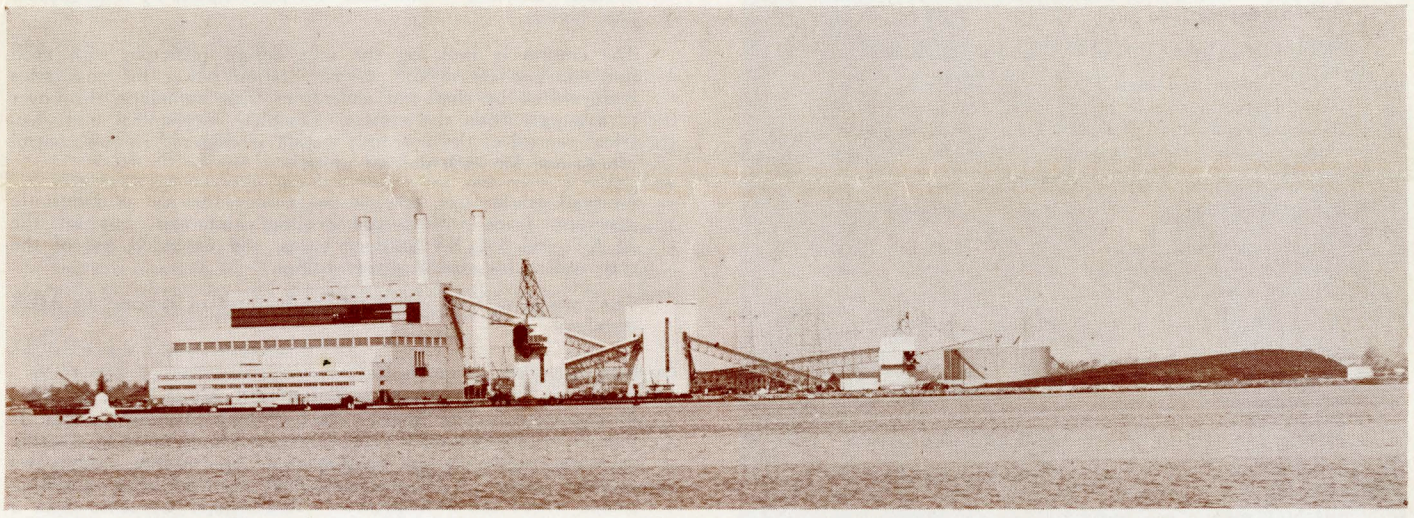
Winter General Meeting

January 30—February 3, 1950

Headquarters

Hotel Statler (Pennsylvania)

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



Sewaren Generating Station, Public Service Electric and Gas Company

MEETING FEATURES

The Winter General Meeting to be held at the Hotel Statler in New York, N. Y., January 30-February 3, 1950 will feature a broad program of professional and social activities. The technical program, by far the largest in the history of the Institute, is a result of the effort of the 39 technical committees in the five technical groups of the Institute.

A group of inspection trips has also been arranged closely allied with the subject matter of the technical program.

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. Meeting headquarters will again be in the Hotel Statler.

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 last year, a registration fee of $3.00 will be required for members and $5.00 for nonmembers. These fees have made the meetings self-supporting and have been largely responsible for postponing the need for raising the annual dues.

SMOKER: All arrangements are complete for our popular "Smoker" which this year returns to Tuesday night, January 31, 1950 at the Hotel Commodore. Chairman A. J. Cooper 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. 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 39 Street, New York 18, N. Y. Reservations received after January 24 will not be honored. Make your checks payable to "Special Account, Secretary, AIEE."

DINNER-DANCE: At this year's meeting we are to again enjoy the pleasure of a formal dinner-dance. It will be held in the Grand Ballroom of the Hotel Statler, Thursday evening, February 2, 1950. Dinner will be served at 7:00 P.M. followed by dancing. Tables for the dinner will accommodate ten persons. The price for the tickets will be $11.00 per person.

Reservations should be addressed to Dinner-Dance Committee, AIEE Headquarters, 33 West 39 Street, New York 18, N. Y. Make your checks payable to "Special Account, Secretary, AIEE."

THEATER TICKETS: It is expected that tickets for the following shows will be available to out-of-town AIEE members during the week of the Meeting.

Orchestra seats: Monday, January 30, through Thursday, February 2, evenings.

Death of a Salesman	$4.80
Kiss Me Kate	6.00
Mr. Roberts	4.80
South Pacific	6.00
(Wednesday matinee $3.60)	
Where's Charley	6.00

Enclose check in proper amount made payable to "American Institute of Electrical Engineers," with request for reservation and mail to Theater Ticket Committee, care of AIEE, 33 West 39 Street, New York 18, N. Y. Preference will be given to requests for even numbers of tickets. The right is reserved to reduce individual allotments to two seats if demand exceeds supply for specific shows. In event of sellout, checks will be returned unless second choice of show or date is given and is available.

HOTEL ACCOMMODATIONS: Members planning to attend the Meeting must make hotel reservations now to be sure of accommodations. Blocks of rooms have been set aside for a limited time only at the Hotel Statler (meeting headquarters) and nearby hotels.

Reservations must be made before January 20, 1950, and requests for reservations should be sent directly to the hotel of choice, but only to one hotel. A copy of the request should be sent to C. N.

AIEE WINTER GENERAL MEETING

Metcalf, Vice-Chairman, Hotel Reservations Committee, care of the Consolidated Edison Company of New York, Inc. Room 1350-S, 4 Irving Place, New York 3, N. Y., and a second and third choice should be indicated thereon. If accommodations are not available at the hotel of first choice, the Hotel Reservations Committee will arrange for transfer of the request to one of the other meeting hotels.

Hotel rooms have been reserved at the following:

Hotel Statler (formerly Pennsylvania)
meeting headquarters, 7th Avenue,
32d to 33d Streets

Single room with bath	$4.50 to $ 8.50
Double room, double bed	7.00 to 10.50
Double room, twin beds	8.00 to 14.00

Hotel McAlpin, Broadway and 34th Street

Single room and bath	4.00 to 7.00
Double room, double bed	6.50 to 10.00
Double room, twin beds	7.50 to 11.00
Suites	13.00 to 16.00

Hotel Governor Clinton, 7th Avenue
at 31st Street

Single room with bath	4.00 to 6.00
Double room, double bed	6.50 to 8.00
Double room, twin beds	8.00 to 9.50

Hotel New Yorker, 34th Street at 8th Avenue

Single room, tub and shower	4.50 to 8.00
Double room, double bed	7.00 to 12.50
Double room, twin beds	8.00 to 12.50

Hotel Martinique, Broadway and 32d Street

Single room with bath	4.00 to 5.50
Double room with bath	6.00 to 8.00
Double room, twin beds	6.50 to 8.00

WINTER GENERAL MEETING COMMITTEE

A. E. Knowlton, *Chairman*
G. J. Lowell, *Vice-Chairman*
J. J. Anderson, Jr., *Secretary*
W. J. Barrett, *Budget Coordination*
D. T. Braymer, *Registration*
J. L. Callahan, *Vice-President, Dist. 3*
A. J. Cooper, *Smoker*
E. F. Farish, *Dinner-Dance*
R. W. Gillette, *Inspection Trips*
C. T. Hatcher, *Reception*
N. S. Hibshman, *Medal Awards*
R. T. Oldfield, *Hotel Accommodations*
Mrs. D. A. Quarles, *Ladies Entertainment*
T. J. Talley III, *Theatre, Radio*
D. W. Taylor, *General Session*
A. R. Thompson, *Press Relations*
C. H. Willis, *Technical Program*

INSPECTION TRIPS: An interesting and varied program of inspection trips has been arranged for those attending the Winter General Meeting. Since the number who may be accommodated on most of the trips is limited, members are urged to make arrangements for the trips they wish to take immediately upon registering at Meeting Headquarters. Advance registrations by mail for inspection trips cannot be accepted. The schedule of trips is as follows:

Tuesday morning, January 31

Radio City Music Hall—The Music Hall is one of the outstanding attractions of Rockefeller Center and is the home of the Rockettes, famous precision dancers. The trip will include a guided tour backstage to see the extensive electrical and mechanical equipment and controls required to operate this huge theatre. Part of the 5500 horsepower of motor load are the two 250 horsepower motors for raising and lowering the three-section stage and orchestra pit. The connected lighting load totals 3500 KW.

Tuesday afternoon, January 31

Sewaren Generating Station, the entirely new four-unit 450,000 KW plant under construction by Public Service Electric and Gas Company, has three units now in operation.

Efficient operation is assured by throttle steam conditions of 1500 psi and 1050 degrees F, and eight stages of feedwater heating. Building volume and cost are reduced by semi-outdoor type boilers.

The station is built on the unit design principle with each unit independent of the others. Station power for auxiliaries is furnished by shaft-end generators with automatic throwover to a supply from the system. Complete mechanical and electrical control of the four-unit station is centered in two control rooms, one for each pair of units.

Unusual features of the station include the use of Oilostatic generator leads with forced cooling, aluminum bus for the 13 KV and 132 KV outdoor buses, and extended use of the tray system for station power cables.

The inspection trip will highlight features of interest to AIEE members.

Tuesday afternoon, January 31

American Telephone and Telegraph Co., Long Distance Headquarters. The world's largest long distance center is housed in a twenty-eight story structure which, with its amazing contents, represents an investment of more than seventy-two million dollars. AIEE members will see the large operating rooms where the switchboards would extend for more than a mile if placed side-by-side. Half a million calls are handled daily by the more than 4,000 long distance operators employed there.

Typing-by-wire, or TWX Service, will be explained on location. The new Overseas Operating Room is the telephone crossroads of the world. Eighty-five countries are within easy reach of the overseas operators—by radio telephone.

AIEE groups will also be taken backstage into the Overseas Control Room and the Audio and Video Network Center to the Bell System's New York Television Network Center. The Coaxial Cable Terminal Room and the Microwave Radio Relay Equipment on the roof of the building will also be seen.

Wednesday afternoon, February 1

Standard Oil Co. of New Jersey, Esso Bayway Refinery and Research Center. The Esso Bayway Refinery is one of the world's largest, taking crude oil and converting it into gasoline, kerosene, diesel oil, fuel oils, lubricating distillate and a whole series of chemicals and specialty products. There are many tremendous units—pipe stills, polymerization units and both thermal and fluid catalytic cracking units. The newest "Cat" cracker, just recently installed, is the largest in the world, rising above the refinery higher than an eighteen-story building.

The Esso Research Center provides modern air-conditioned working facilities for 600 persons engaged in the development of the fuels and lubricants of the future, rubber-like materials, resins and plastics.

Wednesday evening, February 1

The New York Herald Tribune is one of America's great daily newspapers, and is produced in a modern twenty-story publishing plant. In this plan visitors will see its many departments, including the Home Institute testing kitchens, reader service, advertising, promotion, financial, editorial, picture department, editorial-art, city newsroom, foreign desk, wire-service room, the linotype machines, press room and mailing machines.

Thursday, all day, February 2

U. S. Signal Corps Engineering Laboratories at Fort Monmouth, N. J. This is the home of the Signal Corps, and one

TECHNICAL PROGRAM

of the greatest military training and technological centers of its kind in the world. Research and development operations are carried on in three closely integrated laboratories known as Squier, Coles and Evans Signal Laboratories.

These technical activities embrace all phases of electronics, photography and meteorology, including the research, design and improvement of radio and communications television equipments, facsimile, nucleonic devices, radar and other fields. Concurrent research proceeds in components, batteries vacuum tubes, resistors, capacitors, transformers, coils and cables.

Approximately 2,000 scientists and supporting personnel are employed in this vast research and development program. The tour of these laboratories is restricted to United States citizens.

Thursday afternoon February 2

Cable Plant, Western Electric Company at Kearny, N. J. Products manufactured for the Bell System at this plant include lead sheath and Alpeth covered telephone cable. This is one of the largest cable plants in the country, and employs a number of unique processes, such as the application of pulp insulation by making paper directly on the wire, a stranding operation in which the spool of wire and take-up reel are on fixed axes and the twisting is done by a revolving flyer, vacuum drying of cable core where the heat is applied by passing a current through the conductor, and the manufacture of cable with an aluminum and polyethylene (Alpeth) sheath as a final covering in the place of the usual sheath of lead.

Thursday afternoon, February 2

WOR-TV Television Transmitter—Television Station WOR-TV is one of the newest and most modern of television stations. Its equipment includes a 5 Kw General Electric television transmitter, a 10 Kw General Electric FM transmitter, with associated consoles and control and utility equipment. Also to be seen is the DuMont three-channel video input, distribution and switching equipment.

This station has the largest and tallest television tower in the state, rising 1,050 feet above sea level.

Friday morning, February 3

WOR-TV Television Studio. Visitors to this recently completed television studio will see the two four-camera studios with their associated control rooms and equipment. A feature is the unique master control installation. The facilities include two General Electric 16 millimeter synchrolite film projectors and two Rex Cole 35 millimeter projectors with associated equipment, film and editorial rooms.

Friday afternoon, February 3

United States Lines S.S. America. The S.S. America is the largest liner ever built in the United States. Used during World War II as a troop carrier, she made her maiden voyage to Europe as a passenger liner on November 14, 1946. She has a gross tonnage of 36,000 and has a service speed of 20 knots and a reserve speed of 23 knots. She is powered by two sets of triple expansion turbines developing 34,000 shaft horsepower at 128 RPM. Her evaporators can manufacture 120,000 gallons of fresh water per day.

In addition to public rooms and staterooms, visitors will see the loran and radar installations, fire control station, radio room and engine room.

ADVANCE COPIES OF PAPERS

Members may obtain preprints of technical papers at the uniform price of **30c each (60c each to non-members)** by sending enclosed order form and remittance to the AIEE Order Department, 33 West 39th Street, New York 18, N. Y. Conference papers denoted by CP** are intended for presentation only, and are not available. Mail orders (particularly from out-of-town members) are advisable, inasmuch as an adequate supply of each paper at the meeting cannot be assured. Coupon books in $9 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.

To be seen during the A. T. & T. Inspection Trip

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Monday, January 30

10:00 a.m.—Transformers

50-8. Audible Noise of Power Transformers. T. D. Gordy, General Electric Co.

50-18. Harmonic Index—A Tool for Transformer Audio Noise Investigation. W. H. Mutschler, Jr., T. F. Madden, Allis-Chalmers Mfg. Co.

50-19. Audio Noise in Transformers in Residential and Commercial Areas. C. E. Baugh, Pacific Gas and Electric Co.

CP.** Transformer Sound Level Considerations. A. J. Maslin, Westinghouse Electric Corp.

CP.** Quiet Transformer Installations—A Problem for Both Equipment and Substation Designers. I. S. Mendenhall, F. L. Taylor, The Detroit Edison Co.

10:00 a.m.—Rotating Machinery

50-1. Suggested Improvements in the Performance Calculations of Single-Phase Induction Motors. M. S. Thacker, H. V. Gopalakrishna, Indian Institute of Science.

50-20. Generator Rating of Induction Motors. Otto J. M. Smith, University of California.

50-21. Quick and Accurate Production Testing on Large D-C Apparatus. M. J. Baldwin, H. D. Barnhart, General Electric Co.

50-22. Transient Response of Direct Current Dynamos. H. E. Koenig, University of Illinois.

50-23. Maximum Short Circuit Current of D-C Motors and Generators. Subcommittee on D-C Machinery. Prepared by A. G. Darling.

10:00 a.m.—New Electronic Devices, Applications and Techniques

CP.** Magnetic Modulation of Photo-currents and Its Application. H. P. Kalmus, National Bureau of Standards.

CP.** Magnetic Current Regulators. C. A. Black, H. A. Gauper, General Electric Co.

CP.** Manufacture of Electron Tube Parts by the Rubber-die Technique. W. J. Bachman, Radio Corp. of America.

CP.** Optical Contour Follower Control for Machine Tools. T. M. Berry, General Electric Co.

10:00 a.m.—Electric Heating

CP.** Induction Preheating of Electrolytic Tin Plate for Flow Brightening with High Frequency Rotating Equipment. W. T. Thomas, General Electric Co.

CP.** Modern Electric Hot-Dip Galvanizing. C. J. Sodergren, F. A. Berwager, Consolidated Gas Electric Light and Power Co. of Baltimore.

CP.** New Controlled Infrared Heat for Industry. J. E. Kolb, Edwin L. Wiegand Co.

10:00 a.m.—Industrial Control and Feedback-Control Systems

50-24. Characteristics of Some Magnetic-Fluid Clutch Servomechanisms. A. J. Parziale, Massachusetts Institute of Technology; P. D. Tilton, Vickers Electric Divn. of Vickers, Inc.

CP.** Speed of Response of Saturable Reactors. H. F. Storm, General Electric Co.

50-25. ACO.* An Electronic Synchronous Speed Regulator. William J. M. Moore, National Research Council.

CP.** Standard Nomenclature for Feedback-Control Systems. Subcommittee on Nomenclature.

10:00 a.m.—Developments in Long Tube Fluorescent Lighting

CP.** Long Tube Lamp Trends. T. C. Sargent, Sylvania Electric Products, Inc.

CP.** Ballast Developments for Long Tube Lamps. G. C. Harvey, General Electric Co.

CP.** Fixture Design as Affected by Long Tube Lamps. H. P. Steele, Benjamin Electric Mfg. Co.

CP.** The Application and Installation of the Long Tube Lamp. B. F. Greene, New York, N. Y.

2:30 p.m.—General Session

Tuesday, January 31

9:30 a.m.—Transformers and Protective Devices

CP.** Control Transformers. J. M. Frank, A. J. Hauck, Hevi Duty Electric Co.

50-17. Margins Between Arrester Protective Levels and Transformer Insulation. F. J. Vogel, Illinois Institute of Technology.

50-14. Lightning Arresters as a Criterion for Insulation Levels. H. L. Rorden, Bonneville Power Administration.

50-26. Application and Handling of Very Large Power Transformers on the System of the Bonneville Power Administration. Richard F. Stevens, Bonneville Power Administration.

50-99. ACO.* Proposed Changes in Methods in Making Temperature Rise Tests on Transformers. Committee on Transformers.

CP.** Operation of Bushings in Carbonized Oil. W. R. Wilson, L. Wetherill, General Electric Co.

9:30 a.m.—Rotating Machinery

50-27. ACO.* Light Weight Turbine Generator Rotors. Th. de Koning, Philadelphia, Pennsylvania.

50-28. Liquid Cooling of A.C. Turbine Generators. II. Carl J. Fechheimer, Milwaukee, Wis.

50-29. Surface Heat-Transfer Coefficients for Hydrogen-Cooled Rotating Electric Machines. D. S. Snell, R. H. Norris, Mrs. B. O. Buckland, General Electric Company.

50-30. Loading of Hydrogen Cooled Generators at Elevated Gas Pressures. D. S. Snell, General Electric Co.

9:30 a.m.—Telephone and Telegraph Transmission Systems

50-10. A Two-Channel Carrier Telegraph System for Short Submarine Cables. E. L. Newell, C. H. Cramer, Western Union Telegraph Co.

50-6. A New Electronic Telegraph Regenerative Repeater. B. Ostendorf, Jr., Bell Telephone Laboratories, Inc.

50-101. ACO.* Magnetic Cores of Thin Tape Insulated by Cataphoresis. H. L. B. Gould, Bell Telephone Laboratories, Inc.

CP.** Compandors for Telephone Circuits. P. G. Edwards, Bell Telephone Laboratories, Inc.

50-13. A Printing Telegraph Tape-to-Page Translator. A. E. Frost, The Western Union Telegraph Co. Presentation by title only.

9:30 a.m.—Electrostatic Processes I

CP.** Limitations of Conductance Electrostatic Separators. G. W. Penney, Carnegie Institute of Technology; G. W. Hewitt, Westinghouse Electric Corp.

CP.** A Discussion of Methods for the Measurement of Space Charge Density. W. B. Dodson, American Air Filter Co.

CP.** Electrical Charging of Dielectric Films Used in Xerography. C. D. Oughton, J. J. Rheinfrank, J. P. Ebert, Battelle Memorial Institute.

9:30 a.m.—Large Electronic DC Motor Drives

50-31. ACO.* Large Electronic DC Motor Drives in Industry. M. M. Morack, General Electric Co.

50-32. Control of Large D-C Motors Supplied from Ignitron Rectifiers. O. W. Livingston, General Electric Co.

50-33. Rectifier Equipment for Electronic D-C Motor Drives. M. J. Mulhern, S. N. Crawford, General Electric Co.

50-34. Application of Electronic Motor Drives to Printing Presses. J. A. Johnson, Times-Mirror Co.; E. M. Stacey, General Electric Co.

9:30 a.m.—Computing Devices

50-15. Analogue Computer for Multi-Component Fractionation Calculations. G. W. Goelz, J. F. Calvert, Northwestern University.

50-47. An Electronic Simulator for Nonlinear Servomechanisms. Charles M. Edwards, E. Calvin Johnson, Jr., Massachusetts Institute of Technology.

50-48. A Generalized Analogue Computer for Flight Simulation. Albert C. Hall, Massachusetts Institute of Technology.

CP.** Technique of Handling Power System Problems on a Modern AC Network Calculator. P. O. Bobo, Westinghouse Electric Corporation.

50-85. New Techniques on the Anacom. E. L. Harder, J. T. Carleton, Westinghouse Electric Corp.

2:00 p.m.—Sections Committee

2:00 p.m.—Centralized Station Control

CP.** Centralized Station Control. J. M. Drabelle, Iowa Electric Light and Power Co.

50-91. Centralized Instrumentation and Controls for Steam Electric Power Stations. B. C. Mallory, Stone and Webster Engineering Corp.

50-92. Design and Operation of Central Control Rooms. B. F. Borgel, Pennsylvania Elec. Co.

CP.** Centralized Control Desirable for Single Boiler-Turbine-Generator Units. J. A. Lind, J. M. Geiger, Buffalo Niagara Electric Corp.

2:00 p.m.—Rotating Machinery

50-36. Spring and Damping Coefficients of Synchronous Machines and Their Application. L. A. Kilgore, E. C. Whitney, Westinghouse Electric Corp.

50-37. ACO.* Analysis of Synchronous Machine Short Circuits. Robert D. Camburn, Commonwealth and Southern Corp.; Eric T. B. Gross, Illinois Institute of Technology.

50-38. Per Unit Inductances of Synchronous Machines. H. S. Kirschbaum, Ohio State Univ.

50-39. Potier Reactance for Salient-Pole Synchronous Machines. Saad L. Mikhail, Cambridge, Mass.

CP.** Design Calculations for A-C Generators. David Ginsberg, U. S. Engineer Research and Development Laboratories.

2:00 p.m.—Telephone Switching

50-40. Basic Theory Underlying Bell System Facilities Capacity Tables. A. L. Gracey, American Telephone and Telegraph Co.

50-41. The No. 5 Crossbar Dial Telephone Switching System. F. A. Korn, James G. Ferguson, Bell Telephone Laboratories, Inc.

50-42. Fundamentals of the Automatic Telephone Message Accounting System. John Meszar, Bell Telephone Laboratories, Inc.

2:00 p.m.—Symposium on Magnetics

CP.** Magnetostriction and its Measurement. J. E. Goldman, Westinghouse Electric Corp.

CP.** Magnetostriction of Single Crystals of Iron-Silicon. W. J. Carr, Westinghouse Electric Corp.

CP.** Magnetostriction of Permanent Magnets and Other Materials. E. A. Nesbitt, Bell Telephone Laboratories, Inc.

CP.** Recent Developments in Commercially Available Magnetic Materials. L. C. Hicks, Allegheny Ludlum Steel Corp.

CP.** The Properties of Electrical Sheet for Rotating Machinery. H. F. Shannon, Carnegie-Illinois Steel Co.

2:00 p.m.—Electrostatic Processes II

CP.** Suggested Standards for Electrical Power Supplies Used in Electrostatic Precipitation. W. D. Cockrell, H. V. Nelson, General Electric Co.

CP.** Electrical Precipitators for De-tarring Manufactured Gas. A. N. Anderson, Consolidated Edison Company of New York.

CP.** Electrocoating Sandpaper and Textile Fabrics. J. O. Amstuz, Behr-Manning Corp.

2:00 p.m.—Feedback-Control Systems

50-43. ACO.* An Airborne Synchronized Motion Picture Camera Recording System. Viola J. White, Sidney J. Horwitz, Northwestern University.

50-44. A Frequency-Response Method for Analyzing and Synthesizing Contactor Servomechanisms. R. J. Kochenburger, Massachusetts Institute of Technology.

50-45. Phase Lead for A-C Servo Systems with Compensation for Carrier Frequency Changes. A. P. Notthoff, Jr., Massachusetts Institute of Technology.

50-11. Control System Synthesis by Root Locus Method. W. R. Evans, North American Aviation, Inc.

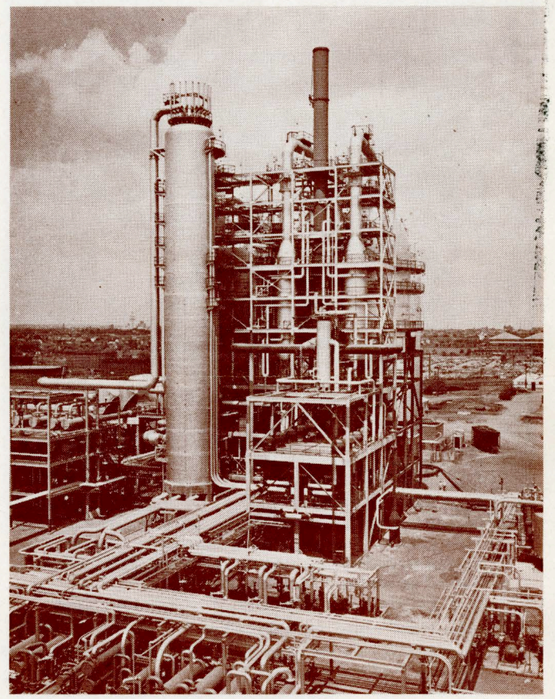
50-103. Static Accuracy Performance of the Selsyn Generator Control-Transformer System. G. Kronacher.

50-46. Improvements in the Characteristics of A-C Lead Networks for Servomechanisms. D. McDonald, University of Michigan. Presentation by title only.

Wednesday, February 1

9:30 a.m.—Excitation Systems

50-49. Excitation System Performance with Motor-Driven Exciters. A. G. Mellor, M. Temoshok, General Electric Co.



Fluid Catalytic Cracking Unit, Esso Bayway Refinery

50-50. Design and Test on Electronic Exciter Supplied From Common Shaft Driven Generator. A. P. Colaiaco, A. A. Johnson, J. E. Reilly, Westinghouse Electric Corp.

50-51. Excitation Improvement. A. H. Phillips, Gilbert Associates, Inc.; W. H. Lambert, D. R. Pattison, Pennsylvania Electric Co.

9:30 a.m.—Insulated Conductors

50-52. The Thermal Resistance Between Cables and a Surrounding Pipe or Duct Wall. F. H. Buller, General Electric Co.; J. H. Neher, Philadelphia Electric Co.

50-53. Development of Improved Luminous Sign Cable. L. F. Roehmann, E. W. Greenfield, Anaconda Wire and Cable Co.

50-54. ACO.* Terminals and Joints for Insulated Power Cables, Electrical Design Considerations. L. F. Roehmann, Anaconda Wire and Cable Co.

50-55. Heat Transfer Study on Power Cable Ducts and Duct Assemblies. Paul Greebler, Johns-Manville; Guy F. Barnett, Philco Radio and Television Corp.

9:30 a.m.—Mobile Radio

CP.** Design of Communication Equipment for Maximum Channel Utilization. L. P. Morris, Galvin Mfg. Corp.

CP.** Allocation of Frequencies for Railroad Use. L. W. Kearney.

CP.** Pulse Time Modulation Telemetering Systems for Rocket Application. J. T. Mengel, Naval Research Laboratory.

9:30 a.m.—Symposium on Magnetics

CP.** Growing Oriented Crystals and Their Magnetic Properties. W. Morrill, General Electric Co.

CP.** Magnetic Anisotropy in Single Crystals of Fe-Co Alloys. H. J. Williams, Bell Telephone Company.

Digests of most papers will appear in ELECTRICAL ENGINEERING

CP.** Recording Fluxmeter. P. P. Cioffi, Bell Telephone Laboratories, Inc.

CP.** Magnetic Powders. C. C. Neighbors, Consulting Engineer.

9:30 a.m.—Nucleonic Instruments

CP.** Pulse Amplitude Discriminators. H. G. Weiss, Raytheon Mfg. Co.

CP.** The Brookhaven Cosmotron. M. G. White, G. K. Green, J. P. Blewett, Brookhaven National Laboratory.

CP.** Nuclear Pulses and Their Amplification. H. E. DeBolt, Westinghouse Electric Corp.

CP.** Equipment for Uranium Prospecting. Frank Stead, U. S. Dept. of the Interior.

CP.** The Control Problems of a Power Producing Nuclear Reactor. J. M. Harrer, Argonne National Laboratory.

9:30 a.m.—Gas Conduction Electron Tubes

CP.** Clean-up of a Noble Gas in an Arc Discharge. M. J. Redden, U. S. Bureau of Standards.

50-56. Statistical Nature and Physical Concepts of Thyratron Deionization Time. H. A. Romanowitz, University of Kentucky; W. G. Dow, University of Michigan.

CP.** Pulse Test Method for Deionization Time Measurement. H. H. Wittenberg, Radio Corp. of America.

CP.** Commutation Factor Rating of Inert Gas Thyratrons and its Influence on Circuit Design. D. E. Marshall, C. L. Shackleford, Westinghouse Electric Corp.

9:30 a.m.—Electric Welding

CP.** Electronically Controlled Head for Electrode Testing. Bela Ronay, U. S. Naval Engineering Experiment Station.

CP.** Preheating and Stress Relieving. E. H. Wilhelm, U. S. Naval Engineering Experiment Station.

CP.** Stud Welding. R. C. Singleton, Morton-Gregory Corp.

9:30 a.m.—Conference on Education

CP.** The Continued Education of the Engineer in Industry. J. C. McKeon, Westinghouse Electric Corp.

CP.** Orientation and Training of the Young Engineer in Industry. Guy Kleis, Westinghouse Electric Corp.; J. S. Crout, Batelle Memorial Institute.

CP.** Professional Registration of the Young Engineer. H. L. Solberg, Purdue University.

CP.** Self-Appraisal Methods for Valuable Characteristics in Engineering. A. R. Cullimore, Newark College of Engineering.

CP.** Integrating the Young Engineer Into His Community. K. B. McEachron, General Electric Co.

2:00 p.m.—Power Generation

50-57. Effect of Buck-Boost Voltage Regulator on Steady State Power Limit. Charles Concordia, General Electric Co.

50-58. Regulation of A-C Generators with Suddenly Applied Loads —II. E. L. Harder, R. C. Cheek, J. M. Clayton, Westinghouse Electric Corp.

50-59. Bus Transfer Tests on 2300-Volt Station Auxiliary System. A. A. Johnson, Westinghouse Electric Corp.; H. A. Thompson, Duquesne Light Company.

2:00 p.m.—Switchgear

50-4. ACO.* Outdoor Metal Clad Switchgear. P. R. Pierson, Westinghouse Electric Corp.

50-60. A New Grounding and Testing Device for Metal Clad Switchgear. H. Krida, E. T. McCurry, General Electric Co.

50-12. High Voltage Oil Circuit Breakers for 5,000,000 to 10,000,000 Kva Interrupting Capacity. W. M. Leeds, R. E. Friedrich, Westinghouse Electric Corp.

5-3. Development and Testing of an Improved High-Voltage High-Capacity Impulse Breaker. E. B. Rietz, General Electric Co. Presentation by title only.

50-61. A New 69-Kv Oil Blast Circuit Breaker. E. B. Rietz, C. J. Balentine, General Electric Co. Presentation by title only.

2:00 p.m.—Microwave Communication and Control Systems

CP.** The Keystone Pipe Line PTM Microwave Link. E. B. Dunn, Keystone Pipe Line Co.; A. J. Finocchi, Federal Telecommunication Laboratories, Inc.

CP.** Power Line Fault Locator Utilizing Pulse Time Modulation Radio Relays. R. W. Hughes, Nelson Weintraub, Federal Telecommunication Laboratories, Inc.

CP.** Radio Links for Television. E. M. Ostlund, Federal Telecommunication Laboratories, Inc.

2:00 p.m.—The Electrical Properties of Gases

CP.** Gaseous Conduction Phenomena and their Application in Electrical Engineering. J. D. Cobine, General Electric Co.

CP.** Mechanism of the Spark Breakdown. L. H. Fisher, New York University.

CP.** Fundamental Processes in Gaseous Tube Rectifiers. A. W. Hull, General Electric Co.

CP.** Microwave Gas Discharges. M. A. Biondi, Westinghouse Electric Corp.

2:00 p.m.—Instrument Transformers

50-62. Orthomagnetic Bushing Current Transformer. J. W. Farr, General Electric Co.

50-63. A Survey of Bushing Type Current Transformers for Metering Purposes. G. Camilli, General Electric Co.

50-64. The Theory of the Current Transductor and Its Application in the Aluminum Industry. T. R. Specht, Westinghouse Electric Corp.; R. N. Wagner, Aluminum Co. of America.

50-65. Application Guide for Grounding of Instrument Transformer Secondary Circuits and Cases. Working Group of the Subcommittee on Instrument Transformers.

50-66. A New Dry Type Insulation for Instrument Transformers. R. A. Pfuntner, R. E. Franck, F. R. D'Entremont, General Electric Co.

50-67. ACO.* A Primary Method of Measuring the Ratio and Phase Angle of Current Transformers. A. L. Brownlee, Commonwealth Edison Co.

2:00 p.m.—Magnetic Amplifiers

50-76. An Analysis of Transients in Magnetic Amplifiers. D. W. VerPlanck, L. A. Finzi, D. C. Beaumariage, Carnegie Institute of Technology. Presentation by title only.

50-94. An Analysis of Transients and Feedback in Magnetic Amplifiers. W. C. Johnson, Princeton University; F. W. Latson, Kellex Corp.

50-93. ACO.* Magnetic Amplifiers of the Balance Detector Type—Their Basic Principles, Characteristics, and Applications. W. A. Geyger, U. S. Naval Ordnance Laboratory.

50-95. A Magnetic Amplifier Frequency Control. L. J. Johnson, H. G. Schafer, Naval Research Laboratory.

2:00 p.m.—Electric Welding

CP.** Unionmelt Automatic Welding Control. J. A. Kratz, The Linde Air Products Co.

CP.** Submerged Arc Welding Control. L. K. Stringham, The Lincoln Electric Co.

CP.** Power Saving Controls. F. H. Varney, D-V Welding Controls.

2:00 p.m.—Industrial Control

CP.** Control Sequence of D-C Adjustable-Voltage Drives. E. E. Moyer, Rensselaer Polytechnic Institute; M. E. Cummings, Bell Telephone Co.

CP.** The Operating Time of D-C Magnet Brakes. J. E. Ryan, General Electric Co.

CP.** Basis of Rating a Plate Rheostat. L. J. Parkinson, General Electric Co.

CP.** Practical Design of Industrial Regulating Systems. S. L. Burgwin, Westinghouse Electric Corp.

Thursday, February 2

9:30 a.m.—Transmission and Distribution

50-96. Dielectric-Recovery Characteristics of Power Arcs in Large Air Gaps. G. D. McCann, J. E. Conner, H. M. Ellis, California Institute of Technology.

50-97. Total and Incremental Losses in Power Transmission Networks. J. B. Ward, J. R. Eaton, H. W. Hale, Purdue University.

50-98. A Voltage Gradient Meter. R. L. Tremaine, R. C. Cheek, Westinghouse Electric Corp.

9:30 a.m.—Symposium on Relays

50-7. Combined Phase and Ground Distance Relaying. W. C. New, General Electric Co.

50-16. Consideration of Requirements and Limitations of Relaying and High-Speed Reclosing on Long and Heavily Loaded Transmission Lines. C. E. Parks, Public Service Co. of Indiana, Inc.; W. R. Brownlee, Commonwealth and Southern Corp.

50-68. Relay Protection for Medium Length High Voltage Transmission Lines. J. H. Kinghorn, American Gas and Electric Service Corp.

50-69. Transmission Line Protection of Short Lines of the Metropolitan Area of a Typical System. W. E. Marter, Duquesne Light Co.

50-70. Sensitive Ground Protection. Project Committee of Relay Committee.

9:30 a.m.—Broadcasting Facilities

CP.** A 5 KW Iron Core Coupled Radio Transmitter. L. F. Deise, L. W. Gregory, Westinghouse Electric Corp.

50-71 ACO.* The Application of Germanium Diodes in High and Ultra High Frequency Television Receivers. J. H. Sweeney, General Electric Co.

CP.** WOR-TV Television Station Construction Problems. Charles Singer, Radio Station WOR-TV.

CP.** A Cathode Ray Sweep Transformer with Ceramic Iron Core. C. E. Torsch, General Electric Co.

50-72. Clampers in Video Transmission. S. Doba, Jr., J. W. Rieke, Bell Telephone Laboratories, Inc. Presentation by title only.

9:30 a.m.—Electric Batteries

CP.** Primary Cells. Charles Clarke, Signal Corps Engineering Laboratories.

CP.** Storage Cells. Hyman Mandell, Signal Corps Engineering Laboratories.

CP.** One-Shot Batteries. Adolph Fishboch, Signal Corps Engineer Laboratories.

9:30 a.m.—Instruments and Measurements

CP.** Equipment for Instrument Calibration. E. A. Gilbert, Radio Frequency Laboratories, Inc.

50-73. Non-Contacting Thickness Gage Using Beta Rays. C. W. Clapp, S. Bernstein, General Electric Co.

50-74. An Improved Method of Measuring Dissipation Factor and Dielectric Constant Using The Susceptance Variation Principle. C. F. Miller, The Johns Hopkins University; F. G. Whelan, Association of American Railroads.

50-75. ACO.* Three-Phase Measurements of Resistance. L. W. Matsch, N. C. Basu, Illinois Institute of Technology; G. R. Horcher, University of Kansas.

CP.** Power Measurement by the Hook-on Method. A. J. Corson, A. L. Nylander, General Electric Co.

50-89. Impulse Measurements by Repeated-Structure Networks. C. L. Dawes, C. H. Thomas, Harvard University; A. B. Drought, Marquette University. Presentation by title only.

50-90. The Irradiation of Spark Gaps for Voltage Measurement. D. R. Hardy, J. D. Craggs, The University of Liverpool. Presentation by title only.

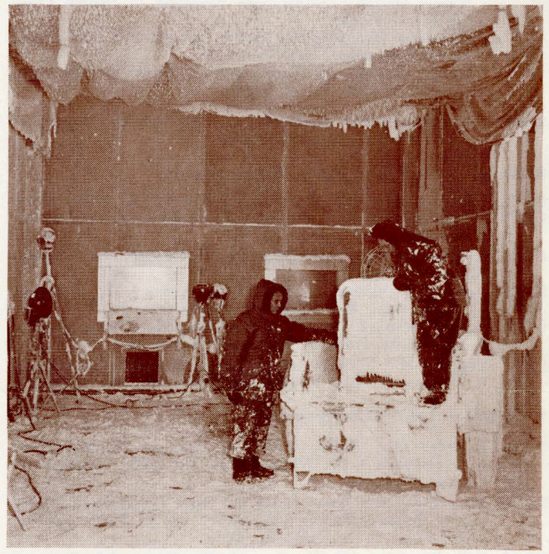
9:30 a.m.—Electron Tubes

CP.** Microphonism Investigation. Lester Feinstein, Sylvania Electric Products, Inc.

CP.** The Use of Conductance Curves for Pentode Circuit Designs. A. H. Hodge, K. A. Pullen, Aberdeen Proving Ground.

CP.** Arc Drop of Hot Cathode Gas Tubes in Service—Measurement Methods and Data. E. K. Smith, Electrons, Inc.

CP.** A Cold Cathode Counting or Stepping Tube. M. A. Townsend, Bell Telephone Labs., Inc.



"Operation Snowflake," Squier Signal Laboratory

9:30 a.m.—Land Transportation

50-77. The Alco-GE 4500-HP Gas-Turbine Electric Locomotive. A. H. Morey, General Electric Co.

50-78. Control System for a 4500-HP Gas-Turbine Electric Locomotive. T. J. Warrick, General Electric Co.

50-79. Rotating Electric Equipment for a Gas-Turbine Electric Locomotive. O. C. Coho, General Electric Co.

9:30 a.m.—General Industry Applications

CP.** Explosion Hazards in Industry and Their Relation to Electrical Installations. K. Pinder, E. I. du Pont de Nemours and Co.

CP.** Underwriters Laboratories Classification and Test of Electrical Equipment for Hazardous Locations. A. F. Matson, Underwriters Laboratories, Inc.

CP.** Motor Selection for Hazardous Locations. J. Z. Linsenmeyer, Westinghouse Electric Corp.

CP.** Wiring Equipment and Methods for Hazardous Locations. O. H. Bissell, Crouse-Hinds Co.

50-9. Basic Patterns for Arrangement of Electric Power Systems for Steel Mills. H. J. Finison, Armour Research Foundation. Presentation by title only.

2:00 p.m.—Conference on Facsimile

CP.** Radiophoto Practices and Problems. Russell Hammond, RCA Communications, Inc.

CP.** Facsimile Broadcasting. J. V. L. Hogan, Hogan Laboratories.

CP.** An 1800-Cycle Synchronous Motor. A. G. Cooley, Times Facsimile Corp.

CP.** Telegraph Office Desk-Fax Concentrator. A. W. Breyfogel, J. H. Hackenberg, F. G. Hallden, The Western Union Telegraph Co.

CP.** Electronic Flat Scanning Facsimile Applications. W. G. H. Finch, C. R. Jones, Finch Telecommunications, Inc.

2:00 p.m.—Operation of Power Systems at Leading Power Factor

Conference papers and informal discussions covering the following subjects:

System Design Considerations Resulting in System Leading Power Factor.
Generator Design Characteristics Determining Safe Power Factor Operating Limits.
Review of Tests and Experiences of Power Systems Operating at Leading Power Factor.

2:00 p.m.—Statistical Analysis as Applied to Electrical Engineering Problems

2:00 p.m.—High-Frequency Measurements

CP.** Television Transient Analyzer. Joseph Fisher, Philco Corp.
CP.** Television Impulse Interference Generator. Jack Fogarty, Philco Corp.
CP.** A Versatile Microwave Measuring Equipment. S. C. Clark, General Electric Co.
50-80. Automatic Calibration of Oscillator Scales. W. J. Means,
ACO.* T. Slonczewski, Bell Telephone Laboratories, Inc.
CP.** Determination of Attenuation from Impedance Measurements. R. W. Beatty, National Bureau of Standards.
CP.** Progress and Development of Crystal Unit Test Oscillators. L. F. Koerner, Bell Telephone Laboratories, Inc.

2:00 p.m.—Land Transportation

50-81. Rectifier Type Motive Power for Railroad Electrifications. L. J. Hibbard, C. C. Whittaker, E. W. Ames, Westinghouse Electric Corp.
50-100. Solderless Commutator Joints for High Temperature Operation of Railway Traction Armatures. J. R. Reed, National Electric Coil Co. of Columbus, Ohio.
CP.** Full Power at all Speeds — A Significant Advantage of Modern Locomotive Transmissions. Charles Kerr, Jr., Westinghouse Electric Corp.
(Presentation of this program will be followed by a meeting of the Committee on Land Transportation.)

2:00 p.m.—Safety Activities of the AIEE

CP.** Electrical Hazards to Farm Stock Prepared for Safety Committee of the American Institute of Electrical Engineers. W. B. Buchanan, The Hydro-Electric Power Comm. of Ontario.
CP.** Rural Neutral Potentials. J. H. Waghorne, The Hydro-Electric Power Comm. of Ontario.
CP.** Protective Grounding of Electrical Installations on Customer's Premises. A. H. Schirmer, Bell Telephone Laboratories, Inc.
50-2. Electric Fences. C. F. Dalziel, University of California. Presentation by title only.

Friday, February 3

9:30 a.m.—Protective Devices

50-82. New Lightning Arrester Standard. H. R. Stewart, New England Power Service Co.; F. M. Defandorf, National Bureau of Standards.
50-83. Surge Protection of Cable Connected Equipment. R. L. Witzke, T. J. Bliss, Westinghouse Electric Corp.
CP.** Power System Fault Control. F. R. Longley, Western Massachusetts Electric Co.
(A report by the Committee on Protective Devices.)

9:30 a.m.—Symposium on Dielectrics

CP.** Dielectrics in Electrical Engineering. A. von Hippel, Massachusetts Institute of Technology.
CP.** Structure and Polarization of Atoms and Molecules. J. C. Slater, Massachusetts Institute of Technology.
CP.** Relaxation Phenomena in Liquids and Solids. C. P. Smyth, Princeton University.
CP.** Modern Plastics. H. Mark, T. Alfrey, Polytechnic Institute of Brooklyn.

9:30 a.m.—Electronic Instruments

50-5. The Direct Measurement of Bandwidth. C. R. Ammerman, The Pennsylvania State College.
CP.** An Electron Tube Characteristic Generator. M. L. Kuder, National Bureau of Standards.
CP.** Thermal Feedback Circuit for Computation and RMS Measurement. R. D. Campbell, Reed Research, Inc.
CP.** A New Cathode Ray Oscillograph for Impulse Testing. W. G. Fockler, Allen B. DuMont Laboratories, Inc.
50-84. The Metrotype System of Digital Recording and Telemetering. G. E. Foster, Metrotype Corp.

9:30 a.m.—Chemical, Electrochemical and Electrothermal Applications

CP.** Cable Insulation for Chemical Plants. L. F. Hickernell, Anaconda Wire and Cable Co.
CP.** Cable Insulation for Chemical Plants. J. J. FitzGibbon, General Electric Co.
CP.**. Cable Insulation for Chemical Plants. R. C. Graham, Rome Cable Corp.
CP.** Cable Insulation for Chemical Plants. E. W. Davis, Simplex Wire and Cable Co.

9:30 a.m.—Domestic and Commercial Applications

CP.** A Critical Examination of Heat Sources and Sinks for Heat Pumps. C. H. Coogan, University of Connecticut.
CP.** Research in Heat Pump Systems. G. H. Hickox, University of Tennessee.
CP.** Heat Pump Design. T. C. Johnson, General Electric Co.
CP.** Radiant Panel Heating. R. C. Cassidy, U. S. Rubber Co.
CP.** Radiant Electric Heating. L. N. Roberson, Seattle, Wash.
50-35. Flame Detectors for Domestic Fuel Burner Safety Devices. J. A. Deubel, Perfex Corp. Presentation by title only.
50-102. Synthetic Load for Testing Rectifiers. C. L. Tetherow, Underwriters Laboratories, Inc. Presentation by title only.

2:00 p.m.—Symposium on Dielectrics

CP.** Conduction Phenomena in Gases. J. P. Molnar, Bell Telephone Laboratories, Inc.
CP.** Conduction in Liquids and Plastics. R. M. Fuoss, Yale University.
CP.** Fluorescence and Phosphorescence. P. Pringsheim, Atomic Energy Commission.

2:00 p.m.—Symposium on Instruments for Testing Insulating Oils, Oil Conditions in the Field and the Effects of Remedial Measures

2:00 p.m.—Chemical, Electrochemical and Electrothermal Applications

50-86. Design and Control of Ferro Alloy Furnaces. F. V. Andreae, Southern Ferro Alloys Co. Presentation by title only.
50-87. Electrical Equipment and Operation of Graphitizing Furnaces. E. R. Cole, The Dow Chemical Co. Presentation by title only.
58-88. Electrode Control and Associated Operating Mechanisms. E. A. Hanff, Swindell-Dressler Corp. Presentation by title only.
CP.** Cable Insulation for Chemical Plants. H. E. Houck, E. I. duPont de Nemours and Co.
CP.** Cable Insulation for Chemical Plants. F. S. Glaza, Dow Chemical Co.
CP.** Cable Insulation for Chemical Plants. J. A. Horacek, Diamond Alkali Co.

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

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Issued by
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS
33 West 39th Street, New York 18, N. Y.
PRINTED IN U.S.A.