Winter General Meeting

January 22-26, 1951

Headquarters

Hotel Statler (Pennsylvania)

7th Avenue and 33rd Street, New York, N. Y.

2329

MEETING FEATURES

The AIEE Winter General Meeting to be held at the Hotel Statler in New York, N. Y., January 22-26, 1951, will feature an expanded program of professional and social activities. The technical program is the largest in the history of the Institute.

During the meeting three medals will be presented to Institute members at General Sessions to be held Monday, Tuesday and Wednesday afternoons. The Edison Medal will be awarded to O. B. Blackwell; the John Fritz Medal, by the four Founder Societies, to Dr. Vannevar Bush and the Hoover Medal to Dr. Karl T. Compton. Dr. Compton, in responding, will speak on the subject "Engineers and National Security."

In addition, another member of the Institute, Ralph J. Kochenburger, has been awarded the Alfred Noble Prize for an outstanding technical paper by an author under thirty-one years of age. This prize award is a joint interest of the Founder Societies and the Western Society of Engineers. The award willl be made together with the twelve Institute Prize Paper Awards and the Hoover Medal Presentation in a general session to be held Monday afternoon, January 22, 1951. The presentations of the John Fritz and Edison Medals are scheduled for Tuesday and Wednesday afternoons.

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.

INSPECTION TRIPS: A program of inspection trips of technical and general interest has been arranged for those attending the Winter General Meeting. A schedule and brief description are given below. Since the number who may be accommodated in most of these trips is limited, members are urged to make arrangements for trips immediately upon registering at meeting Headquarters. Advance registration by mail for inspection trips cannot be accepted.

1. **Radio City Music Hall—Tuesday Morning, January 23**—The Radio City Music Hall, New York City's most outstanding modern theater, is famous for its enterainment quality and its application of engineering development to the entertainment field. The trip is a back-stage tour to see the extensive mechanical and electrical equipment with its intricate control systems. Revolving and sectionalized stages, lifting orchestra pits, motor operated curtains, and fantastic lighting effects are to be seen on this trip. The magnitude of these operations is indicated by 5500 horsepower of motor and 3500 kilowatts of connected load.

2. **The New York Times—Tuesday Morning January 23 and Thursday Afternoon January 25**—The Times is famous for complete and impartial news coverage of the entire world. In order to maintain this reputation, it has the most extensive news gathering organization of any newspaper in the world. There are over 30 foreign bureaus, as well as many more part-time news contacts. In this country, there are 9 bureaus, and 400 other news contacts. The Times has 50 full-time correspondents abroad, and 47 part-time correspondents. The total news intake per day is in excess of one million words. The Times tour is designed to give each visitor a clear picture of each operation in the complex process of producing a newspaper from the news source, to the news stands. A competent guide directs each group, explaining operations, and answering questions. In addition to the tour of the newspaper plant, each group visits The Times' radio station, WQXR, which is located in the building.

3. **DuMont Television Receiver Manufacturing Plant—Tuesday Afternoon, January 23**—An opportunity to inspect this modern television-receiver manufacturing plant is presented to members attending the Winter General Meeting. This plant, the largest of its type in the United States, was placed in operation in the fall of 1948. The latest assembly techniques are employed on the numerous production lines, each line producing a different type of receiver chassis. Television receivers, from beginning to end, can be seen on this trip.

4. **Anaconda Wire and Cable Plant—Tuesday Afternoon, January 23**—This tour visits the Hastings-on-Hudson mill of the Anaconda Wire and Cable Company, one of the most modern of the larger cable mills in this country, producing hot-rolled rods, bare and coated wire, stranded conductors, weatherproof impregnated-paper, varnished-cloth, and plastics-insulated cables and cable accessories. The Company's Research Laboratories are also located at this mill. An opportunity will be afforded to see all of the processes from rod rolling to completion of the finished products. Special features such as the high-vacuum Taylor impregnating system, electric control of tensions during paper taping, fabrication of Type CB (Carbon Black) cables, and extrusion of heat-treated F-3 alloy cable sheath are included.

5. **North Queens Substation and the Astoria Transformer and Equipment Repair Shop, Tuesday Afternoon, January 23 and Wednesday Afternoon, January 24**—This is a combination trip to the recently completed North Queens Substation and the adjacent new Astoria Transformer and Equipment Repair Shop. The Substation which is now in service receives power over four 138KV transmission cables and distributes to fourteen 27KV underground network feeders. Outdoor 138KV buses, switches and transformers; and indoor 27KV air circuit breakers, isolated metal-clad buses are features of this installation. The present substation capacity is 170 mw. with provisions for future additional high and low tension feeders. The Repair Shop, which was recently built to fulfill the maintenance requirements of an expanding system, has many novel features including flow painting and a centralized oil purification and distribution control system. (*Non-Citizens of the United States Must Give 10 Days Advance Notice of Intention to Attend.*)

6. **New York Stock Exchange—Wednesday Morning, January 24 and Thursday Afternoon, January 25**—This well-known institution has given permission for a limited number of persons to view its operations and to hear an explanation of its function in the economic welfare of the nation. A most interesting and informative program is provided.

7. **Elevator Plant of the Westinghouse Electric Corporation—Wednesday Afternoon, January 24**—This plant produces elevators and electric stairways for every conceivable modern structure, from the multi-story business offices of Rockefeller Center to the flight deck elevators of our modern aircraft carriers. Over 5000 tons of steel and 6000 miles of wire and cable are used annually at this plant. Many new features and improvements in vertical transportation were first introduced through equipment developed and produced at this plant.

8. **U. S. Signal Corps Engineering Laboratories, Fort Monmouth, New Jersey—Wednesday, All Day, January 24**—As principal research and development center of the Signal Corps, the Signal Corps Engineering Laboratories are charged with the creative research, development, design and improvement of ground signal equipment and special electronic devices for the United States Army, and in many instances, for the Armed Forces at large. Radio, radar, electronic countermeasures, wire, television, meteorology, photography, radiological detection devices, components, power units and auxiliary equipments which provide the communication and detection systems for the Army are on its agenda. Some 2700 scientists, engineers and

supporting personnel are collaborating to effect technological advances. The tour of these Laboratories is restricted to United States citizens.

9. Brooklyn-Battery Tunnel — Thursday Morning, January 25—The longest vehicular tunnel in the United States, capable of handling 16,000,000 vehicles a year, was recently opened for traffic through the dual two-lane tubes. A project of this magnitude raised many problems which were uniquely solved by its engineers. This tour includes passage through the tubes to see the novel illumination features and a visit to the master electric control board, the ventilating shafts, and the power supply switch rooms. Dependability of operation and flexibility of control were stressed in the design of the electric facilities for this tunnel.

10. Power Control Center and New Rectifier Station of the New York City Transit System—Thursday Afternoon, January 25—The 53d Street supervisory station controls all of the automatic substations of the New York Subway System. These substations are of the automatic, unattended type and are both rotary and rectifier equipment. The Commonwealth and Molford substations each consist of two 2-unit 3000 KW ignitron rectifiers recently installed and are typical of the type of conversion equipment which is now favored for this application. These stations are controlled from the 53d Street board. An opportunity will be afforded to see the dispatchers board in operation at one point and to observe the reaction of another.

ETA KAPPA NU DINNER: The Eta Kappa Nu Association will hold its Annual Recognition Dinner on Monday evening, January 22, 1951. This dinner will be held at 6:30 p.m. in the Blue and Green Room, Hotel McAlpin, Broadway and 34th Street, New York City, N. Y. At this dinner, Mr. D. P. Campbell will receive the Eta Kappa Nu plaque in commemoration of his being chosen the Most Outstanding Young Electrical Engineer for 1950. Honorable Mention certificates will be awarded to Messrs. R. W. Mayer, A. W. Edwards, K. A. Kesselring. These gentlemen were selected from among 50 candidates for the 1950 recognition by a jury consisting of Dr. Erich Hausmann, Dean, Polytechnic Institute of Brooklyn; Messrs. A. H. Kehoe, Vice President, Consolidated Edison, Incorporated; Robin Beach, Robin Beach Associates; Fischer Black, Editor, Electrical World; and F. E. Sanford, National President of Eta Kappa Nu Association.

SMOKER: All arrangements are complete for the popular "smoker" on Tuesday night, January 23, 1950, at the Hotel Commodore. Chairman D. M. Quick advises that the evening will open with a cocktail hour at 5:30 p.m. in the West Ballroom with dinner and show to follow. Tables for ten persons will be available and price of the tickets will be $8.00 per person. Though every effort will be made to meet all demands for tickets, the physical limits of the room have made this difficult for several years past. Reservations should be addressed to the Smoker Committee, AIEE Headquarters, 33 West 39th Street, New York 18, N. Y. Reservations received after January 16 will not be honored. Checks should be made payable to "Special Account, Secretary AIEE."

DINNER-DANCE: At this year's meeting, members and guests again wil enjoy the pleasure of a formal dinner-dance. It will be held in the Grand Ballroom of the Hotel Statler Thursday evening, January 25, 1951. Dinner will be served at 7 P.M. followed by dancing. Tables for the dinner and dance will accommodate ten persons. The price for tickets will be $11 per person. Requests for reservations should be addressed to Dinner-Dance Committee, AIEE Headquarters, 33 West 39th Street, New York 18, New York. Checks should be made payable to "Special Account, Secretary AIEE."

LADIES' ENTERTAINMENT: An interesting program has been arranged for the ladies. Monday afternoon there willl be a Tea and Get Together at Ladies' Headquarters at the Statler: Tuesday evening a dinner at the Town Hall Club, for which there will be a charge of $2.00, followed by attendance at a broadcast of "America's Town Meeting of the Air"; Wednesday a trip to the United Nations at Lake Success, also possible attendance at a session of the Security Council. This trip is contingent on the international situation at that time. Thursday there will be a Luncheon and Fashion Show at The Plaza. Smaller sightseeing trips will be arranged on request.

THEATER TICKETS: It is expected that tickets will be available for various Broadway shows. Those members wishing seats should write AIEE Headquarters at an early date to insure best choice of seats and productions. Requests should include name of show, date, number of seats required, and check to cover cost of tickets. In the case of tickets in short supply, the right is reserved to allocate seats only to members attending from points beyond the New York metropolitan area.

Tickets for the following shows are not available:

Call Me Madam Guys and Dolls

Some current productions and prices are:

	Evening, Orchestra	*Matinee, Orchestra*
Affairs of State	$4.80	$3.60
*Gentlemen Prefer Blondes	6.00	3.60
The Lady's Not for Burning	4.80	3.60
*Kiss Me Kate	6.00	3.60
Season in the Sun	4.80	3.60
The Cocktail Party	4.80	3.60
The Happy Time	4.80	3.60
The Members of the Wedding	4.80	3.60
Bell, Book and Candle	4.80	3.60

*Indicates Musical.

HOTEL ACCOMMODATIONS: Blocks of rooms have been set aside at the Hotel Statler (meeting headquarters) and near-by hotels for members attending. To assure accommodations, reservations must be received by the hotel of choice before January 12. Requests for reservations should be sent early directly to the desired hotel, and to only one hotel. A copy of the request should be sent to Mr. C. N. Metcalf, Chairman, Hotel Accommodations Committee, in care of Consolidated Edison Company of New York, Inc., Room 1250-S, 4 Irving Place, New York 3, N. Y. A second and third choice should be indicated on this copy. If requested accommodations are not available, the Hotel Accommodations Committee will arrange for transfer to one of the other hotels desired.

Hotel rooms have been reserved at:

Hotel Statler (meeting headquarters), 7th Avenue, 32d to 33d Streets	
Single room with bath	$ 5.00 to $ 8.50
Double room, double bed	7.50 to 10.50
Double room, twin beds	9.00 to 14.00
Parlor suites	19.00 to 33.00
Hotel McAlpin, Broadway and 34th Street	
Single room and bath	4.50 to 8.50
Double room, double bed	7.00 to 10.50
Double room, twin beds	8.50 to 11.00
Suites	14.00 to 15.00
Hotel Governor Clinton, 7th Avenue at 31st Street	
Single room with bath	4.50 to 7.00
Double room, double bed	7.00 to 10.00
Double room, twin beds	8.50 to 10.00
Hotel New Yorker, 34th Street at 8th Avenue	
Note: Reservations for arrival January 20th or 21st ONLY. Write to D. W. Carlton, Director of Sales.	
Single room, tub and shower	$ 4.50 to $ 8.00
Double room, double bed	7.50 to 12.50
Double room, twin beds	8.50 to 12.50
Suite accommodations	14.00 to 25.00
Hotel Martinique, Broadway and 32d Street	
Single room with bath	3.50 to 6.00
Double room, double bed	6.00 to 10.00
Double room, twin beds	6.50 to 10.00
Two-room suites	10.00 to 18.00
Note: Rate for single room with bath was listed incorrectly in the November issue of Electrical Engineering.	
Hotel Commodore, 42d Street at Lexington Avenue	
Single room with bath	6.00 to 9.00
Double room, twin beds, bath	10.50 to 12.50

REGISTRATION FEES REQUIRED: Members and nonmembers should register in advance by filling in the advance registration card sent to you with this mailed announcement. As instituted two years ago, a registration fee of $3.00 will be required for members and $5.00 for nonmembers.

ADVANCE COPIES OF PAPERS

Members may obtain preprints of numbered papers at the uniform price of 30c each (60c each to nonmembers), by sending enclosed order form and remittance to the AIEE Order Department, 33 West 39th Street, New York 18, N. Y. 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 denominations are available for those who wish to avoid remittance by check or otherwise. Most of the papers ultimately will be published as AIEE Proceedings and in the Transactions. *Conference Papers* denoted by *CP.*** are intended for presentation only, and are not available.

Monday, January 22

10:00 a.m.—Relays and Instrument Transformers

51-42. Relay Protection of A-C Generators. Project Committee on Generator Protection.

CP.** Ground Relay Protection for Generators. E. T. B. Gross, Illinois Institute of Technology.

51-38. Bibliography of Relay Literature 1947-1949. Project Committee on Relay Bibliography. Presentation by title only.

51-113. ACO.* Report on Transformer Magnetizing Current and Its Effect on Relaying and Oil Switch operation. Subcommittee on Magnetization Characteristics of Transformers.

CP.** Overvoltage Caused by Current Transformers in a Generator Differential Relaying Circuit. C. R. Mason, General Electric Company.

51-133. ACO.* A Report on Proposed Changes In the Standards for Instrument Transformers. Project Subcommittee on Rating Factors for Instrument Transformers.

51-14. Neutral Inversion of a Single Potential Transformer Connected Line to Ground on an Isolated Delta System. L. L. Gleason, Puget Sound Power and Light Co.

10:00 a.m.—Insulating Oil Testing

CP.** Current Practices in Electrical Tests on Dielectrics in the Field. Subcommittee on Electrical Tests on Dielectrics in the Field.

51-43. ACO.* Insulation Field Test Results. W. F. Dunkle, Pennsylvania Power and Light Co.

51-37. ACO.* Power-Factor Testing of Electrical Equipment to Determine Insulation Values. J. A. Rawls, Virginia Electric and Power Co.

CP.** A New Concept of Insulating Oil Characteristics. F. C. Doble, Doble Engg. Co.

10:00 a.m.—New Types of Power Rectifiers

CP.** The Mechanical Rectifier. Otto Jensen, ITE Circuit Breaker Co.

CP.** Commutating Reactor Control for Mechanical Rectifiers. E. J. Diebold, ITE Circuit Breaker Co.

CP.** Development of a Pumpless Ignitron. C. C. Herskind, E. J. Remscheid, General Electric Co.

CP.** Studies of Degassing Processes by Mass Spectrometer. J. G. Neuland, General Electric Co.

CP.** Application of Pumpless Rectifiers. Ralph Siegel, General Electric Co.

51-131. Sealed Ignitron Rectifiers for Urban Transit Power Supply. D. W. Borst, General Electric Co. Presentation by title only.

10:00 a.m.—Basic Sciences

51-44. Transmission Line Load Impedance for Maximum Efficiency. S. G. Lutz, Bronxville, N. Y.

51-45. Networks for Which Magnitude or Phase Angle of Input Impedance or Transfer Admittance Remains Constant as Load Varies. R. S. Berkowitz, University of Pennsylvania.

51-46. The Generalized Transmission Matrix Stability Criterion. P. M. Honnell, Washington University.

51-47. Loci of Complex Impedance and Admittance Functions. E. L. Michaels, The Rauland Corp.

51-48. Contact Transients in Simple Electrical Circuits. F. E. Martin, H. E. Stauss, Naval Research Lab.

51-49. ACO.* The Finite Representation of Impulse Functions in Solving Differential Equations. J. J. Smith, P. L. Alger, General Electric Co.

51-50. Calculation of Flux Distributions with Saturation. H. Poritsky, General Electric Co. Presentation by title only.

51-6. Tables of Green's Functions, Fourier Series, and Impulse Functions for Rectangular Coordinate Systems. J. J. Smith, General Electric Co. Presentation by title only.

2:30 p.m.—General Session

Address: President LeClair

Award of Student Prizes

Award of Institute Prizes

Presentation of the Alfred Noble Prize to Ralph J. Kochenberger.

Presentation of the Hoover Medal to Dr. Karl T. Compton.

Response: Engineers and National Security. Dr. K. T. Compton, Chairman of the Board, Massachusetts Institute of Technology Corporation.

Tuesday, January 23

9:30 a.m.—Operation of Power, Communication and Transportation Utilities Under Military Attack—Panel Discussion

The present national emergency has given rise to considerable civil defense activity by the federal, state and local governments. Substantial information pertaining to the efficiency of modern military weapons, particularly the atom bomb, has now been made available and plans for operation under military attack are being formulated by utility companies. These two sessions will be devoted to a panel discussion of the atom bomb and its effects, radioactivity associated with an atom bomb blast, various instruments for indicating radioactivity, and steps being taken by power, communication and transportation companies for the mobilization of these industries to cope with emergencies resulting from military attack which may be imminent and which would greatly exceed operating emergencies ordinarily encountered during peacetime. There will be ample time for discussion of questions from the floor. The discussion is being sponsored by the following committees: Basic Sciences, Communications, Land Transportation, Power Generation, Industrial Power Systems, System Engineering, Nucleonics.

9:30 a.m.—Relays and Industrial Power Systems

CP.** Relaying of Interconnections Between Industrial and Utility Generating Systems. Project Committee on Relaying of Interconnections Between Industrial and Utility Generating Systems.

CP.** Industrial Power System Protection. J. E. Barkle, H. G. Barnett, Westinghouse Electric Corp.

CP.** Bendix Products Division's Seven Years Operating Experience with Split Bus Substation. T. W. Dugdale, Indiana and Michigan Electric Co.; K. K. Falk, Bendix Aviation Corp.

CP.* Relay Protection of Mobile, Alabama Alumina Plant. F. H. Kimmel, Aluminum Ore Co.

9:30 a.m.—Eectronic Instruments

CP.** The NOL Self-Contained Multi-Channel Cathode Ray Recorder. S. H. Silver, U. S. Naval Ordnance Laboratory.

CP.** Dynamic Strain Analysis. C. M. Hathaway, K. C. Rock, Hathaway Instrument Co.

CP.** Polarimeter for the Study of Low Frequency Echoes. A. H. Benner, H. J. Nearhoof, Pennsylvania State College.

CP.** New Oscillograph Recording Cameras. H. P. Mansberg, Allen B. Du Mont Laboratories, Inc.

CP.** Electronic Counting of Worn-Out Paper Money. H. M. Joseph, National Bureau of Standards.

9:30 a.m.—Magnetic Materials

CP.** Electronic and Nuclear Magnetic Resonance. K. K. Darrow, Bell Telephone Labs., Inc.

CP.** Structure and Properties of the Ferrites. F. G. Brockman, Philips Labs.

CP.** Measurement Technique for Magnetic Materials in the Frequency Range 10^6 to 2.5 x 10^{10} c/s. W. B. Wesphal, Massachusetts Inst. of Technology.

CP.** Production and Properties of Magnetic Materials Used at High Frequencies. E. Albers-Schoenberg, General Ceramics and Steatite Corp.

9:30 a.m.—Electrical Cable in Chemical Plants

CP.** An Installation of 15 Kv Polyethylene Insulated Cable. P. N. Lubke, Ford, Bacon and Davis, Inc.

Conference Papers on The Installation of Electrical Cables in Chemical Plants.

E. W. Davis, Simplex Wire and Cable Co.

R. C. Graham, Rome Cable Corp.

W. P. Lewis, The American Steel and Wire Co.

9:30 a.m.—Management

CP.** The Organization for the War Effort. Leslie E. Simon, Brigadier General, U. S. Army.

CP.** Management Development. William Maloney, ESSO Standard Oil Co.

9:30 a.m.—Industrial Control

CP.** A New D-C Contactor—Laboratory and Field Development. F. C. Iglehart, B. C. Wells, Westinghouse Electric Corp.

51-51. An Electronic Power Source for Large D.C. Contact Testing. D. L. Pettit, Square D Co.

51-52. ACO.* Instrumentation for Analysis of Contact Wear. M. R. Swinehart, Cutler-Hammer, Inc.

9:30 a.m.—Semi-Conductors

CP.** Germanium Photocells. Mrs. F. A. Stabl, Sylvania Electric Products.

CP.** Noise Due to Current in Semi-conductors. S. J. Angello, Westinghouse Electric Corp.

CP.** Circuit Application Problems in Transitors. C. B. Brown, Naval Ordnance Lab.

1:45 p.m.—General Session

Presentation of John Fritz Medal to Dr. Vannevar Bush, President, Carnegie Institution of Washington.

2:30 p.m.—Operation of Power, Communication and Tansportation Utilities Under Military Attack—Panel Discussion—Continued

2:30 p.m.—Protective Devices

51-63. Some Effects of Lightning Arrester Protective Characteristics and Location Upon Station Apparatus Protection. J. W. Kalb, The Ohio Brass Co.

51-64. Application of Resonant Grounding in Power Systems in the U. S. E. T. B. Gross, Illinois Institute of Technology; E. W. Atherton, Drexel Hill, Pa.

51-65. A Study of Conduction Phenomena Near Current Zero for an A-C Arc Adjacent to Refractory Surfaces. T. E. Browne, Jr., A. P. Strom, Westinghouse Electric Corp.

51-66. Power System Fault Control. Working Group on Power System Fault Limitation.

51-1. The Power Interruption Testing of Lightning Arresters. Otto Ackermann, Westinghouse Electric Corp.

CP.** Standardization of Rating of Neutral Grounding Reactors. J. L. Thomason, General Electric Co.

2:30 p.m.—Nucleonic Instruments

CP.** Instrumentation in the Civil Defense Program. R. L. Butenhoff.

CP.** A Portable Gamma Scintillation Counter. C. J. Borkowski, R. A. Dandl.

CP.** Vibrating Reed Recording Electrometer. J. V. Werme.

CP.** Ion Current Measurements with Stabilized Zero. A. J. Williams, Jr., R. E. Watson, W. R. Clark, W. G. Amey, Leeds and Northrup Co.

2:30 p.m.—Therapeutics

CP.** The Bases for Establishment of Maximum Energy Ratings for X-Ray Tubes. T. H. Rogers, Machlett Labs., Inc.

CP.** High Speed Exposure Timing in the Application of X-Rays. R. L. Wright, Westinghouse Electric Corp.

CP.** The Electrical Conductivity of Cadmium Sulphide When Exposed to Pulsating X-Radiation. J. E. Jacobs, General Electric X-Ray Corp.

CP.** The Intensification of X-Ray Fluorescent Images. W. S. Lusby, Westinghouse Electric Corp.

CP.** A Rotating Anode Tube for Medium Powered Self-Rectified X-Ray Equipment. W. W. Lang, Eureka X-Ray Tube Corp.

2:30 p.m.—Electrical Breakdown in Gases

CP.** Electrical Breakdown in Gases at High Pressure. J. G. Trump, Massachusetts Inst. of Technology.

CP.** Electrical Breakdown of Very Short Gaps. L. H. Germer, Bell Telephone Labs., Inc.

CP.** The Roll of Corona Discharge in the Electrical Precipitation Process. H. J. White, Research Corp.

2:30 p.m.—Industrial Control

51-13[illegible] Transient Response of Saturable Reactors with Resistive Load. H. F. Storm, General Electric Co.

CP.** Electronically Controlled Half-Wave Excitation for D-C Shunt Motors. W. S. Kupfer, Jr., E. E. Moyer, Rensselaer Polytechnic Institute.

CP.** A Short-Cut Method for Determining the Coil Temperature Rise of Solenoids on Duty Cycle. T. M. Spitler, General Electric Co.

CP.** Hermetically Sealed Components for Industrial Control. E. B. Steinberg, Remington Rand, Inc.

2:30 p.m.—Cathodic Protection

CP.** The Electrical Nature of Corrosion and Cathodic Protection. H. D. Holler, National Bureau of Standards.

CP.** Cathodic Protection of Water Storage Tanks. H. W. Hosford, Harco Corp.

CP.** Economic Aspects of Cathodic Protection, R. M. Wainwright, Univ. of Illinois.

Wednesday, January 24

9:30 a.m.—Transformers

51-113. ACO.* Report on Transformer Magnetizing Current and Its Effect on Relaying and Oil Switch operation. Subcommittee on Magnetization Characteristics of Transformers.

CP.** Inrush Currents. W. H. Mutschler, Allis Chalmers Mfg. Co., L. A. Finzi, Carnegie Inst. of Technology.

51-53. Transformer Magnetizing Inrush Current. T. R. Specht, Westinghouse Electric Corp.

51-54. ACO.* Improved Core Form Transformer Winding. E. J. Grimmer, W. L. Teague, Westinghouse Electric Corp.

51-55. An Investigation of Audio Noise in Substation Type Transformers. J. H. Vivian, Southern California Edison Co.; R. R. Peck, Line Material Co.

51-56. Acoustic Models of Transformer Installations. Briggs Gettys, W. B. Conover, General Electric Co.

9:30 a.m.—Insulation

CP.** Evaluation of Insulation Materials. F. Brown, Jr., A. Pletenik, G. W. Young, General Electric Co.

51-127. A.C. and D.C. Voltage Endurance Studies on Mica Insulation for Electrical Machinery. G. L. Moses, Westinghouse Electric Corp.

51-69. Aging of Class B Insulating Material in Nitrogen. H. C. Stewart, L. C. Whitman, General Electric Co.

51-128. ACO.* D.C. Overpotential Testers for High Voltage Insulation Fault Detection. F. W. Atkinson, The Takk Corp.; J. K. Hewson, The John Hewson Co.

51-129. ACO.* Dielectric Absorption Studies at Higher Voltages on Large Rotating Machines. W. Schneider, Westinghouse Electric Corp.

51-130. ACO.* Non-Destructive Testing of Generator Insulation. E. H. Povey, F. S. Oliver, Doble Engineering Co.

9:30 a.m.—Electronic Education

CP.** Electronic Education Requirements for Industry. Walther Richter, Allis Chalmers Mfg. Co.

CP.** Electronic Education Requirements for the Research Laboratory, W. G. Shepherd, University of Minnesota.

CP.** Electronics in Electrical Education. J. D. Ryder, University of Illinois.

9:30 a.m.—Instruments and Measurements

51-57. Total Hemispherical Radiometers. J. T. Gier, R. V. Dunkle, Univ. of California.

51-28. Output Analysis and Alignment Techniques for Phase-Rotation Single Sideband Transmitters. Oliver Whitby, D. R. Scheuch, Stanford Research Institute.

51-29. An Electromechanical Transducer. J. F. Engelberger, H. W. Kretsch, Manning Maxwell and Moore, Inc.

51-58. An Electromagnetic Induction Method of Measuring Oscillating Fluid Fow. A. J. Morris, Office of Naval Research; J. H. Chadwick, Stanford Univ.

CP.** Resistance Thermometry System for Measuring Turbine Blade Temperatures. M. L. Greenough.

51-59. Three-Phase Measurements of Resistance. L. W. Matsch, N. C. Basu, Illinois Inst. of Technology; G. R. Horcher, Univ. of Kansas. Presentation by title only.

9:30 a.m.—New Techniques of Network Synthesis

CP.** The Application of Special Functions to Network Synthesis. R. M. Fano, Massachusetts Inst. of Technology.

CP.** Network Synthesis without Mutual Reactance. R. J. Duffin, Carnegie Inst. of Technology.

CP.** Synthesis of R-C Networks with Prescribed Transfer Function. A. D. Fialkow, Polytechnic Inst. of Brooklyn.

CP.** Transducer Design Based on Statistical Properties of the Signal. R. B. Blackman, Bell Telephone Labs., Inc.

9:30 a.m.—Recent Developments in Electronic Telegraph Methods

51-60. An Electronic Time Division Multiplex Telegraph Set. T. A. Hansen, R. D. Slayton, Teletype Corp.

51-61. Four-Two Channel Time Division Multiplex Telegraph System for Long Distance Radio Circuits. W. C. Peterman, All America Cables and Radio, Inc.; A. Minc, Mackay Radio and Telegraph Co.

51-5. ACO.* A Teleprinter Signal Bias Meter. H. F. Wilder, Western Union Telegraph Co.

51-62. A Nationwide FM Telegraph Network. F. B. Bramhall, L. A. Smith, Western Union Telegraph Co.

CP.** An Automatic Flat Scanning Facsimile Transmitter, W. G. H. Finch, C. R. Jones, Finch Telecommunications, Inc.

9:30 a.m.—Arc Welding

51-142. The Physical Mechanism of Low- and High-Current Arcs, and their Relation to the Welding Arc. Wolfgang Finkelnburg. Engineer Research and Development Laboratories. Presentation by title only.

51-143. New Electrodes for Stabilizing Inert-Gas Welding Arcs. J. D. Cobine, C. J. Gallagher, General Electric Co. Presentation by title only.

51-139. AC Arc Welders with Saturable Reactor Control. S. Oestreicher, Harnischfeger Corp., Presentation by title only.

CP.** Report of Subcommittee on Fundamentals of Electric Arc Research, R. C. McMaster, Battelle Memorial Institute.

CP.** Gas Coverage of the Inert Welding Arc. R. W. Tuthill, General Electric Co.

CP.** Stud Welding Method. T. L. Hufert, Graham Mfg. Corp.

CP.** Application and Developments in the Electric Arc Stud Welding Field, R. C. Singleton, Nelson Stud Welding Co.

9:30 a.m.—Electrical Applications in Hazardous Areas

CP.** Tests of Electrostatic Control Equipment for Industrial Applications. Robin Beach, Engineers Associated.

CP.** Lightning Protection for Hazardous Buildings and Structures. J. Z. Linsenmeyer, E. Beck, Westinghouse Electric Corp.

CP.** Control Equipment for Hazardous Locations. B. M. Miniken, General Electric Co.

CP.** Control Rooms vs NEMA Enclosures for Electrical Equipment. R. G. Rudrow, Atlas Powder Co.

1:45 p.m.—General Session

Presentation of Edison Medal to O. B. Blackwell, Assistant Vice President (Retired) American Telephone and Telegraph Company.

2:30 p.m.—Insulated Conductors

51-10. Radial and Tangential Stresses in Impregnated Paper Insulation. J. B. Whitehead, The Johns Hopkins University.

51-9. Thermal Transients on Buried Cables. F. H. Buller, General Electric Co.

51-67. 69 Kv Medium Pressure Gas-Filled Cable, Washington, D.C. H. W. Clark, Potomac Electric Power Co.

51-68. Lead-Alloy Sheaths for Underground Power Cable. Herman Halperin, C. E. Betzer, Commonwealth Edison Co.

51-22. Thermal Expansion Effects in Power Cables. C. S. Schifreen, Philadelphia Electric Co.

2:30 p.m.—Transformers

51-134. ACO.* Provisional Progress Report on Proposed Changes of Temperature Rise Tests on Transformers—A.S.A. Transformer Standards C57.22. Subcommittee on Methods of Making Temperature Rise Tests on Transformers.

CP.** Temperature Tests on Transformers. W. C. Hughes.

51-4. Deterioration of Transformer Oil and Paper Insulation by Temperatures. F. J. Vogel, C. C. Petersen, L. W. Matsch, Illinois Inst. of Technology.

51-69. Aging of Class B Insulating Material in Nitrogen. H. C. Stewart, L. C. Whitman, General Electric Co.

51-135. ACO.* Progress Report on Cooperative Tests on Aging of High-Temperature Insulations. Subcommittee No. 5 on Coordinated Study of Life of Transformer Insulation.

51-132. ACO.* Proposed AIEE Guide for Operation and Maintenance and Dry-Type Transformers with Class B Insulation. Working Group No. 24 AIEE Com. on Transformers.

2:30 p.m.—Insulation

51-125. A Maintenance Inspection Program for Large Rotating Machines. J. S. Johnson, Westinghouse Electric Corp.

CP.** Electrical Maintenance of Large Rotating Machines. H. F. McCullough, General Electric Co.

51-126. Routine Insulation Testing of Synchronous Machines. L. F. Hunt, J. H. Vivian, Southern California Edison Co.

51-41. Detection of Turn-to-Turn Faults in Large High Voltage Turbine Generators. R. M. Sexton, R. J. Alke, Westinghouse Electric Corp.

CP.** A-C and D-C Dielectric Breakdown Testing of a Large Turbine Generator Stator. E. R. Morris, Philadelphia Electric Co.; R. D. Case, Westinghouse Electric Corp.

CP.** Turn-to-Turn Insulation Over-potential Tests and General Dielectric Tests of a Turbo Generator. H. C. Marcroft, Pennsylvania Water and Power Co.

2:30 p.m.—Magnetic Amplifiers

51-71. Progress Report of the AIEE Magnetic Amplifier Subcommittee. Subcommittee on Magnetic Amplifiers.

51-72. Steady-State Analysis of Self-Saturating Magnetic Amplifiers Based on Linear Approximations of the Magnetization Curve. W. H. Esselman, Westinghouse Electric Corp.

CP.** Transient Response of Magnetic Amplifiers. L. A. Finzi, D. P. Chandler, D. C. Beaumariage, Carnegie Inst. of Technology.

CP.** Magnetic Amplifiers using Ferrite Cores. W. C. Johnson, Princeton Univ.

CP.** Types of Magnetic Amplifiers—A Survey. J. G. Miles, Engineering Research Associates, Inc.

2:30 p.m.—Instruments and Measurements

51-30. Frequency Compensation of A-C Instruments. J. H. Miller, Weston Electrical Instrument Corp.

51-3. Marking of Varmeters. Subcommittee on Marking of Varmeters and Related Instruments.

51-74. A Winding Insulation Tester for D-C Armatures. F. H. Catlin, N. Rohats, General Electric Co.

51-75. A Hook-on Power Factor Meter. A. J. Corson, A. L. Nylander, General Electric Co.

2:30 p.m.—Advances in the Communication Switching Art, Telephone and Telegraph

51-76. A Full Automatic Private Line Teletypewriter Switching System. W. M. Bacon, G. A. Locke, Bell Telephone Labs., Inc.

51-77. Public Address System Used in Western Union Reperforator
ACO.* Switching Centers. R. W. Good, The Western Union Telegraph Co.

51-78. Automatic Trunk Selection in Reperforator Switching. W. B. Blanton, The Western Union Telegraph Co.

51-79. Single Frequency Signaling System for Supervision and Dialing Over Long Distance Telephone Trunks. N. A. Newell, A. Weaver, Bell Telephone Labs., Inc.

2:30 p.m.—Graduate Study in Electrical Engineering

CP.** Mathematics in Electrical Graduate Education. E. W. Anderson, Iowa State College.

CP.** Graduate Examination Procedures. J. G. Brainerd, University of Pennsylvania.

CP.** The Importance of Graduate Work in the Power Field. W. A. Lewis, Illinois Inst. of Technology.

2:30 p.m.—Resistance Welding

51-137. Probabilities of Interference Between Resistance Welders. W. K. Boice, General Electric Co. Presentation by title only.

51-138. Welding Calculations: Effect of Conductor Configuration in Overhead Lines. H. W. Tietze, Public Service Electric & Gas Co. Presentation by title only.

51-140. Electrical Contact Resistance—the Contribution of Non-Uniform Current Flow. W. B. Kouwenhoven, W. T. Sackett, Jr., Johns Hopkins Univ.

51-141. Selection of Fuses for Resistance Welding Machines. C. B. Stadum, Westinghouse Electric Corp.

CP.** Resistance Welding Transformers. Karl Sarafian, General Motors Corp.

CP.** Magnetic Force Welder. Jerome Welch, Cutler-Hammer, Inc.

CP.** Fusionette Welding Equipment. Harry Marx, Primeweld Corp.

Thursday, January 25

9:30 a.m.—Transmission

51-80. Techniques of Corona Loss Measurement and Analysis—500 Kv Test Project of the American Gas and Electric Company. O. Naef, American Gas and Elec. Service Corp.; R. L. Tremaine, A. R. Jones, Westinghouse Electric Corp.

51-12. Corona Investigation on Extra High Voltage Lines—500-Kv Test Project of the American Gas and Electric Company. I. W. Gross, O. Naef, American Gas and Electric Service Corp.; C. F. Wagner, R. L. Tremaine, Westinghouse Electric Corp.

51-40. Radio Influence Tests in Field and Laboratory—500 Kv Test Project of the American Gas and Electric Company. G. D. Lippert, S. C. Bartlett, American Gas and Electric Service Corp.; W. E. Pakala, C. D. Fahrnkopf, Westinghouse Electric Corp.

CP.** System Economics of Electric Power Transmission at Extra High Voltage. H. P. St. Clair, E. L. Peterson, American Gas and Electric Service Corp.

51-11. The 300/315 Kv Extra High Voltage Transmission System of the American Gas and Electric Company. Philip Sporn, E. L. Peterson, I. W. Gross, H. P. St. Clair, American Gas and Electric Service Corp.

9:30 a.m.—Transformers

51-39. Single-Step Voltage Regulator Application. R. W. Schlie,
ACO.* Rural Electrification Administration.

CP.** The Effect of Voltage Variations on Voltage Regulator Design. D. R. Samson, General Electric Co.

51-81. Insulation Co-ordination and a New Line of Oil Insulated
ACO.* Potential Transformers. F. J. Vogel, Illinois Inst. of Technology; D. R. Laib, Allis-Chalmers Mfg. Co.

51-2. A 2,000,000 KVA Transformer Core. W. C. Sealey, Allis-Chalmers Mfg. Co.

51-136. Report of Working Group on Dielectric Tests. Subcommittee
ACO.* on Revision of Dielectric Tests.

51-70. Economics of Power Transformer Application. J. E. Barkle, R. L. Witzke, Westinghouse Electric Corp. Presentation by title only.

9:30 a.m—Insulation and Synchronous Machinery

51-121. A New High Voltage Insulation for Turbine-Generator Stator Windings. C. M. Laffoon, C. F. Hill, G. L. Moses, L. J. Berberich, Westinghouse Electric Corp.

CP.** Turbo Generator for Use in Short Circuit Testing. Sterling Beckwith, Allis-Chalmers Mfg. Co.

51-122. Synchronous Machine Damping and Synchronizing Torques. Charles Concordia, General Electric Co.

51-123. Factors Affecting Minimum Surface Leakage Distances in Direct Current Power Systems. J. E. Hart, A. T. McClinton, Naval Research Lab.; W. W. Rosenberry, Naval Engg. Experiment Station.

51-124. Telephone Influence Factor in Synchronous Machines. G. L. Oscarson, I. C. Benson, Electric Machinery Mfg. Co. Presentation by title only.

CP.** Silastic Tape—A New Insulating Material. G. E. McIntyre, J. F. Dexter, Dow Corning Corp.

9:30 a.m.—Radiation Detection Devices

CP.** Scintillation Counters. George Morton, R.C.A. Labs.

CP.** Quenching and Lifetime of Geiger-Muller Counters. J. B. H. Kuper, Brookhaven National Laboratory.

CP.** Electrometer Tubes. D. L. Collins, Victoreen Instrument Co.

CP.** Calibration of Radiation Detection Devices. G. Failla, Columbia Univ.

9:30 a.m.—Computing Devices

51-82. The Input-Output System of the Edvac. R. L. Snyder, Jr., Aberdeen Proving Ground.

CP.** Improvement in the Security of Large Masses of Valuable Records by Use of Computor Techniques. S. N. Alexander, National Bureau of Standards.

51-83. A Method of Gating for Parallel Computers. A. G. Ratz, V. G. Smith, University of Toronto.

51-84. Systematization of Tube Surveillance in Large Scale Computers. Homer Spence, Aberdeen Proving Ground.

51-85. Design of a Flip-Flop by Linear Circuit Analysis. J. F.
ACO.* Donan, Computer Research Corp.; L. D. Hindall, Los Angeles, Calif.

9:30 a.m.—A New Carrier System for Medium Haul Telephone Circuits

51-86. The Type N-1 Carrier Telephone System Objectives and
ACO.* Transmission Features. R. S. Caruthers, Bell Telephone Labs., Inc.

51-87. N-1 Carrier Telephone System Apparatus and Equipment.
ACO.* W. E. Kahl, L. E. Pedersen, Bell Telephone Labs., Inc.

CP.** The Type N-1 Carrier Telephone System—Engineering and Application. A. B. Covey, H. R. Huntley, American Tel. & Tel. Co.

9:30 a.m.—Industrial Power Systems

CP.** Parallel Operation of Industrial Generating Plants and Public Utility Systems. G. C. Harness, G. E. Grosser, Westinghouse Electric Corp.

CP.** Utilization of Purchased Electric Power in an Oil Refinery. A. J. Claes, Socony-Vacuum Oil Co.

CP.** Industrial Plant Power Sources. R. T. Woodruff, Aluminum Ore Co.

CP.** Emergency Electric Generating Plant. B. F. Thomas, Jr., N. A. Lougee and Co.

9:30 a.m.—Electric Space Heating and Heat Pumps

CP.** Five All Electric Homes Using the Heat Pump for Year Round Air Conditioning. E. R. Ambrose, American Gas and Electric Service Corp.

CP.** Ignition Delay in Oil Burners. F. Hamburger, Jr., Johns Hopkins Univ.

CP.** Electric Panel Heating. C. Frere, General Electric Co.

CP.** Controls for Heat Pump Applications. E. F. Snyder, Minneapolis-Honeywell Regulator Co.

2:00 p.m.—Capacitors

51-15. Application of Shunt Capacitors at Transmission and Distribution Stations. F. M. Porter, C. P. Zimmerman, American Gas and Electric Service Corp.

51-88. Technical Problems Associated with the Application of a Capacitor in Series with a Synchronous Condenser. R. L. Witzke, Westinghouse Electric Corp.; E. L. Michelson, Commonwealth Edison Co.

51-89. Fundamental Effects of Series Capacitors in High-Voltage Transmission Lines. A. A. Johnson, J. E. Barkle, D. J. Povejsil, Westinghouse Electric Corp.

51-20. The Application of a Series Capacitor to a Synchronous Condenser for Reducing Voltage Flicker. P. M. Black, Illinois Northern Utilities Co.; L. F. Lischer, Commonwealth Edison Co.

2:00 p.m.—Substations

51-90. Direct Current Power Supplies and Isolation of Faults on Electric Transit Systems—Part I. S. S. Watkins, Gibbs and Hill, Inc.; M. E. Reagan, Westinghouse Electric Corp.

51-91. Direct Current Power Supplies and Isolation of Faults on Electric Transit Systems—Part II. S. S. Watkins, Gibbs and Hill, Inc.; M. E. Reagan, Westinghouse Electric Corp.

51-92. Group Regulation of Urban 4-Kv Feeders. C. L. Grim, H. B. Peck, Consolidated Gas, Electric Light and Power Co. of Baltimore.

CP.** The Trend Toward Bus Regulation on the System of the Detroit Edison Company. I. S. Mendenhall, Detroit Edison Co.

CP.** Considerations That Led to Radial Distribution with Bus Regulation in Preference to Primary or Secondary Networks in the City of Los Angeles. M. V. Eardley, Dept. of Water and Power, The City of Los Angeles.

2:00 p.m.—Symposium on the Determination of What Units in What Plants Should be Used for Load and Frequency Control

CP.** Introduction to the Subject. S. B. Morehouse, Leeds & Northrup Co.

CP.** Allocation and Assignment of Frequency-Tie Line Control. G. H. McDaniel, American Gas and Electric Service Corp.

CP.** Methods of Scheduling Load Regulations When Using Automatic Load Control. A. P. Hayward, Duquesne Light Co.

CP.** The Determination of What Units in What Plants on A System should be Assigned to Load Regulation. E. C. Stewart, Middle South Utilities Co.

CP.** Load Regulation Practices of Cincinnati Gas and Electric Company. S. Goldsmith, Cincinnati Gas and Electric Co.

CP.** Assignment of Load Regulating Burden to Stations of the Commonwealth Edison Group of Companies. R. T. Purdy, Commonwealth Edison Co.

2:00 p.m.—Power Tubes for Electronic Heating

CP.** Tubes for Dielectric Heating at 915 Megacycles. R. B. Nelson, General Electric Research Labs. Presentation by P. W. Morse, General Electric Co.

CP.** Selection and Application of Tubes for Induction and Dielectric Heating. H. J. Dailey, C. H. Scullen, Westinghouse Electric Corp.

CP.** The Design of High Power Vacuum Tubes for Industrial Heating Applications. H. B. Doolittle, Machlett Labs.

CP.** A VHF High Power Triode. W. Schmitt, Federal Telephone and Radio Corp.

2:00 p.m.—Analog Computers

This session will be composed of the following technical paper and several conference papers dealing with various aspects of the design and application of electric analog computers.

51-93. Analog Computing Techniques Applied to Economics. R. H. Strotz, J. F. Calvert, N. F. Morehouse, Northwestern University.

2:00 p.m.—Electronic Paths Under the Sea—Centenary

CP.** The Genesis of Submarine Cables. L. Espenschied, Bell Telephone Labs., Inc.

CP.** Submerged Repeaters for Long Submarine Telegraph Cables. C. H. Cramer, Western Union Telegraph Co.

51-94. A Submarine Telephone Cable with Submerged Repeaters. J. J. Gilbert, Bell Telephone Labs., Inc.

2:00 p.m.—Industrial Power Systems

CP.** High Voltage Motor Starters Coordinated with Distribution Switchgear. T. B. Montgomery, Allis-Chalmers Mfg. Co.

CP.** Power Modernization of an Old Plant. A. W. Howard, General Electric Co.

CP.** Power Distribution System Expansion Bethlehem Steel Co., Lackawanna Plant. T. O. Zittel, Bethlehem Steel Co.; R. M. Wilson, General Electric Co.

CP.** Power Distribution System of the United States Government Accounting Office Building, Washington, D. C. F. J. Muller, Public Building Service; D. S. Brereton, General Electric Co.

2:00 p.m.—The Measurement and Control of Audible Noise from Fluorescent Lamp Ballasts

CP.** The Effect of Ambient Noise Level and Human Factors on the Evaluation of Acceptable Ballast Noise Limits. C. H. Burns, Westinghouse Electric Corp.

CP.** Measurement of Audio Ballast Noise. H. U. Hjermstad, Sola Electric Co.

CP.** Testing Fluorescent Fixtures for Noise. R. D. Eames, Mitchell Mfg. Co.

51-95. Noise Evaluation of Fluorescent Lamp Ballasts. C. P. Hayes, H. R. Gould, General Electric Co. Presentation by title only.

Friday January, 26

9:30 a.m.—Capacitors and Switchgear

51-19. Switching of Distribution Capacitors by Manual and Automatic Devices. R. J. Hopkins, N. R. Schultz, General Electric Co.

51-18. Switching High-Voltage Shunt Capacitor Banks. A. W. Funkhouser, Indianapolis Power and Light Co.; R. C. Van Sickle, D. F. Shankle, Westinghouse Electric Corp.

51-21. Capacitor Switching Phenomena. R. C. Van Sickle, Westinghouse Electric Corp.; John Zaborszky, Univ. of Missouri.

CP.** Capacitor Switching Oil and Air Blast Circuit Breakers. A. E. Kilgour, Allis-Chalmers Mfg. Co.

CP.** Dielectric Strength of Capacitors. R. J. Hopkins, T. R. Walters, General Electric Co.

9:30 a.m.—Power Generation

51-96. Progress in the Development of Large Turbine Generators. E. D. Huntley, H. D. Taylor, General Electric Co.

51-97. Modern Practice in the Balancing of Large Turbine-Generator Rotors. C. M. Laffoon, A. C. Hagg, C. H. Janthey, P. R. Heller, Westinghouse Electric Corp.

CP.** Progress and Needed Improvements to Electric Power Generating Stations and Machines. I. E. Moultrop, G. A. Orrok, Jr., Boston Edison Co.

CP.** Progress in Electrical Machinery and Control for Power System Service. T. B. Montgomery, R. C. Moore, W. L. Ringland, L. T. Rosenberg, Allis-Chalmers Mfg. Co.

9:30 a.m.—Some New Electron Tubes

CP.** A Gas-Filled Resonant Window for Radar Duplexing Devices. E. A. Goldman, N. T. Williams, Westinghouse Electric Corp.

CP.** A High-Current Thyratron. A. W. Coolidge, Jr., General Electric Co.

CP.** A Tunable Miniature Magnetron. H. W. A. Chalberg, General Electric Co.

CP.** A Permanent Magnet Electron Microscope. J. H. Reisner, Radio Corp. of America.

9:30 a.m.—Radio Communication, Point-to-Point and Mobile

51-7. Operational Study of a Highway Mobile Telephone System. L. A. Dorff, Bell Telephone Labs., Inc.

CP.** Progress in Radio-Facsimile for Telegram Delivery. C. Jelinek, Jr., K. R. Jones, The Western Union Telegraph Co.

CP.** Description of Power Amplifier and Exciter Transmitter Units for Transoceanic Point-to-Point Communication Service. H. E. Goldstine, G. L. Usselman, RCA Labs.

CP.** Simplified Analysis of Non-recurrent Pulse Groups. L. S. Schwartz, Hazeltine Electronics Corp.

51-98. Pulse Time Modulation Telemetering Systems for Rocket Applications. J. T. Mengel, Naval Research Laboratory. Presentation by title only.

9:30 a.m.—Feedback Control Systems

51-99. Some Design Criteria for Automatic Controls. P. T. Nims, Chrysler Corp.

51-100. Effects of Carrier Shifts on Derivative Networks for AC Servomechanisms, G. M. Attura, Industrial Control Co.

51-101. Network Synthesis by Graphical Methods for A-C Servomechanisms. G. A. Bjornson, Massachusetts Inst. of Technology.

51-102. A Note on the Design of Conditionally Stable Feedback Systems. Paul Travers, Massachusetts Inst. of Technology.

51-103. A Phase-Plant Approach to the Compensation of Saturating Servomechanisms. A. M. Hopkin, Northwestern Univ.

WINTER GENERAL MEETING, NEW YORK JAN. 22-26, 1951

9:30 a.m.—Heavy Traction

The following three papers will be a single presentation.

51-104. Selection of Equipment for Multiple-Unit Cars. W. M. Hutchison, Westinghouse Electric Corp.

51-36. A New MU Car Motor for the Pennsylvania Railroad. H. G. Jungk, Westinghouse Electric Corp.

51-105. New A.C. MU Car Control for the Pennsylvania Railroad. S. E. Newhouse, Westinghouse Electric Corp.

The following three papers will be a single presentation.

51-35. Why Four-Motor Multiple-Unit Car Equipments? R. A. Williamson, General Electric Co.

51-106. A.C. Multiple-Unit Car Motor. F. C. Kreitler, Jr., General Electric Co.

51-107. A-C Multiple-Unit Car Control Equipment. W. S. O'Kelly, General Electric Co.

51-108. A New Train Performance Calculator. S. V. Smith, Pennsylvania Railroad.

51-34. A Modern Cab Signaling and Train Control System for Railroads. L. R. Allison, Union Switch and Signal Co.

9:30 a.m.—Rotating Machinery

51-109. Circuit Analysis Method for Determination of A-C Impedances of Machine Conductors. D. S. Babb, J. E. Williams, University of Illinois.

51-110. A Simplified Method for Predicting Induction Motor Performance. H. E. Webking, General Motors Corp.

51-111. An Experimental Study of Induction Machine End-Turn Leakage Reactance. E. C. Barnes, The Reliance Electric & Engg. Co.

CP.** The Development of a Treatment for Die-Cast Rotors. Ulrik Krabbe, Thomas B. Thrige.

51-117. Die Cast Rotor Studies. L. C. Packer, G. E. Monchamp,
ACO.* Westinghouse Electric Corp.

9:30 a.m.—I. and M. Standards and Spectographic Instrumentation

CP.** Standards for Electrical Measurements. F. B. Silsbee, National Bureau of Standards.

CP.** Atomic Definitions of Primary Standards. R. D. Huntoon, National Bureau of Standards.

CP.** Some Applications of Photomultiplier Tubes in Spectrographic Analysis. J. K. Brody.

CP.** Radio Frequency Spectroscopy. D. K. Coles, Westinghouse Electric Corp.

2:00 p.m.—Transmission and Distribution

51-17. Protection of Transmission Lines over Mountainous Region Where Lightning Incidence is High. J. E. Housley, J. D. Harper, Aluminum Co. of America.

51-16. Geometric Mean Distances of Angle-Shaped Conductors. P. C. Magnusson, Oregon State College.

51-26. A Per Unit Interpretation of Transmission Line Constants. D. J. Povejsil, A. A. Johnson, Westinghouse Electric Corp.

51-112. 11 Year Operating Record, Rural Line Sectionalizing by Repeater Fuses. R. M. Schahfer, F. H. Strout, Northern Indiana Public Service Co.

2:00 p.m.—Switchgear

51-25. A Spring Mechanism for Hand Closing of Magnetic Power Air Circuit Breakers. R. C. Dickinson, J. D. Findley, Westinghouse Electric Corp.

51-27. A New 69 Kv Air Blast Circuit Breaker. R. B. Shores, J. W. Beatty, General Electric Co.

51-8. Ice Testing and Its Influence Upon Switch Design. G. E. Heberlein, E. J. Field, Railway and Industrial Engg. Co.

CP.** Application of Air Circuit Breakers in Motor Circuits. P. L. Camp, General Electric Company.

51-113. Report on Transformer Magnetizing Current and Its Effect
ACO.* on Relaying and Air Switch Operation. Subcommittee on Magnetization Characteristics of Transformers. Presentation by J. M. Wallace.

2:00 p.m.—Hydroelectric Outage Experience

51-23. Determination of Generator Standby Reserve Requirements. H. T. Strandrud, Bonneville Power Administration.

CP.** Factors Determining the Optimum Capacity of an Hydro-Electric Power Installation. J. J. Traill, The Hydro-Electric Power Comm. of Ontario.

CP.** Determination of Monthly Hydro Dependable Capacity, Niagara Mohawk Electric System. E. B. Strowger, Niagara Mohawk Power Corp.

CP.** Determination of Reserve Capacity by the Probability Method —Effect of Interconnections. G. Calabrese, New York University.

Discussions by H. W. Phillips, Pennsylvania-New Jersey Interconnection, E. L. Kanouse, Dept. of Water & Power of Los Angeles, E. D. Early, Southern Services, Inc.

2:00 p.m.—Some New Electronic Devices and Techniques

CP.** A Metal Evaporator using High-Frequency Induction Heating. R. G. Picard, J. E. Joy, Radio Corp. of America.

CP.** Use of Diodes as Logarithmic Elements in Measuring and Control Equipment. W. M. Grim, Jr., Massachusetts Inst. of Technology.

CP.** Measurement of Metal Wall Thickness from One Side by the Ultrasonic Resonance Method. N. G. Branson, Branson Instruments, Inc.

CP.** The Sona-Stretcher. H. R. Foster, E. E. Crump, J. L. Gogorth, Kay Electric Co.

2:00 p.m.—Color Television

CP.** U.H.F. Television Reception at Bridgeport. R. G. Clapp, Philco Corp.

CP.** Some Phases of the United States Color Television Standards. P. C. Goldmark, Columbia Broadcasting System, Inc.

51-114. A Color Television System for Industry. H. R. Smith, A. L.
ACO.* Olson, R. F. Cotellessa, Allen B. Du Mont Labs., Inc.

CP.** Fundamentals of Color Television and Their Application Today. A. V. Loughren, Hazeltine Electronics Corp.

2:00 p.m.—Feedback Control Systems

51-73. The Effects of Loads and Disturbances Upon Feedback Controllers. R. W. Jones, Northwestern Univ.

CP.** An Optimization of RC Lead Networks for Servomechanisms. J. R. Ragazzini, L. A. Zadeh, Columbia Univ.

CP.** Carrier Controlled Relay Servos. J. C. Lozier, Bell Telephone Labs., Inc.

CP.** Servomechanism Transient Performance from Decibal-Log Frequency Plots. H. Harris, Jr., M. J. Kirby, E. F. von Arx, Sperry Gyroscope Co.

2:00 p.m.—Light Traction

CP.** Power Supply Study and New Rectifier Installation for the United Electric Railways of Providence. W. C. Whitman, F. F. Schaller, New England Power Service Co.

51-115. Economics of Trolley Coach Power Supply. G. R. McDonald, J. C. Price, General Electric Co.

51-33. Electrical Equipment and Performance of Lightweight Rapid Transit Cars. W. R. Ellis, M. L. Sloman, Westinghouse Electric Corp.

51-31. A New Lightweight Rapid Transit Motor. R. A. Pettersen, General Electric Co.

51-32. A New Lightweight Rapid Transit Control Equipment. I. W. Lichtenfels, H. G. Moore, General Electric Co.

2:00 p.m.—Rotating Machinery

51-116. Equivalent Circuits, and Their Application in Designing Shaded Pole Motors. S. S. L. Chang, Robbins and Myers, Inc.

51-24. Commutation in Universal Type Motors. L. C. Packer, Westinghouse Electric Corp.

CP.* Application of Universal Motors. F. J. Chayka, General Electric Co.

51-118. Measurement of D-C Machine Parameters. R. M. Saunders, Univ. of California.

51-119. Rules for Designing Frog-Leg Windings of D.-C. Machines. H. B. Dwight, R. G. Haltmaier, Massachusetts Inst. of Technology.

51-120. Fault Transients in Aircraft D-C Systems. D. G. Scorgie, Naval Research Lab.

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

ACO.* Advance copies only available; not intended for publication in Transactions.

WINTER GENERAL MEETING COMMITTEE: The members of the 1951 Winter General Meeting Committee are G. J. Lowell, Chairman; C. T. Hatcher, Vice-Chairman; J. J. Anderson, Secretary; W. J. Barrett, Budget Co-ordinator; C. S. Purnell, Vice-President, District No. 3, AIEE; C. H. Willis, Technical Program; J. D. Tebo, D. W. Taylor, D. T. Braymer, General Session; N. S. Hibshman, Medals; G. T. Minasian, J. B. Harris, Jr., Publicity; C. N. Metcalf, Hotel Accommodations; E. R. Thomas, Registration; D. M. Quick, Smoker; Mrs. R. F. Brower, Ladies' Entertainment; E. S. Banghart, Dinner-Dance; F. P. Josslon, Inspection Trips; J. B. Paszkowski, Theater-Radio.

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