automatic Electric Co.
- 55-467. An Improved Detached-Contact Type of Schematic Circuit Drawing. F. T. Meyer, Bell Telephone Labs., Inc.
- CP.** Recent New Features for the No. 5 Crossbar Switching System. J. W. Dehn and R. E. Hersey, Bell Telephone Labs., Inc.
- 55-436. Minimizing and Mapping Sequential Circuits. W. S. Bennett, I The John Hopkins University.

2:00 p.m.—Insulated Conductors

Committee on Insulated Conductors
Ballroom, New Ocean House
M. H. McGRATH, Presiding

- 55-446. Freezing Oil-Type Pipe Cable. E. J. Merrell, Phelps Dodge III Copper Products Corp.

MONDAY (continued)

- 55-468. A-C Resistance of Conventional Strand Power Cables in Non-Metallic Duct and in Iron Conduit. R. W. Burrell and M. Morris, Consolidated Edison Co. of N.Y., Inc.
- CP55-433. Typical Applications of Non-Leaded Cable on Low Voltage Alternating Current Network System. A. Bodicky, Union Electric Co. of Missouri.
- 2:00 p.m.—System Engineering and Relays**
Committees on System Engineering and Relays
Priscilla Room, New Ocean House
FRANK VON ROESCHLAUB, Presiding
- 55-469. Relay Protection for Lines Being Sleet Melted by the Short III Circuit Method. J. Hogan and C. G. Pebler, Commonwealth Associates, Inc.
- CP.** Protective Relaying and System Planning. J. E. Barkle and J. L. Blackburn, Westinghouse Electric Corp.
- CP55-447. Protective Relaying as a Major Tool for System Planning. J. R. Linders, Cleveland Electric Illuminating Co.
- CP55-526. Relationship Between System Planning and Relay Protection. E. L. Michelson, Commonwealth Edison Co.
- 2:00 p.m.—Conference on Ethics**
Committee on Code of Principles of Professional Conduct
Ballroom, Preston Hotel
P. L. ALGER, Presiding
- CP.** Teaching Ethics to Engineering Students. H. W. Bibber, Union College.
- CP.** What Ethics? C. T. Chave, Stone and Webster.
- CP.** The Philosophy of Codes of Ethics. L. L. Fuller, Harvard Law School.

Tuesday, June 28

- 9:30 a.m.—Color Television**
Committee on Television and Aural Broadcasting Systems
Convention Hall East
I. J. KAAR, Presiding
- CP55-561. The Impact of Color on Television Network Facilities. J. Thorpe, American Telephone and Telegraph Co.
- 55-457. Basic Problems in Film Pickup for TV Broadcasting. E. M. I Gore, Radio Corp. of America.
- CP.** The Continuous Film Projector and Flying Spot Scanner for Television. R. E. Putman, General Electric Co.
- CP.** A Color Projection Receiver. W. F. Bailey, R. P. Burr and R. J. Keogh, Hazeltine Corp.
- 9:30 a.m.—Insulated Conductors**
Committee on Insulated Conductors
Ballroom, New Ocean House
L. E. FOGG, Presiding
- 55-443. The Limiter, Its Basic Function in Network Distribution Systems. C. P. Xenis, Consolidated Edison Co. of N.Y., Inc.
- 55-444. Overload Classifications for Secondary Network Cables. R. C. III Graham, Rome Cable Corp.
- 55-434. Time Current Damage Characteristics, Cable in Duct. L. F. III Porter, Consolidated Edison Co. of N. Y., Inc.
- 55-445. Co-Ordination of Secondary Network Protection. E. L. Leinbach, Detroit Edison Co., and A. S. Brookes, Public Service Electric and Gas Co.
- 9:30 a.m.—System Engineering and Power Generation**
Committees on System Engineering and Power Generation
Priscilla Room, New Ocean House
C. N. METCALF, Presiding
- 55-496. Automatic Load-Frequency Control System for Central Station III Power. G. Ehrenberg, Minneapolis-Honeywell Regulator Co.

TUESDAY (continued)

- CP55-527. A Low Cost Automatic Computer for Economic Load Dispatching. M. H. Welsh, Duquesne Light Co.
- 55-528. A Computer for Economic Scheduling and Control of Power III Systems. C. D. Morrill and J. A. Blake, Goodyear Aircraft Corp.
- 55-529. System Planning Practices, System Planning Subcommittee III of the System Engineering Committee.
- 9:30 a.m.—Section Delegates Conference**
Committee on Sections
Dining Room, Preston Hotel
W. R. HOUGH, Presiding
- 9:30 a.m.—Computing Devices**
Committee on Computing Devices
Convention Hall West
MORRIS RUBINOFF, Presiding
- CP.** Superconducting Computer Components. D. A. Buck, Massachusetts Institute of Technology.
- 55-497. A Multi-Stable Transistor Circuit. R. A. Henle, International I Business Machines Corp.
- CP.** Experimental Transistor Calculator. G. D. Bruce and J. O. Logue, International Business Machines Corp.
- 9:30 a.m.—Safety**
Committee on Safety
Colonial Room, New Ocean House
C. E. GANTHER, Presiding
- CP55-471. Electric Shock—Its Causes and Its Prevention. R. L. Kline and J. B. Friauf, Dept. of the Navy.
- 55-426. Protection of Personnel Against Electric Shock Hazards in III Central Office Communications Equipment. R. V. Jones, American Telephone and Telegraph Co.
- CP.** A Worthwhile Approach to the Accident Prevention Problem. C. T. Williamson, Bethlehem Steel Co.
- CP55-525. A Discussion of Causes of Electrical Accidents and Fires and Means for Their Prevention. E. W. McLeod, Hydro-Electric Power Commission of Ontario.
- 2:00 p.m.—Satellite TV Transmitters**
Committee on Television and Aural Broadcasting Systems
Convention Hall East
C. H. BROWN, Presiding
- CP.** An Experimental Investigation of the Engineering Aspects of a UHF Television Booster Installation. J. Epstein, W. C. Morrison and O. M. Woodward, Jr., RCA Laboratories.
- CP55-472. Three Low Power UHF Television Systems. J. B. Grund, Sylvania Electric Products, Inc.
- CP.** Systems for Satellite Television Broadcasting. T. B. Friedman, Adler Communications Laboratories.
- CP.** Considerations of Microwave Installations. R. G. McLaughlin, Raytheon Mfg. Co.
- 2:00 p.m.—Insulated Conductors**
Committee on Insulated Conductors
Ballroom, New Ocean House
M. W. CHEN, Presiding
- 55-473. Limiters, Their Design Characteristics and Application. F. III Heller and I. Matthyse, Burndy Engineering Co.
- 55-432. High Temperature Classification of Rubber and Rubber-Like III Insulation of Network Cable by Oven Heating Tests. W. H. Couch and G. J. Crowdes, Simplex Wire and Cable Co.

TUESDAY (continued)

55-474. A Mathematical Method for Determining Insulation Damage
III Curves for Network Cables. R. H. Kolks, Cincinnati Gas and
Electric Co.

55-441. Characteristic Properties of Secondary Network Cables. S. J.
III Rosch, Anaconda Wire & Cable Co.

2:00 p.m.—System Engineering

Committee on System Engineering
Priscilla Room, New Ocean House
T. W. SCHROEDER, Presiding

55-530. Forecasting the Demand for Electricity. R. G. Hooke, Public
III Service Electric and Gas Co.

CP55-531. Electric Utility Load Forecasting. W. W. Godard, Cleve-
land Electric Illuminating Co.

CP55-532. Forecasting Farm Electric Power Requirements. E. R.
Brown and R. D. Partridge, Rural Electrification Adm.

55-450. The Application of Business Machines to Electric Utility
III Load Forecasting. J. G. Gruetter, Bonneville Power Adm.

CP55-533. National Income and Use of Electrical Energy. F. Felix,
International General Electric Co.

2:00 p.m.—Section Delegates Conference

Committee on Sections
Dining Room, Preston Hotel
W. R. HOUGH, Presiding

2:00 p.m.—Computing Devices

Committee on Computing Devices
Colonial Room, New Ocean House
E. L. HARDER, Presiding

CP55-515. A Machine for Computing the Convolution Integral. T. O.
Ellis, Rand Corp., M. R. Davis and L. L. Grandi, University
of California.

55-451. A Static Magnetic Transistor Analogue Divider. D. H. Schae-
I fer, Naval Research Lab.

55-461. Four Quadrant Multiplication with Transistors and Magnetic
I Cores. R. L. Van Allen, Naval Research Lab.

55-430. A Sine Function Resistor, K. L. Nielsen, U. S. Naval Ord-
I nance Plant and E. H. Roland, General Motors Corp.

Wednesday, June 29

9:30 a.m.—Radio Communications

Committee on Radio Communications Systems
Priscilla Room, New Ocean House
E. D. BECKEN, Presiding

55-534. The Inter-Island Radio Network of the Hawaiian Telephone
I Company. W. B. Farinon, Hawaiian Telephone Co.

55-535. Engineering Problems and Performance Record of the Ha-
I waiian Inter-Island Radio Network. W. B. Farinon and A. C.
Walker, Hawaiian Telephone Co.

55-536. Equipment for Inter-Island Radio Circuits. A. C. Walker,
I V. P. Hoover, Hawaiian Telephone Co., and E. E. Nolan,
Lenkurt Electric Co.

55-429. Impulse Noise in Narrow Band F.M. Receivers. S. P. Lapin,
I Motorola, Inc., and J. J. Suran, General Electric Co.

9:30 a.m.—Transmission and Distribution

Committee on Transmission and Distribution
Dining Room, Preston Hotel
I. B. JOHNSON, Presiding

55-437. Corona Studies—In Relation to Insulation. T. W. Liao, J. R.
III Nye, H. H. Brustle and J. G. Anderson, General Electric Co.

WEDNESDAY (continued)

55-453. Effects of Corona on Traveling Waves. C. F. Wagner and
III B. L. Lloyd, Westinghouse Electric Corp.

55-475. Traveling Wave Protection Problems II. E. W. Boehne, Mas-
III sachusetts Institute of Technology.

55-476. A Method for Studying Circuit Transient Recovery Voltage
III Characteristics of Electric Power Systems. W. C. Kotheimer,
General Electric Co.

9:30 a.m.—Power Generation

Committee on Power Generation
Convention Hall East
H. C. BARNES, Presiding

55-459. An Approach to the Definition of Excitation System Response.
III T. J. Bliss, Westinghouse Electric Corp.

CP55-462. Excitation System Response. J. V. Baptist and S. M. Den-
ton, Bureau of Reclamation.

CP.** A Hydro Utility's Approach to Defining Excitation System
Response. P. L. Dandeno and K. R. McClymont, Hydro-Elec-
tric Power Commission of Ontario.

CP.** Exciter Response. H. W. Cory, Allis-Chalmers Mfg. Co.

CP55-524. Field Tests of Response of Excitation System for a Syn-
chronous Condenser. A. N. B. Eliassen, Sargent and Lundy.

CP.** Excitation System Response—Definition and Significance in
Power Systems. M. Temoshok, General Electric Co.

9:30 a.m.—Management

Committee on Management
Ballroom, New Ocean House
F. K. McCUNE, Presiding

CP.** The Obligations of Engineering Management in a Large De-
centralized Manufacturing Company. C. H. Linder, General
Electric Co.

CP.** Challenges and Opportunities for Young Engineers in the
Utility Industry. J. W. Bennett, Western Massachusetts Elec-
tric Co.

9:30 a.m.—Basic Sciences

Committee on Basic Sciences
Colonial Room, New Ocean House
W. R. LePAGE, Presiding

55-428. Analysis of Nonlinear Coupled Circuits—II. Y. H. Ku, Uni-
I versity of Pennsylvania.

55-490. A Method of Solving Mathieu's Equation. J. J. Smith, Gen-
I eral Electric Co.

55-491. Magnetic Flux Density Measurements in Rotating Machines.
I B. J. Ley, New York University, and A. Charnetz, Ford In-
strument Co.

2:00 p.m.—Feedback Control Systems

Committee on Feedback Control Systems
Ballroom, New Ocean House
H. W. CORY, Presiding

CP55-548. Correlation Between Root Locus and Transient Response
of Sampled-Data Control Systems. E. I. Jury, University of
California.

55-549. Optimum Switching Criteria for Higher Order Contactor
II Servo with Interrupted Circuits. S. S. L. Chang, New York
University.

55-550. Extension of Continuous-Data System Design Techniques to
II Sampled-Data Control Systems. G. W. Johnson, D. P. Lin-
doff and C. G. A. Nordling, University of Connecticut.

WEDNESDAY (continued)

55-551. Analysis and Design Principles of Second and Higher-Order
II Saturating Servomechanisms. R. E. Kalman, E. I. du Pont de Nemours and Co.

55-553. A Simple Method for Calculating the Time Response of a
II System to an Arbitrary Input. G. A. Biernson, Massachusetts Institute of Technology. Re-presented for discussion.

2:00 p.m.—Wire Communications

Committee on Wire Communications Systems
Priscilla Room, New Ocean House
W. F. POTTER, Presiding

55-259. Aluminum Die Castings for Carrier Telephone Systems.
I L. Pedersen, Bell Telephone Labs., Inc.

55-559. Aluminum Conductor Steel Reinforced (ACSR) for Railroad
I Signal and Communications Circuits. H. W. Adams, Reynolds Metals Co.

55-560. Frequency Shift Signaling Circuit for '45' Type Carrier Sys-
I tems. K. E. Appert and R. S. Caruthers, Lenkurt Electric Co.

CP.** A Telephone Communication System for the Green Bay and
Western Railroad. G. W. Searle and J. W. Deist, Wisconsin Telephone Co.

2:00 p.m.—Transmission and Distribution

Committee on Transmission and Distribution
Dining Room, Preston Hotel
F. V. SMITH, Presiding

55-448. Voltage Dip and Synchronous-Condenser Swings Caused by
III Arc Furnace Loads. C. Concordia, General Electric Co.

55-477. Electromagnetic Unbalance of Untransposed Transmission
III Lines, II. Single Lines with Horizontal Conductor Arrangement. E. T. B. Gross, Illinois Institute of Technology, and S. W. Nelson, Armour Research Foundation.

55-478. "Oracle" Computes Line Constants with Tensors. R. B. Ship-
III ley, M. Hochdorf and M. Watson, Tennessee Valley Authority.

55-479. A Rational Method for the Step-by-Step Calculations in
III Power System Transient Stability Studies. E. O. Norinder, Swedish State Power Board.

2:00 p.m.—Electronic Reliability

Committee on Electronics
Colonial Room, New Ocean House
VICTOR HARRIS, Presiding

CP.** Standard Functional Divisions for Electronic Equipment.
R. S. Shultz and W. R. Waltz, Vitro Corp. of America.

CP.** The Modular Design of Electronics: A Progress Report. J. G.
Reid, Jr., R. L. Henry and C. C. Rayburn, ACF Electronics.

CP.** National Bureau of Standards Preferred Circuits Program.
J. H. Muncy, National Bureau of Standards.

CP.** Prediction of Electronic Equipment Reliability Based on
Design Factors. V. Harris and M. M. Tall, Vitro Corp. of America.

CP55-498. The Eccles-Jordan Trigger Circuit with Special Attention
to Transition Time. R. Chatterjee, Bangalore, India, and W. G. Dow, University of Michigan.

55-500. Notes on the Use of Screen-to-Plate Transconductance in
I Multigrid Circuit Design. K. A. Pullen, Jr., Aberdeen Proving Ground. Re-presented for discussion.

Thursday, June 30

9:30 a.m.—Textile Industry

Committee on General Industry Applications
Dining Room, Preston Hotel
R. R. PRECHTER, Presiding

The morning session will be devoted to acquainting the conference with the need for recommended electrical practices for installation and use of electricity and electrical devices on textile-machinery. During this session the necessary background information leading to the preparation of the recommended practices will be given. Need for these recommended practices based upon machinery builders' experience, mill operators' experience and fire underwriters' experience will be presented.

Speakers:

V. F. Sepavich, Crompton and Knowles Loom Works.
J. D. McConnell, Cone Mills Corp.
Swaffield Cowan, Factory Insurance Assn.

9:30 a.m.—Telegraph Systems

Committee on Telegraph Systems
Priscilla Room, New Ocean House
E. F. WATSON, Presiding

55-501. The Ticketfax System. A. S. Hill, Western Union Telegraph
I Co.

55-502. Ticketfax Electronics. C. Jelinek, Jr., Western Union Tele-
I graph Co.

55-503. Ticketfax Transmitters and Recorders. D. M. Zabriskie, Wes-
I tern Union Telegraph Co.

9:30 a.m.—Protective Devices

Committee on Protective Devices
Convention Hall East
E. G. NORELL, Presiding

55-556. Lightning Protection in a 24-KV Station—Field and Labora-
III tory Studies. H. R. Armstrong, Detroit Edison Co., R. W. Ferguson and A. R. Hileman, Westinghouse Electric Corp.

55-557. Review of the Factors Concerned with the Use of Protective
III Devices Shunting Reactors. Fault Limiting Devices Subcommittee of the Protective Devices Committee.

55-558. Surge Attenuation in Power Cables. W. W. Valentine, Poto-
III mac Electric Power Co. J. K. Dillard and J. M. Clayton, Westinghouse Electric Corp.

9:30 a.m.—Magnetic Amplifiers

Committee on Magnetic Amplifiers
Ballroom, New Ocean House
W. J. DORNHOEFER, Presiding

55-537. Full-Wave, Reversible-Polarity, Half-Cycle Response Magnetic
I Amplifiers. C. B. House, Naval Research Lab.

55-538. Influence of ID-OD Ratio on Static and Dynamic Magnetic
I Properties of Toroidal Cores. R. W. Roberts and R. I. Van Nice, Westinghouse Electric Corp.

55-539. Magnetic Amplifiers in Bistable Operation. L. A. Finzi and
I G. C. Feth, Carnegie Institute of Technology.

55-540. Standards for the Presentation of Data on Magnetic Ampli-
I fier Core Materials. AIEE Materials Subcommittee.

CP.** The Replacement of Relays and Moving Contacts with Static
Control Elements—A New Concept in Industrial Control.
R. A. Ramey, Westinghouse Electric Corp.

THURSDAY (continued)

9:30 a.m.—Basic Sciences

Committee on Basic Sciences
Colonial Room, New Ocean House
L. J. BERBERICH, Presiding

- 55-440. The Dielectric Behavior of Some Fluorogases and Their Mixtures with Nitrogen. G. Camilli, T. W. Liao and R. E. Plump, General Electric Co. Re-presented for discussion.
- I
- 55-493. Electric Breakdown of Perfluorocarbon Vapors and Their Mixtures with Nitrogen. L. J. Berberich, C. N. Works, and E. W. Lindsay, Westinghouse Electric Corp. Re-presented for discussion.
- I
- 55-494. Heat-Resistant Polyester Magnet Wire. W. F. Gilliam, E. M. Boldebuck and J. R. Elliott, General Electric Co. Re-presented for discussion.
- I
- 55-495. Heat Resistant Insulation Systems for Motors. C. J. Herman and K. N. Mathes, General Electric Co. Re-presented for discussion.
- I
- CP55-562. Electrical Insulation Progress. P. L. Alger and K. N. Mathes, General Electric Co.

2:00 p.m.—Textile Industry

Committee on General Industry Applications
Dining Room, Preston Hotel
F. D. SNYDER, Presiding

The afternoon session will present in detail the recommended electrical practices for installation and use of electricity and electrical devices on textile machinery. This program will be in the form of a panel presentation wherein each member will present a particular section of the recommended practice, based upon his intimate knowledge of the subject and reasons for the recommendations.

The panel will be made up of the following:

- F. D. Snyder, Westinghouse Electric Corp.
- R. R. Prechter, General Electric Co.
- M. R. Brice, Culter Hammer Co.
- R. H. Clark, Warner and Swasey Co.
- Swaffield Cowan, Factory Insurance Assn.
- V. F. Sepavich, Crompton and Knowles Loom Works.

2:00 p.m.—Rotating Machinery

Committee on Rotating Machinery
Priscilla Room, New Ocean House
C. L. SIDWAY, Presiding

- CP55-504. Direct Current High Potential Testing of Large Generators. H. H. Lang and W. D. Houser, Westinghouse Electric Corp.
- CP.** Thermal Evaluation of Enamelled Wire. J. F. Dexter, Dow Corning Corp.
- CP.** Thermal Endurance Studies of High Voltage Insulation Systems for Large Generators. G. L. Moses and J. C. Botts, Westinghouse Electric Corp.
- CP.** Guiding Principles in the Thermal Evaluation of Insulating Materials. L. J. Berberich and T. W. Dakin, Westinghouse Electric Corp.

2:00 p.m.—Land Transportation

Committee on Land Transportation
Ballroom, Preston Hotel
M. C. SWANSON, Presiding

- CP.** Transit Modernization and Rapid Transit Development in Cleveland. M. W. Rew, Cleveland Transit System and G. M. Woods, Westinghouse Electric Corp.

THURSDAY (continued)

- 55-563. Cleveland Transit System Gets New Rapid Transit Cars. C. A. II Koch, Cleveland Transit System and T. H. Murphy, Westinghouse Electric Corp.

- CP55-564. Progress in Design for Long Life of Control for Large Rapid Transit Cars. I. W. Lichtenfels, General Electric Co.

- 55-565. Modernizing Service Controls on Rapid Transit. George II Krambles, Chicago Transit Authority.

- CP.** Automobile—Public Transportation Coordination—A Paramount Area—Wide Need. E. E. Kearns, General Electric Co.

2:00 p.m.—Magnetic Amplifiers

Committee on Magnetic Amplifiers
Ballroom, New Ocean House
A. B. HAINES, Presiding

- 55-542. Decicycle Magnetic Amplifier Systems for Servo Applications. L. J. Johnson, Hufford Machine Works, and S. E. Rauch, University of California.
- I

- 55-463. Operational Magnetic Amplifier with Audio Frequency Transistor Power Supply. R. O. Decker and F. Gourash, Westinghouse Electric Corp.
- I

- 55-543. Phase-Locking of Switching-Transistor Converters for Polyphase Power Supplies. A. G. Milnes, Carnegie Institute of Technology.
- I

- 55-465. High-Frequency Operation of Self-Saturating Magnetic Amplifiers. H. W. Collins, Westinghouse Electric Corp.
- I

- CP.** Magnetic Logic Circuits for Use in Industrial Control Systems. W. G. Evans, W. G. Hall and R. I. Van Nice, Westinghouse Electric Corp.

2:00 p.m.—Industrial Power Systems and Switchgear

Committees on Industrial Power Systems and Switchgear
Convention Hall East
C. M. LATHROP, Presiding

- 55-442. Short-Circuit Currents in Low Voltage Systems. Joint Sections Committee on Air Circuit Breakers of NEMA.
- III

- 55-427. Relay Response to Motor Residual Voltage During Automatic Transfers. A. R. Kelly, Standard Oil Development Co.

- CP55-541. Problems Encountered in Automatic Transfer of Large Induction Motors in Industrial Applications. R. O. Bigelow and C. Auty, New England Power Service Co.

- CP.** Economic Studies Applied to Industrial Power Systems. H. B. Backenstoss, Jackson and Mooreland Engineers.

- 55-508. Testing of D-C Interrupters on A-C Test Circuits. E. W. III Boehne, Massachusetts Institute of Technology, and K. Chen, Westinghouse Electric Corp.

2:00 p.m.—Instruments

Committee on Instruments and Measurements
Colonial Room, New Ocean House
ERNST WEBER, Presiding

- CP55-482. A Liquid Scintillation Detector. J. H. Knapton, Tracerlab, Inc.

- 55-483. The Design of a New 2-Element, Single Disc, Polyphase I Meter. W. J. Schmidt, Westinghouse Electric Corp.

- 55-484. A New Line of Direct-Acting Recording Instruments. L. J. I Lunas and J. C. Nycz, Westinghouse Electric Corp.

- 55-485. A Transducer Type Frequency Meter. U. L. Smith, Westinghouse Electric Corp.
- I

THURSDAY (continued)

2:00 p.m.—Transmission and Distribution

Committee on Transmission and Distribution
Convention Hall West
E. L. KANOUSE, Presiding

- CP55-480. Probable Service Life of Creosoted Pine Poles in New England. C. A. Booker, New England Power Service Co.
- CP55-554. The Increasing Importance of Pole Line Inspection. J. A. Rawls, Virginia Electric and Power Co., and M. S. Hudson, Consulting Chemist.
- CP.** Use of High Strength Steel in Transmission Towers. H. M. Walton, U. S. Steel Corp.

Friday, July 1

9:30 a.m.—Rotating Machinery

Committee on Rotating Machinery
Convention Hall West
L. O. DOREMAN, Presiding

- CP55-505. Design of High Precision Synchros and Resolvers. R. A. Hertz, Minneapolis-Honeywell Regulator Co., and R. M. Saunders, University of California.
- CP55-506. Optimum Design of Induction Torque-Motors and Servo-Motors. G. Weiss, The W. L. Maxson Corp.
- 55-507. Current Loci of Salient Pole Synchronous Motors—An Extension of Blondel Theory. J. F. H. Douglas, Marquette University.

9:30 a.m.—Carrier Current and Microwave

Committee on Carrier Current
Ballroom, Preston Hotel
L. C. EATON, Presiding

- 55-458. A Study of Carrier Frequency Noise of Power Lines Part III IV, Conclusion of Field Measurements. J. D. Moynihan, Sprague Electric Co., and B. J. Sparlin, Westinghouse Electric Corp.
- 55-516. Microwave Systems Parameters for Reliable Communications. III A. Alvira and I. T. Corbell, General Electric Co.
- 55-517. Quadriphase—A New Approach to Time Division Multiplexing. W. E. Evans and R. F. Lowe, General Electric Co.
- CP55-566. Application of Passive Repeaters to Microwave Systems. R. H. Davis and L. G. Walker, Motorola Inc.

9:30 a.m.—Switchgear

Committee on Switchgear
Dining Room, Preston Hotel
J. C. WOODS, Presiding

- 55-509. A New 500 MVA Air Magnetic Circuit Breaker of Simplified Design. M. J. Reilly and D. E. Weston, Allis-Chalmers Mfg. Co.
- 55-460. Flux Measurements in Magnetic Air Circuit Breaker Interrupters. W. A. Carter, I-T-E Circuit Breaker Co.
- 55-510. A Power Class Recloser for Higher Speed Clearing of Distribution Circuits. E. J. Field and D. L. Leatherberry, I-T-E Circuit Breaker Co.
- CP.** New Distribution Class Oil Circuit Breakers. E. J. Casey, T. R. Coggeshall and R. H. Miller.

FRIDAY (continued)

9:30 a.m.—Theory of Rectifiers

Committee on Basic Sciences
Colonial Room, New Ocean House
W. C. DUNLAP, Presiding

- CP.** Current Voltage Characteristics of Power Rectifiers. J. S. Saby, General Electric Co.
- CP.** Surface States and Channels on Germanium. R. H. Kingston, Massachusetts Institute of Technology.
- CP.** Design Specification for Silicon Power Rectifiers. D. H. Novon, Transitron Electronic Corp.
- CP.** Mechanisms of Breakdown in Rectifiers. K. G. McKay, Bell Telephone Labs., Inc.

9:30 a.m.—Telemetering

Committee on Instruments and Measurements
Priscilla Room, New Ocean House
W. J. MAYO-WELLS, Presiding

- 55-438. The Movable Core Transformer as a Pickup for Industrial I Telemetering Systems. A. J. Hornfeck and L. M. Wermelskirchen, Bailey Meter Co.
- 55-486. A Precision Torque Balance for the Measurement of Small I Torques. R. Matthys, Minneapolis-Honeywell Regulator Co.
- CP55-487. Automatic Testing and Selection of Magnetic Toroids. R. B. Einfeldt, and R. P. Fischer, Remington-Rand, and A. D. Glick, Minneapolis-Honeywell Regulator Co.
- CP55-488. A New High Speed Telemeter Transmitter for D-C Measurements. R. M. Stuart, General Electric Co.

9:30 a.m.—Transformers

Committee on Transformers
Ballroom, New Ocean House
J. A. ADAMS, Presiding

- 55-435. Proposed Test Code for Functional Temperature Endurance III Tests of Ventilated Dry-Type Power and Distribution Transformers. Working Group on Life of Materials.
- 55-449. Functional Life Tests of Insulation Systems for Dry Type III Transformers. P. Narbut, Westinghouse Electric Corp.
- 55-452. Functional Life Evaluation of Group 2 Dry-Type Power III Transformers. H. G. Zambell, Allis-Chalmers Mfg. Co.
- CP.** A Study of Models for Use in Evaluating Dry-Type Transformer Insulating Systems. T. R. Walters and A. L. Scheideler, General Electric Co.
- CP.** Mechanical Shock Tests on Models of Dry-Type Transformers. G. A. Monito, Westinghouse Electric Corp.

9:30 a.m.—Magnetic Amplifiers

Committee on Magnetic Amplifiers
Convention Hall East
H. W. LORD, Presiding

- 55-544. The Application of Perpendicularly Superposed Magnetic I Fields. R. A. Hertz and H. Buelteman, Jr., Minneapolis-Honeywell Regulator Co.
- 55-545. Oscillographic Techniques for the Evaluation of Magnetic I Amplifier Response. D. L. Critchlow, Carnegie Institute of Technology.
- 55-546. Formulation of Magnetic Amplifier Circuit Equations. D. H. I Schaefer, Naval Research Lab.
- 55-71. Voltage Gain of a Resonant Dielectric Amplifier. E. A. Sack, I Westinghouse Electric Corp., and G. W. Penney, Carnegie Institute of Technology. Re-presented for discussion.

FRIDAY (continued)

CP.** Design Methods for Magnetic Switching Element Control Systems. R. I. Van Nice, W. G. Hall and W. G. Evans, Westinghouse Electric Corp.

2:00 p.m.—Transformers

Committee on Transformers
Ballroom, New Ocean House
J. R. MEADOR, Presiding

55-520. Functional Life-Expectancy Tests for Liquid-Filled Distribution Transformers. A. M. Lockie, Westinghouse Electric Corp. Re-presented for Discussion.

55-521. Control of Electrostatic Voltage Distribution in Power Transformer Design. S. Bennon and R. J. Cossaart, Westinghouse Electric Corp.

CP55-439. A New Method for Analog Studies of Transformers. O. I. Elgerd, Washington University.

CP55-522. Sources of High Power Factor in Dry Type Transformers. G. A. Monito and L. B. Rademacher, Westinghouse Electric Corp.

55-523. The Forced Oil Cooled Rotary Welding Transformer. W. E. III Shenk, The McKay Machine Co.

2:00 p.m.—Switchgear

Committee on Switchgear
Dining Room, Preston Hotel
J. D. WOOD, Presiding

55-511. A Hydraulic Manual Power Closing Mechanism for Power Circuit Breakers. E. R. Perry and N. W. Morelli, Allis-Chalmers Mfg. Co.

CP55-512. Electromagnetic Forces as Applied to Circuit Breaker Contact Design. T. G. Bank, Allis-Chalmers Mfg. Co.

CP55-513. New Low Voltage Air Circuit Breaker of 25,000 A.I.C., 600 Volts. J. W. Timmerman and O. J. Albani, Allis-Chalmers Mfg. Co.

55-514. The Calculation of the Complete Time/Current Characteristics of Cartridge Fuses with Single Wire Element. A. E. Guile, Queen Mary College.

CP.** A New Design of 13.8 KV Metal-Clad Switchgear. T. G. A. Sillers and A. Ewy, Allis-Chalmers Mfg. Co.

2:00 p.m.—Metallic Rectifiers

Committee on Metallic Rectifiers
Colonial Room, New Ocean House
GLEN RAMSEY, Presiding

55-518. Selenium Rectifiers for High Temperature Operation. G. O. I Isaacson, Fansteel Metallurgical Corp.

CP55-519. High Temperature Operation of Rectifiers. H. W. Henkels, Westinghouse Electric Corp.

Panel Discussion—Dr. S. J. Angello, Westinghouse Electric Corp., Moderator.

2:00 p.m.—Measurements

Committee on Instruments and Measurements
Priscilla Room, New Ocean House
C. F. SAVAGE, Presiding

55-236. Report of Dielectric Tests on a Large Hydro Generator. C. A. I Duke, Tennessee Valley Authority, C. W. Ross, James G. Biddle Co., and J. S. Johnson, Westinghouse Electric Corp. Re-presented for discussion.

FRIDAY (continued)

55-489. Measuring and Recording Atmospheric Electrostatic Potential. J. S. Carroll, Stanford University, S. B. Hammond, University of Utah, and E. H. Stewart, Wesix Electric Heater Co.

CP55-464. New Circuits for Recurrent Surge Oscillography. D. D. Davis, General Electric Co.

55-547. An Angular Position A-C EMF Transducer and its Application to Null-Type Recorders. E. C. Guptill and C. W. McCarty, General Electric Co.

55-456. The Recognition of Possible Measurement Errors in D-C Dielectric Testing in the Field. C. W. Ross and E. B. Curdts, James G. Biddle Co. Re-presented for discussion.

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

Committee on Transmission and Distribution
Convention Hall East
T. J. BROSANAN, Presiding

55-481. Economics of Higher Primary and Secondary Voltages for Commercial Areas. R. F. Lawrence and D. N. Reys, Westinghouse Electric Corp.

CP.** Analysis of Low-Voltage Capacitors in Series with Distribution Transformers. G. G. Auer, R. G. Livingston, R. J. Hopkins and N. M. Neagle, General Electric Co.

CP.** Application of Low Voltage Series Capacitors with Distribution Transformers. R. F. Lawrence and L. W. Manning, Westinghouse Electric Corp.

CP.** Unnumbered Conference Papers 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 bi-monthly publications as follows:

- I COMMUNICATIONS AND ELECTRONICS.
- II APPLICATIONS AND INDUSTRY.
- III POWER APPARATUS AND SYSTEMS.

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COMMITTEE MEETINGS

Sunday, June 26

2:00 p.m.—Planning and CoordinationPresident Room

Monday, June 27

2:00 p.m.—Fundamental Arc ResearchJade Room
2:00 p.m.—Group Subcommittee on TelemetrySurf Room*
2:00 p.m.—SectionsPresident Room
2:00 p.m.—Conference of Vice-Presidents &
District SecretariesGold Room
2:00 p.m.—Form Wound Coils Working Group.....Card Room*
2:00 p.m.—Prize AwardsStandish Room
3:30 p.m.—Recording and Controlling Instruments
SubcommitteeColonial Room*
4:00 p.m.—Communication Switching Systems.....Dining Room*
4:30 p.m.—Digital Computers Subcommittee ..Beach House Deck
4:30 p.m.—Principles of Professional Conduct.....Ballroom*

Tuesday, June 28

9:30 a.m.—Section Delegates ConferenceDining Room*
9:30 a.m.—Instruments and MeasurementsRed Room
9:30 a.m.—Power DivisionGold Room
9:30 a.m.—Electric WeldingPresident Room
9:30 a.m.—Magnetic Amplifier Definitions Subcommittee
Colonial Room*
9:30 a.m.—General Systems SubcommitteeJade Room
9:30 a.m.—Chemical, Electrochemical &
Electrothermal ApplicationsStandish Room
9:30 a.m.—Coordinating Committee #4Card Room*
9:30 a.m.—Lightning and Insulator Subcommittee....Surf Room*
2:00 p.m.—Section Delegates ConferenceDining Room*
2:00 p.m.—Magnetic Amplifier Standards Subcommittee
The Deck, N.O.H. Veranda
2:00 p.m.—SafetyStandish Room
2:00 p.m.—General Applications DivisionPresident Room
2:00 p.m.—ElectronicsGold Room
2:00 p.m.—Science and Electronics DivisionColonial Room*
2:00 p.m.—Towers, Poles and Conductors Subcommittee
Card Room*
2:00 p.m.—Random Wound Coils Working Group.....Surf Room*
2:00 p.m.—Hydro-Electric Systems Subcommittee.....Jade Room

Summer General Meeting

2:00 p.m.—Lightning Protection in Multi-line
Stations Working GroupBallroom Veranda

4:00 p.m.—Computing DevicesPresident Room

Wednesday, June 29

9:30 a.m.—Student BranchesGold Room

9:30 a.m.—ResearchCard Room*

9:30 a.m.—Public RelationsJade Room

9:30 a.m.—Metallic Rectifiers Magnetic Amplifiers
SubcommitteeSurf Room*

9:30 a.m.—Insulated Conductors Officers
The Deck, N.O.H. Veranda

9:30 a.m.—PublicationsRed Room

9:30 a.m.—TV and Aural BroadcastingPresident Room

9:30 a.m.—Rotating Machinery Administrative Subcommittee
Ballroom Veranda

9:30 a.m.—Industry DivisionStandish Room

9:30 a.m.—Dielectric Amplifiers Subcommittee ...Colonial Room*

2:00 p.m.—Technical OperationsStandish Room

2:00 p.m.—Power GenerationN.O.H. Beach House Deck

2:00 p.m.—Members for Life FundJade Room

2:00 p.m.—Student BranchesGold Room

2:00 p.m.—Rotating Machinery Insulation Subcommittee
Colonial Room*

2:00 p.m.—ManagementPresident Room

2:00 p.m.—Magnetic AmplifiersCard Room*

4:00 p.m.—Wire CommunicationsPriscilla Room

4:00 p.m.—System EngineeringSurf Room*

Thursday, June 30

9:30 a.m.—Board of DirectorsThomson Club

9:30 a.m.—Metallic RectifiersJade Room

9:30 a.m.—Induction Machinery Subcommittee ...Colonial Room*

9:30 a.m.—Core Matching and Grading W. G.....Card Room*

9:30 a.m.—Radio CommunicationsPresident Room

9:30 a.m.—Land TransportationStandish Room

9:30 a.m.—Transmission and DistributionGold Room

9:30 a.m.—C.C. Methods of Measurement Subcommittee
Ballroom Veranda

9:30 a.m.—Transformer Instrumentation and Measure-
ment Working Group ...The Deck, N.O.H. Veranda

2:00 p.m.—Board of DirectorsThomson Club

2:00 p.m.—Metallic RectifiersJade Room

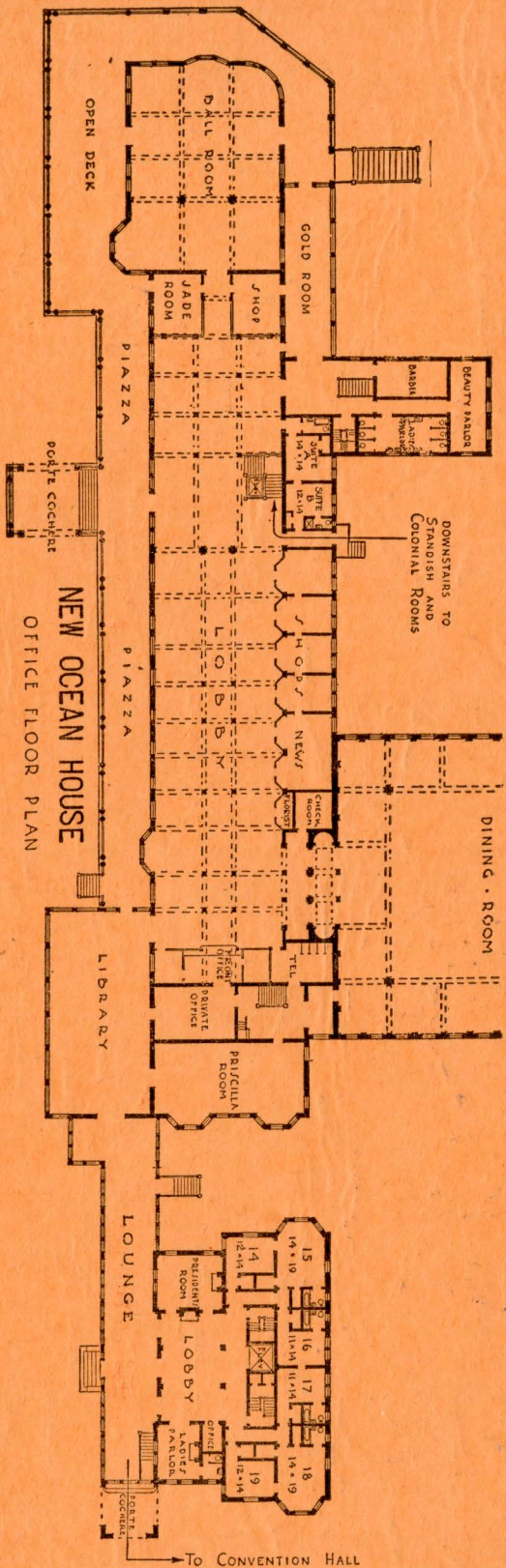
2:00 p.m.—Transformer Instrumentation and Measure-
ment Working Group...The Deck, N.O.H. Veranda

4:00 p.m.—Synchronous MachineryPriscilla Room

4:00 p.m.—Carrier CurrentPresident Room

7:30 p.m.—Forum of Technical Committee Chairmen
Priscilla Room

* These rooms are located in the Preston Hotel.



NEW OCEAN HOUSE
OFFICE FLOOR PLAN

To CONVENTION HALL