Winter General Meeting

January 21-25, 1957

Headquarters
Hotel Statler

The AIEE Winter General Meeting to be held at the Hotels Statler and the Sheraton-McAlpin in New York, New York, January 21-25, 1957, will feature one of the largest technical programs in the history of the Institute. The social activities ,for which the Winter General Meeting is known, will again be one of the outstanding activities. A group of varied and interesting inspection trips has been arranged closely allied with the technical sessions. Your attention is drawn to the stub of the advance registration card in connection with three of these inspection trips.

GENERAL SESSION: At the General Session on Monday, January 21, at 2 P.M., Mr. Frederick R. Kappel, President of the American Telephone & Telegraph Company, will give the principal address. At this meeting, the Edison Medal will be awarded to Dr. Comfort A. Adams, Past President of the Institute and the Institute Paper Prizes will be presented. President M. S. Coover will open the session with his report to the membership.

INFORMAL TEA: This social gathering before the formal program begins has been enjoyed by more and more people each year. Make it a point to attend this year—Sunday afternoon, January 20, from 4 to 6 p.m., in the Georgian Room of the Statler. There will be no charge.

HOTEL RESERVATIONS: The general headquarters will be at the Hotel Statler but a number of the Technical Sessions and Committee Meetings will be held at the Sheraton McAlpin. Modernization of both meeting rooms and guest rooms is under way at the Sheraton McAlpin, which is just a block away from the Statler, and the Committee is confident that the accommodations will be satisfactory.

Blocks of rooms have been set aside for us at the hotels indicated below covering both the Pennsylvania and Grand Central areas, and rates are listed for your guidance in requesting reservations.

HOTEL STATLER, 7th Ave., 32nd to 33rd Streets.

Single Room	$ 8.00 to $12.00
Double Room	11.00 to 16.00
Twin Bedroom	11.50 to 19.00

HOTEL SHERATON McALPIN, Broadway, 33rd to 34th Streets

Single Room	$ 6.85 to $11.25
Double Room	10.35 to 14.75
Twin Bedroom	12.50 to 17.75
Suites	22.00 to 32.00

HOTEL NEW YORKER, Eighth Ave. and 34th Street

Single Room	$ 7.00 to $10.00
Double Room	10.00 to 14.00
Twin Bedroom	12.00 to 17.00

HOTEL MARTINIQUE, Broadway at 32nd Street

Single Room	$ 6.00 to $11.00
Double Room	9.00 to 14.00
Twin Bedroom	9.00 to 16.00

HOTEL COMMODORE, Lexington Ave. and 42nd Street

Single Room	$ 9.00 to $12.00
Double Room	12.50 to 15.50
Twin Bedroom	13.00 to 17.50

HOTEL ROOSEVELT, Madison Ave. and 45th Street

Single Room	$ 8.50 to $13.50
Double Room	14.00 to 17.50
Twin Bedroom	16.50 to 20.00

All rates quoted are subject to a 5% New York City occupancy tax.

Special Note: Because the time of our meeting conflicts with two other large groups in 1957, the hotels will be more crowded than we have experienced in recent years. *None of the hotels will guarantee us any rooms not reserved prior to January 7, 1957.* The Committee suggests that where possible, doubling up with a friend will not only save you money but will ease the hotel situation, also that you reserve for the entire week beginning Sunday, January 20th.

Please send your requests for reservation directly to the hotel of your choice, specifically referring therein to the AIEE meeting. Do not write to more than one hotel. If your request cannot be filled, the hotel will automatically refer the request to the Hotel Reservations Committee, which will endeavor to obtain a similar reservation at another of the Convention hotels.

THEATER TICKETS: As in the past, tickets to the following shows currently playing in New York will be available to AIEE members during the week of the meeting. All prices shown are brokers' prices.

	Evenings M, T, W, T	Evenings F, S	Matinees W
Damn Yankees Gwen Verdon	$8.60	$8.60	$5.15
Inherit the Wind Paul Muni	5.70	6.85	5.15
Li'l Abner Edith Adams Peter Palmer	9.15	9.15	5.90
Major Barbara Charles Laughton Burgess Meredith Cornelia Otis Skinner Eli Wallach	8.00	8.00	5.70
Middle of the Night Edward G. Robinson	6.85	6.85	5.15
New Faces of '56	8.00	8.60	5.70
No Time for Sergeants	5.70	6.85	5.20
Mr. Wonderful Sammy Davis, Jr.	8.00	8.60	5.70
The Diary of Anne Frank Gusti Huber Joseph Schildkraut	6.85	6.85	4.55
The Loud Red Patrick Arthur Kennedy David Wayne	6.85	6.85	5.15
The Most Happy Fella Robert Weeds	8.60	8.60	5.90
The Reluctant Debutante Adrianne Allen Hyde White	6.85	6.85	5.15*

* Mats. Thurs.

Checks should be made payable to: "Theater Ticket Committee, AIEE." Requests also should include first and second choice of both name and date of show, and should be sent to: Theater Ticket Committee, AIEE, c/o S. Friend, Jr., 75 Buena Vista Drive, Dobbs Ferry, N. Y.

SMOKER: A highlight of the Winter General Meeting will be the Smoker to be held Tuesday evening, January 22, 1957. Good food, good fellowship, and top quality entertainment will be the feature of this event which will take place in the Hotel Statler.

Attendance will be limited for the comfort of guests. Ticket requests should be mailed at an early date. The price remains at $10 per ticket and requests should be addressed to "AIEE Smoker Committee," 33 West 39th Street, New York 18, N. Y., accompanied by checks made payable to "Special Account, Secretary, AIEE."

DINNER-DANCE: At 7 p.m. on Thursday, January 24, the doors of the Grand Ballroom, Hotel Statler, are scheduled to open for the affair which climaxes the social events of the Winter General Meeting. Charles Peterson will supply the music. Reserve your place, or tables of ten now, by writing to the AIEE Dinner Dance Committe, American Institute of Electrical Engineers, 33 West 39th Street, New York 18, N. Y. Tickets are $12.50 each and checks should be made payable to "Special Account, Secretary, AIEE."

INSPECTION TRIPS: A program of inspection trips of both technical and general interest has been arranged for those attending the Winter General Meeting. Since the number of persons who may be accommodated on each of these trips is limited, members who are interested are urged to make arrangements and obtain full details at the Inspection Trips desk immediately after registering. Advance registration by mail will be accepted from "out-of-towners" for only the trips to Brookhaven National Laboratory, Bell Telephone Laboratories and the Merchant Marine Academy.

On some of the trips proof of U. S. Citizenship will be required,

and members should be prepared to comply with such security regulations as may be in force at the time of the trip.

Radio City Music Hall, New York, N. Y. (Tuesday morning, January 22, 1957). This ever popular trip has been scheduled again. Spectacular stage shows distinguished by unique lighting effects have made the Radio City Music Hall an outstanding attraction for visitors from all over the world. Members will see the backstage facilities as well as unusual features, such as the revolving sectionalized stage, elevating orchestra pit, motorized curtains and the multitude of electric and mechanical controls required for the special stage and lighting effects.

International Business Machines Corp., New York, N. Y. (Tuesday morning, January 22, Wednesday afternoon, January 23, Thursday afternon, January 24). The International Business Machines Corporation will demonstrate and explain the operation of their Type 705 Electronic Data Processing Machine, Type 704 Electronic Data Processing Machine, Type 650 Magnetic Drum Data Processing Machine and High Speed Printer.

In addition, numerous other electronic devices will be exhibited and the operation explained by technical personnel.

Grumman Aircraft Engineering Corp., Bethpage, L. I., N. Y. (Tuesday morning, January 22). A guided tour of the main production plant, including a demonstration of rubber press and stretch press forming of aluminum, spot welding of aluminum, flash welding of steel, anodizing, routing, sub and final assembly. Only United States citizens are permitted.

Ford Motor Company, Mahwah, N. J. (Tuesday afternoon, January 22). This plant offers a good opportunity to see all the interesting detail work that goes into the assembly of an automobile. On 961,000 square feet of floor space, 45 freight carloads of auto parts are converted daily by 2,800 employees, using 10 miles of conveyor lines and a 1,025-foot final car-assembly line, into completed cars and trucks. The 36-acre site of the plant includes the main assembly, steam power plant, and oil house.

Bell Telephone Laboratories, Murray Hill, N. J. (Tuesday afternoon, January 22). This very popular tour is again scheduled. The general activities of the Laboratory will be explained as well as the features of the transatlantic cable, transistors and the bell solar batteries. During the two-hour tour the visitor will also see the metallurgy, wood preservation, frequency standard and digital computer sections. For the convenience of out-of-towners advance registration will be accepted. Aliens are not excluded but must indicate their status on their reservation. Bus leaves Hotel Statler 12:45 P.M. returns 5:15 P.M. Reservation $2.00.

U. S. Merchant Marine Academy, Kings Point, N. Y. (Wednesday morning, January 23). This trip will consist of a general inspection of the facilities of the Academy. The outstanding features are the engineering laboratories and the laboratories relating to nautical science such as navigation, seamanship and naval architecture. All the laboratories contain equipment found on board ship and is in operating condition. The Electrical Laboratory contains an actual turbine electric propulsion system, while the Electronics Laboratory has radar, sonar, loran, radio detection finder, fathometer, gyro compasses, degaussing systems, radio transmitters and telephonic equipment. Bus leaves Statler—9:00 A.M. Ticket: $5.00 for Bus and Lunch.

Fairless Steel Plant, Fairless, Pa. (All day Wednesday, January 23). The Fairless Works is U. S. Steel's first integrated steel plant in the East and covers 3,000 acres of land near Trenton, N. J. of which 175 are under roof. The inspection party will see all of the operations including the stock pile of raw materials (iron ore, coal and limestone) the blast furnaces, open hearth plant, the hot strip mill, and the sheet and tin finishing mills.

This plant has an annual capacity of approximately 1,200,000 tons of pig iron which, when used in the plant's nine open hearth furnaces, furnish 1,800,000 tons of steel. The large amount of electric equipment used for driving and controlling various operations in the mills will also be of interest to our members.

Steinway and Sons, Astoria, L. I., N. Y. (Wednesday morning, January 23). Visitors to this famous institution will see skilled craftsmen fitting the soundboards and iron frames of pianos, and stringing, installing and regulating the keys and action. They will also see finishing, polishing and other specialized hand work which is the heart of the piano. An unusual opportunity to witness the work of the master artisan.

East River Generating Station, Consolidated Edison Company of New York, Inc., New York, N. Y. (Wednesday morning and afternoon, January 23). The East River Station of the Consolidated Edison Company is located at East 14th Street and East River Drive. Arrangements for the trip will include a short bus ride from the Statler Hotel to the Generating Station.

This will be a guided tour of New York City's second largest generating station located adjacent to a modern residential center which imposes stringent requirements on noise and smoke abatement. Since 1951 four 60-cycle units have been placed in service, each one rated 150,000 kilowatts or more. The tour will highlight these new units and their associated boilers and auxiliaries as well as the newest in 69 kv and 138 kv transformers, metal-clad bus and switchgear. Buses will leave Statler at 9:15 A.M. and 1:30 P.M.

Lincoln Tunnel Third Tube (Wednesday afternoon, January 23). The present Lincoln Tunnel comprises two dual-lane parallel tubes between midtown Manhattan and Weehawken, New Jersey. The south tube was opened to traffic in 1937 and the north tube in 1945. The cost for approaches and both tubes was $88,500,000.

Construction of the $100,000,000 third tube, which was begun in 1952 and is expected to be opened to traffic in April 1957, will increase the annual capacity of the tunnel by 50 percent and will double the peak hour capacity in the preponderant direction of traffic.

Visitors will be shown through the new and present ventilation buildings and will view the air handling and sampling equipment, the control room and the power distribution system. They will also be permitted to walk through and examine the new tube.

The duration of the tour will be approximately two and a half hours and ladies will be permitted to attend.

Brookhaven National Laboratory, Upton, New York. (All day Thursday, January 24). The facilities at this location are operated by Associated Universities, Inc., under contract with the Atomic Energy Commission, and constitute the Northeastern Center for nuclear research and development in the fields of physics, chemistry, Isology, medicine and engineering. Among the important exhibits which our members will see are the atomic pile, hot laboratory and the cosmotron. A complete tour has been arranged and competent guides, engineers and scientists will be on hand to explain fully the extensive facilities and exhibits which have been erected at this vast site. U. S. citizens only. Advance Registration and payment requested from out-of-towners. Bus leaves Statler at 8:00 A.M. Ticket: $5.50 for bus and lunch.

Bulova Watch Company, Jackson Heights, N. Y. (Thursday morning, January 24). On the two hour tour of the plant the visitor will see the manufacture and assembly of Bulova jeweled watches in one of the largest and most up-to-date plants of its kind.

Built to accommodate a complete manufacturing process on one floor, as well as to provide the most comfortable working conditions for its employees, this structure of 400,000 square feet floor space combines inspired architectural solidity and beauty with truly functional engineering design and workmanship.

Set in the center of a landscape of 23½ acres, of which 20 acres are devoted to athletic fields and playgrounds for use by the surrounding community, and the generous parking facilities for employees, the building is completely faced in Indiana limestone and its lobby is in Italian marble with carved murals by a skilled Parisian artist depicting the evolution of time.

The entire outside of the building is lighted at night by fifty-four large concealed floodlights, while the work areas are lighted by five miles of fluorescent tubing which provides more than twice the minimum required amount of footcandles to the work surfaces.

The factory and offices are supplied by 2000 tons of air conditioning capacity which includes a vacuum filtering system to control dust.

Western Electric Company, Kearny, New Jersey (All day Thursday, January 24). This is one of the largest manufacturing plants of this supply organization for Bell Telephone. Included in this tour will be the multi-conductor cable shop, relay blade manufacturing, and assembly of manual and automatic switchboard equipment.

Electrical Testing Laboratories, Inc., New York, N. Y. (Thursday afternoon, January 24). Since its inception in 1897 in a private incandescent lamp testing service, Electrical Testing Laboratories has grown to be one of the most complete independent laboratories of its kind in the country today. Its photometric department has long held national as well as international recognition for its work in the fields of photometry, colorimetry, and radiometry. Its electrical laboratory provides such services as the calibration of instruments and meters, oscillograph recordings, determination of electrical characteristics of material and devices, and performance tests of electric apparatus of various types. Of particular interest are a Molecular Beam Oscillator for use as a frequency standard, a balanced ambient room type calorimeter for measurement of room

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ADVANCED COPIES OF PAPERS

Members may obtain preprints of numbered papers at the uniform price of 40c each (80c 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 $10 denominations are available for those who wish to avoid remittance by check or otherwise. The Transactions Papers will also be published in the bimonthly publications.

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

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

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

Monday, January 21

10:00 a.m.—Substations

CP57-49. Energized Insulator Washing in Substations. J. M. Mabe, Central Power and Light Company.

CP57-69. Substation Design Standards and Shortcuts Save Manpower. R. F. Stevens, U. S. Dept. of the Interior.

57-53. III Supervisory Control of Transmission Terminals at Generating Stations. M. C. Hedges, Commonwealth Edison Company.

57-70. III Operational Record of Supervisory Equipments on the Southern California Edison Company System. J. D. Cleary, Southern California Edison Company.

10:00 a.m.—Insulated Conductors

CP.* Compression Forces Influencing Pipe Type Cables. E. J. Merrell and A. L. McKean, Phelps-Dodge Copper Products Co.

57-66. III Soil Factors Affecting Buried Pipe Cable Temperatures. C. A. Bauer and Robert J. Nease, Commonwealth Edison Company.

CP57-67. Aluminum Alloy Armour Wire for Submarine Cables. E. D. Bent and W. J. Pardy, Northern Electric Company, Ltd.

CP57-68. The Effect of the Frequency of Bending Cycles on the Fatigue Life of Cable Sheathing. C. E. Betzer, Commonwealth Edison Company.

CP.* A Pioneer 230 KV Pipe Cable Installation. W. A. DelMar and E. J. Merrell, Phelps-Dodge Copper Products Co.

10:00 a.m.—Relays

57-18. III A New Line of Protective Relays and Cases. J. L. Blackburn and W. E. Glassburn, Westinghouse Electric Corp.

CP57-71. Interim Report on Revisions to Relay Standards. Relay Standards Subcommittee of the AIEE Committee on Relays.

57-72. Bibliography of Relay Literature. Subcommittee on Bibliography of Relay Literature of the AIEE Relays Committee.

57-21. III Detection of Faults in Power Transformers. E. A. Klingshirn, Youngstown University, and H. R. Moore and E. C. Wentz, Westinghouse Electric Corp.

10:00 a.m.—Analog Techniques

CP57-193. A Differentiator for A-C Computers. W. X. Johnson, Radio Corporation of America.

CP.* A New Method for Generating a Function of Two Independent Variables. L. G. Polimerou, Convair.

CP.* Bi-Variable Function Generation. J. Levitt, General Electric Co.

CP.* The Operational Amplifier as a Laboratory Tool. P. E. Pfeiffer, Rice Institute.

CP.* Coordinated Use of Digital and Analog Computers. E. M. Piper and K. B. Tuttle, Northrop Aircraft Company.

10:00 a.m.—Nucleonics

10:00 a.m.—Land Transportation

57-28. An 8500-Horsepower Gas Turbine-Electric Locomotive. R. M. Smith, General Electric Company.

CP57-29. Development and Use of the Gas Turbine Locomotive. F. D. Gowans and A. H. Morey, General Electric Company.

57-16. II The Case for a Standard System of Railroad Electrification for the American Railroads. T. F. Perkinson, General Electric Company.

10:00 a.m.—Domestic and Commercial Applications

CP.* Four Inch Diameter Motors for Submersible Water Well Systems. M. J. Carroccio, General Electric Company.

CP57-26. Motor-operated Switch for Space Heating Control. J. C. Beckett, Wesix Electric Heater Company.

57-12. II Load and Economic Aspects of the Residential Heat Pump on Electric Utility Systems. C. W. Bary, Philadelphia Electric Co.

57-6. II Single Phase Versus Three Phase Service for Residential Air Conditioning. A. S. Anderson and Chase Hutchinson, Ebasco Services, Inc.

57-27. II Some Problems and Design Factors Concerning Noise in Motor Driven Home Appliances. E. R. Cunningham and G. L. Wolfert, General Electric Company.

10:00 a.m.—Special Instruments and Auxiliary Apparatus

57-214. A New Voltage-Time Recorder for Transient Measurements by C. M. Foust and B. V. Bhimani, General Electric Co.

57-20. Factors Influencing the Sparkover Voltage of Asymmetrical Sphere Gaps by H. E. Fiegel and W. A. Keen, Jr. General Electric Co.

CP57-215. Sphere-Gap Volt-Time Curves—Reference Standards for Steep Front Measurements by J. H. Park and H. N. Cones, National Bureau of Standards.

CP.* The Response of Resistance Dividers to Steep Front Impulse Waves by A. F. Rohlfs, J. S. Kresge and F. A. Fisher, General Electric Co.

Electrical Testing Laboratories, New York, N. Y.

EE WINTER GENERAL MEETING

10:00 a.m.—Communication Theory

CP.* Information Theory Impact on Modern Communication Theory. P. Mertz, Bell Telephone Laboratories, Inc.

CP.* Binary Codes for Combating Noise. D. Slepian, Bell Telephone Laboratories, Inc.

CP.* Speech Bandwidth Compression. W. E. Kock, Bendix Aviation Corp.

57-136. What Use is Delta Modulation to the Transmission Engineer? I F. K. Bowers, Bell Telephone Laboratories, Inc. Re-presented for discussion.

56-963. Moment Detection and Coding. J. J. Slade, Jr., S. Fich, L. F. Nanni and D. A. Molony, Rutgers University. Re-presented for discussion.

10:00 a.m.—Industrial Power Systems

CP57-120. Experience in Operating 240 and 480 Volt Industrial Distribution Systems Ungrounded. J. A. Gienger, Eastman Kodak Company.

57-1. II Analysis of Irregular Current and Voltage Wave Shapes Found in Industrial Power Engineering. R. H. Kaufmann, General Electric Company.

CP57-121. Electrical Surveys for Industrial Plants. W. B. Rollins, Anderson-Nichols and Company.

CP.*. Plant's Power Distribution System has Face Lifting. E. H. Howard, General Electric Company.

10:00 a.m.—Telegraph Systems

57-64. I Multiplex Telegraph Equipment for Radio and Submarine Cable Circuits. B. S. Diamond, American Cable and Radio Corporation.

57-65. I A Predicted Wave Signalling Phase-Shift Telegraph System. E. T. Heald and R. G. Clabaugh, Collins Radio Company.

CP.* A Flat-Bed Scanner of the Rotary-Mirror Type. H. Stricholm and Edward Lincoln, Times Facsimile Corporation.

CP.* Facsimile Recording in Hydrographic Service. Bernard Luskin, Times Fecsimile Corporation.

CP.* Advancements in the Facsimile Art During 1956. W. H. Bliss, RCA Laboratories.

2:00 p.m.—General Session

"Address," President M. S. Coover.

Presentation of the Institute Paper Prizes.

Presentation of the Edison Medal to Dr. Comfort A. Adams, Past President of the Institute.

"Address," Mr. Frederick R. Kappel, President, American Telephone & Telegraph Company.

Tuesday, January 22

9:30 a.m.—Section Representatives

9:30 a.m.—Transmission and Distribution

57-153. III New Method for Computing Bearing Capacity of Block Foundations in Transmission Lines. O. D. Zetterholm and B. O. Pramborg, Swedish State Power Board.

57-154. A 230 KV Spar Arm H-Frame Transmission Line Design and Tests. C. C. Dodge, Stone and Webster Engineering Corp.

55-263. III A Field Study of ACSR Cable in Severe Marine and Industrial Environment. E. W. Greenfield and E. W. Everhart, Kaiser Aluminum and Chemical Corp. Re-presented for discussion.

CP57-155. Appraisal—30 Year Old Wood Transmission Structures. F. W. Smith, Virginia Electric and Power Comapny.

CP.* 69 KV Dual Conductor Transmission Lines. P. J. Croft, Canada Wire and Cable Co. and Mr. Art Lee, West Kootenay Power Co.

CP.* The Corrosion of Malleable Iron. O. R. Huggins, Malleable Iron Fittings Co.

9:30 a.m.—Rotating Machinery

CP57-122. Divergence Analysis of DC Machine Commutation. S. J. Roumanis, General Electric Company.

57-123. An Analysis of D-C Machine Commutation. J. R. M. Alger and D. T. Bewley, General Electric Company.

Piano Assembly at Steinway and Sons, Long Island City, N. Y.

57-124. Carbon Brush Friction and Chatter. E. I. Shobert II, Stackpole Carbon Company.

9:30 a.m.—Transformers

57-115. III Loading of Sealed Dry-Type Transformers. L. C. Whitman, General Electric Company.

57-116. III Protection of Series Capacitors Used With Distribution Transformers. G. G. Auer, N. M. Neagle and L. W. Robbins, General Electric Company.

CP57-117. Transformer Noise Problem—Performance of Acoustic Treatments and Vibration Isolaters. A. T. Edwards, The Hydro-Electric Power Commission of Ontario.

CP.* Low Sound Transformers. G. K. Kallenbach, M. W. Schulz, Jr., and T. J. Twomey, General Electric Company.

9:30 a.m.—Power System Communications

57-57. III A New Approach to Power Line Carrier System Optimization. W. H. Freeman, Motorola, Inc.

57-23. III Carrier Relaying Frequency Assignments Reduced to Numbers. F. C. Krings, General Electric Company.

CP.* Evaluation of Operating Principles with Microwave Relaying. J. Berdy, H. J. Fiedler, F. C. Krings and A. J. McConnell, General Electric Co.

9:30 a.m.—Electrostatic Processes

CP57-87. Some Measurements of Abnormal Corona. G. W. Penney, Carnegie Institute of Technology, and J. G. Hewitt, International Business Machines Corp.

CP57-46. Polarity and Temperature Effects in Corona for Charging Aerosols. W. T. Sproull, Western Precipitation Corporation.

CP57-88. Power Supplies and Control for Electrostatic Precipitators. J. W. Farr, J. T. Jamison and R. E. Treffeisen, General Electric Company.

CP.* Automatic Control of Electrical Precipitation Rectifier Equipment. H. E. Van Hoesen, H. J. Hall and H. J. White, Research-Cottrell, Inc.

TECHNICAL PROGRAM

CP.* A Further Theoretical Analysis of the Charging of Fine Particles in a Corona Discharge. A. T. Murphy, F. Adler and G. W. Penney, Carnegie Institute of Technology.

57-89. I Measurements of Charge Imparted to Fine Particles by a Corona Discharge. G. W. Penney, Carnegie Institute of Technology, and R. D. Lynch, Westinghouse Electric Corp. Re-presented for discussion.

CP57-90. The Charging of Small Particles for Electrostatic Precipitation. G. W. Hewitt, Westinghouse Electric Corp. Re-presented for discussion.

9:30 a.m.—Symposium on Polyethylene Wire and Cable Insulation

CP.* New Developments and Trends in Polyethylene Wire and Cable Insulation. Alex E. Javitz, Electrical Manufacturing Magazine.

CP.* Thermal Embrittlement of the More Crystalline Polyethylene. R. H. Carey, J. A. Snyder, H. C. Vakos, Bakelite Corp.

CP*. Polyethylene in Wire and Cable Use, Effects of Molecular Structures on Properties. W. W. Spohn, H. J. Frey, Jr., E. I. du Pont de Nemours & Co.

CP.* Irrathene Irradiated Polyethylene, A New Insulating Material for Wire and Cable. K. J. Mackenzie, General Electric Company.

CP57-36. Impulse Breakdown of Electrically Prestressed Polyethylene. S. R. Vail, Duke University, W. F. Gauster, North Carolina State College.

9:30 a.m.—Land Transportation

CP57-216. Electrical Equipment of the New Haven Speed Merchant Locomotives. R. M. Henderson, Fairbanks-Morse Co. and T. T. Means, General Electric Co.

CP57-63. Electrical Aspects of High Speed Self-Propelled Train for the New Haven. J. E. Burton, The Budd Company.

57-30. Diesel Locomotives with Mechydro Hydraulic Transmission for Lightweight Passenger Trains. S. F. Steinbrook, Baldwin-Lima-Hamilton Corporation.

57-15. II Design and Analysis of the Motor-Alternator Speed Regulator for the New Haven Speed Merchant Locomotive. S. W. McElhenny, General Electric Company.

9:30 a.m.—Applied Mathematics

57-104. I The Development of a New Method of Circuit Analysis in Ladder Networks. L. F. Coker, Texas Technological College.

57-107. I A Describing Function Representation for the Multiple Nonlinearities of Electrohydraulic Control Valves. John Zaborszky, H. J. Harrington, McDonnell Aircraft Corporation.

East River Generating Station, Consolidated Edison Co. of N. Y.

57-108. I Generalized Charts of the Effects of Nonlinearities in Electrohydraulic Control Valves. John Zaborszky and H. J. Harrington, McDonnell Aircraft Corporation.

57-109. I Forces and Stresses in an Electromagnetic Field. T. H. Lee, General Electric Company.

9:30 a.m.—Chemical Processes Subcommittee

CP.* The Use and Performance of Polyethylene Power Cable in Chemical Plants. J. C. Norton and G. O. Wardrop, Carbide and Carbon Chemicals Co.

CP.* New Electrical Construction Approach for Ammonium Nitrate Facilities. R. G. Rudrow, Atlas Powder Company.

CP.* Use of Water Sprays for Outdoor Substation Structures. W. W. Merkel, Davison Chemical Co.

9:30 a.m.—Indicating and Integrating Instruments

57-111. I An Inductronic Double Bridge. J. H. Miller, Weston Electrical Instrument Corporation. Re-presented for discussion.

CP.* Phase Angle Measurements in the Audio Range. David Alper, Bendix Aviation Corp.

CP.* Principles and Practices for Standardizing Laboratories. Dr. F. B. Silsbee, U. S. Bureau of Standards.

CP57-112. A Dynamic Torquemeter Utilizing the Reciprocal Wiedemann Effects. M. J. O'Neill, Perkin-Elmer Company.

9:30 a.m.—Digital Computer Techniques for Electrical Engineering Problems

CP.* Numerical Analysis of Physical Systems Using Digital Computers. R. W. Ferguson, P. A. Zaphyr and E. L. Harder, Westinghouse Electric Corp.

CP57-194. Some Practical Mathematical Techniques. G. K. Carter, General Electric Co.

CP.* Application of Computers to the Analysis of Sudden Short-Circuit Oscillograms. D. B. Harrington, J. I. Whittlesey, General Electric Company.

CP.* Numerical Techniques Used in the Application of Digital Computers to Power Systems Problems. G. W. Stagg, American Gas & Electric Co.

2:00 p.m.—Section Representatives

2:00 p.m.—Transmission and Distribution

57-156. Conductor Economics on High-Voltage Transmission Systems. J. M. Henderson and A. J. Wood, General Electric Company.

CP57-157. The Economics of Subtransmission Planning. D. N. Reps, Westinghouse Electric Corp.

CP57-158. 345 KV Transmission—A Progress Report. H. P. St. Clair, American Gas and Electric Service Corp.

57-159. Representation of Induction Motor Loads During Power System Stability Studies. D. S. Brereton, D. G. Lewis and C. C. Young, General Electric Co.

CP.* Performance Charts for Three-Phase Transmission Circuits Under Balance Operation. K. J. Cox and Edith Clarke, University of Texas.

57-160. III Fault Location Methods for Overhead Lines. R. F. Stevens, D. J. Marihart and T. W. Stringfield, Bonneville Power Administration.

2:00 p.m.—Rotating Machinery—Insulation

57-125. III D-C Testing Experience on Rotating Machine Insulation. J. S. Johnson and A. W. Zwiener, Westinghouse Electric Corp.

57-126. III Destructive Breakdown Tests on a Large Turbine Generator Stator Winding. A. M. Nemetz, Consumers Power Company, and M. S. Kirwen, Commonwealth Associates, Inc., and J. S. Johnson, Westinghouse Electric Corp.

CP.* A High Voltage Surge Test for Detecting Faults Between Turns of Rotating Machinery. J. S. Johnson and R. E. Kelley, Westinghouse Electric Corp.

CP.* Heat Flow in D-C Motor Field Coils as a Function of Insulation Deterioration. G. P. Gibson and J. C. Schwarckops.

2:00 p.m.—Transformers

57-48. III Short Circuit Capability Tests of Load Tap Changer Mechanisms. O. P. McCarty and W. M. Johnson, General Electric Company.

57-118. Electrode Area Effect for the Impulse Breakdown of Transformer Oil. H. S. Endicott and K. H. Weber, General Electric Company.

CP.* Transformer Oil Preservation. J. R. Meador and N. E. Dillow, General Electric Company.

CP57-119. Cascade Potential Transformers. G. Camilli, General Electric Company; H. R. Lucas, Canadian General Electric Company; and L. W. Marks and C. H. Tuttle, General Electric Company.

2:00 p.m.—Relays and Power System Communications

57-13. An Approach to Microwave Relaying and System Design by J. R. Linders and V. A. Nosko, Cleveland Electric Illuminating Company.

57-209. Field Tests of Microwave Relaying Equipment by E. W. Downer, Cleveland Electric Illuminating Company.

57-208. A Microwave System for Protective Relaying—Boston Edison Company by John J. Egan, Kenneth O. Sten and John E. Hurley, Boston Edison Company.

57-207. Field Tests and Operating Experience with Carrier Transfer Trip Relaying for Line Protection by A. W. Adams, Bonneville Power Administration.

2:00 p.m.—Education in Electronics

TOPIC: Technicians can be trained to work as Junior Engineers.

THEME: The need is well recognized, to suitably utilize available manpower, and to provide on-the-job education to improve the status of laboratory technicians, within their companies. The purpose of this panel discussion is to bring together viewpoints from Industry, University, Technical Institute and Professional Engineering, possibly to develop a standardized program, to increase the number of engineers available to the industry.

PARTICIPANTS:

Moderator: John Russell, General Electric Company
Industry: Thor Trolsen, General Electric Company
University: Eric Walker, Pennsylvania State University
Technical Institute: J. J. Gershon, DeVry Technical Institute
Professional Engineering: Newell L. Freeman, New York State Board of Examiners of Professional Engineers and Land Surveyors
A Proposed Solution: C. F. Spitzer, General Electric Company

2:00 p.m.—Symposium on Polyethylene Wire and Cable Insulation

CP.* Applications of Polyethylene in the Wire and Cable Industry. E. J. Merrill, Phelps Dodge Copper Products.

CP.* The Polyethylenes for Higher Voltage Cables. R. C. Graham, Rome Cable Company.

CP.* Use of Polyethylene Covered Conductor in the Niagara Mohawk System. G. P. Adams and C. T. Nicholson, Niagara Mohawk Power Company.

CP.* Four Years of Experience with High Voltage Polyethylene Power Cables. G. Martin, P. Flouck and B. Schmidt, S. A. des Cabeleries et Trifileires, Switzerland. To be delivered by P. J. Croft, Canada Wire and Cable Corp.

CP.* Resilient Shielding, A New Construction in Polyethylene Power Cable. E. D. Eich, Anaconda Wire and Cable Company.

2:00 p.m.—Magnetics

CP.* Visit to Russian Conference on Magnetism. R. M. Bozorth, Bell Telephone Labs.

CP.* Highlights of the 1956 AIEE Magnetic Conference. C. P. Bean

CP.* Fine-Particle Permanent Magnets—A Survey. T. O. Paine, L. I. Mendelsohn and F. E. Luborsky.

CP*. Microwave Applications of Magnetic Materials. John Pippin,

2:00 p.m.—Land Transportation and Industrial Power Rectifiers

CP.* Rectifier Locomotives for the Virginian Railway. J. C. Fox, Virginian Railway Company, J. P. Wiles, General Electric Company.

57-32. The Electric System of the Rectifier-Type Locomotives for the Virginian Railway. J. C. Brown, General Electric Company.

CP57-33. Design of Ignitron Tubes for Rectifier Locomotives. B. E. Belnap, J. L. Zehner and H. E. Zuvers, General Electric Co.

Bulova Watch Company

CP.* Design Considerations for Rectifiers for Railway Locomotives. C. C. Herskind, J. E. Hudson, and W. R. Kettenring, General Electric Company.

CP.* Report on Progress and Trends in European Electrification. E. H. Brown, C. B. Lewis and D. R. MacLeod, General Electric Company.

2:00 p.m.—Safety

CP57-62. Lead-acid Storage Batteries for Emergency Lighting and Power. E. A. Hoxie, The Electric Storage Battery Company.

CP.* A Branch-Circuit Wiring System Used at the National Bureau of Standards. R. L. Lloyd, National Bureau of Standards.

CP.* Resuscitation from Electric Shock—Motion pictures of heart fibrillation. Dr. W. B. Kouwenhoven, The Johns Hopkins University.

57-35. II Field Treatment of Electric Shock Cases I. W. B. Kouwenhoven and W. R. Milnor, The Johns Hopkins University.

2:00 p.m.—Indicating and Integrating Instruments

57-43. I Compensation for Instrument Losses in Circuits Containing a Wattmeter, Voltmeter and Ammeter. N. M. Vrana, Cornell University.

CP.* A Stable Platform for Galvanometer Mounting. Dr. F. K. Harris,

57-113. I Mass Flowmeter with Retarding Disk Integration. R. G. Ballard and J. R. Macintyre, General Electric Company.

57-114. I The Clamp-Type Alternating-Current Microammeter. G. F. Montgomery and Carroll Stansbury, National Bureau of Standards.

CP.* Measurement and Control of Minute Frequency Variations in Supply Systems, and Survey of the Present State of the Art, R. Leonhardt, Rohde and Schwarz. Presented by R. Feldt, Federal Telephone and Radio Co.

2:00 p.m.—Radio Communications System

57-58. I An Experimental Narrow Band FM Mobiletelephone System. W. A. Miller, The Pacific Telephone & Telegraph Company.

CP.* RCA Multiplex/ARQ System. A. Kahn and A. Liguori

CP57-103. Modern Approach to Communication Systems Planning and Engineering. V. J. Nixon, Microwave Services, Inc.

57-59. Noise Considerations on Toll Telephone Microwave Radio Systems. T. A. Combellick and M. E. Ferguson, Lenkurt Electric Company.

CP57-60. Design Factors for the Optimization of Multichannel Radio Systems. C. A. Parry, White Plains, New York.

CP57-61. Signal-to-Noise Ratios in Strong-Carrier FM Systems. Harry Urkowitz, Philco Corporation Research Division.

56-1001. I Some Results with Frequency Diversity in a Microwave Radio System. F. H. Willis, Bell Telephone Laboratories, Inc. (Re-presented for discussion.)

Wednesday, January 23

9:30 a.m.—Transmission and Distribution

The following three papers are printed in one booklet at 80¢ to members and $1.60 to nonmembers.

57-161. Colorado High Altitude Corona Tests Conductors, Towers and Footings. L. M. Robertson, Public Service Company of Colorado; H. M. Walton, O. H. Huggins and P. T. Coffin, Aluminum Company of America; R. G. Yerk, Hughes Bros., Inc. and N. E. Desenberg, Ohio Edison Company.

57-161. Colorado High Altitude Corona Tests—Insulators and Associated Hardware. L. M. Robertson, Public Service Co. of Colorado, and A. D. Lantz, Jr., The Ohio Brass Co.

57-161. Colorado High-Altitude Corona Tests Scope, Tests, and Instrumentation. L. M. Robertson, Public Service Co. of Colorado, and C. F. Wagner and T. J. Bliss, Westinghouse Electric Corp.

CP.* Radio Noise Measurement on Denver-Shoshone Line of Public Service Company of Colorado. L. M. Robertson, Public Service Co. of Colorado. G. E. Adams, N. R. Schultz, H. A. Gauper and T. W. Liao, General Electric Co.

9:30 a.m.—Rotating Machinery—Synchronous

CP57-205. Stability Limits of a Synchronous Motor. F. C. Tormollan, University of Texas.

57-127. Eddy Currents in the End Portion of Turbine-Generator Stator Windings. G. W. Staats, Allis-Chalmers Manufacturing Company.

57-128. Harmonics of the Salient Pole Synchronous Machine and Their Effects Part II—Synchronous Torques. M. M. Liwschitz-Garik, Polytechnic Institute of Brooklyn.

56-1010. III Calculation of Windage Noise Power Level in Large Induction Motors. M. E. Talaat, Elliott Company. Re-presented for discussion.

9:30 a.m.—Transformers

CP.* Corona Measurements on Oil-Insulated Transformers. E. J. Adolphson and F. J. Vogel, Allis-Chalmers Manufacturing Company.

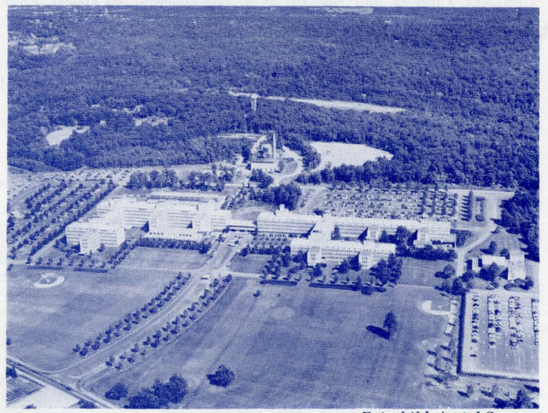
57-40. III Induced Losses in Steel Plates in the Presence of an Alternating Current. W. G. Deuring, General Electric Company.

57-14. III A Semi-Automatic Test for Measuring the Loss in Transformer Core Laminations. S. C. Leonard and R. L. TenBroeck, General Electric Company.

57-24. III Stray Current Losses in Stranded Windings of Transformers. H. J. Kaul, Westinghouse Electric Corporation.

9:30 a.m.—Electronic Circuitry

57-31. I Transistorized Phase Discriminators. A. N. DeSautels, Minneapolis-Honeywell Regulator Company.



Fairchild Aerial Surveys
Bell Telephone Laboratories, Murray Hill, N. J.

57-74. I Upper Limits of Output Power in Vacuum Tube and Transistor A-C Amplifiers. L. M. Vallese, Polytechnic Institute of Brooklyn.

57-75. I An N Stage Series Transistor Circuit. K. H. Beck, Minneapolis-Honeywell Regulator Company. (Re-presented for discussion only.)

CP57-76. An Amplitude-Stabilized Bridged-T Oscillator. Kurt Enslein, University of Rochester.

CP.* Noise Measurements by the Rothe Method. Christoph Metelmann, General Electric Company.

57-77. I Simultaneous Pulled Oscillations in a Triode Oscillator Incorporating Two Oscillatory Circuits. A. E. Mostafa, Alexandria University, Alexandria, Egypt.

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

CP.* Considerations of the Toxicity of Gases. Dr. D. Lester, Yale University.

CP57-82. The Use of Sulfur Hexafluoride in Waveguides. Tore Anderson and A. L. Reeves, Airtron, Inc., W. H. Mears and S. R. Orfeo, General Chemical Research Labs.

CP57-83. Electrical Discharge Characteristics of the Plane Parallel Gap Bounded by Insulating Surfaces. J. C. Devins, General Electric Company.

CP.* The Influence of Space-Charge on the Electric Breakdown of Sulfur Hexafluoride. Daniel Berg and Carroll N. Works, Westinghouse Research Laboratories.

CP.* Corona Measurement and Interpretation. T. W. Dakin, Westinghouse Research Laboratories.

9:30 a.m.—Magnetic Amplifiers

57-5. I On the Input Power of the Half-Wave Magnetic Amplifier Circuit. T. Kikuchi, Microwave Research Institute of Polytechnic Institute of Brooklyn, and K. Murakami, Tohoku University, Japan.

57-91. I Magnetic Frequency Multipliers and Their Rating Part II—Frequency Sextuplers. William McMurray, General Electric Company.

57-92. I Self-Balancing Magnetic Amplifiers of the Differential Feedback Type. William A. Geyger, U. S. Naval Ordnance Laboratory.

57-93. I Speed Control of a D-C Motor Using a Magnetic Amplifier. W. Leonhard, Westinghouse Electric Corp.

CP57-94. Dynamic Operation of Magnetic Amplifiers with Real Core and Rectifier Functions. H. C. Bourne, Jr., and D. Nitzan, University of California.

9:30 a.m.—Research

CP.* Opinions of Electrical Engineering Graduates Regarding Employment Opportunities. M. S. Oldacre, Stanford Research Institute. J. D. Ryder, Michigan State University. S. Reid Warren, Jr., University of Pennsylvania.

CP.* Recruiting, Selecting, and Training Engineers—Philadelphia Electric Company Program. George R. Conover, Lewis R. Gaty, Philadelphia Electric Company.

CP.* Engineering Work—The Human Resource. Clarence H. Linder, General Electric Company.

CP.* Engineers and Energy. Robert E. Wilson, Standard Oil Company (Indiana).

9:30 a.m.—Petroleum Industry

CP.* Purchased Electric Power for Modern Petroleum Refinery. R. W. Mills and W. R. Ankrom.

CP.* Designing for Locations Having Group 'B' Gases. E. R. Hoyle and R. P. Northrup.

CP.* Modern Requirements for Oil Well Pumping. J. K. Howell and S. S. Browne, Westinghouse Electric Corporation.

9:30 a.m.—Wire Communications

57-137. I General Aspects of Hands-Free Telephony. J. W. Emling, Bell Telephone Laboratories.

CP.* Type 88 Loudspeaking Telephone. E. S. Peterson, Automatic Electric Co.

57-138. I The Hands-Free Telephone. V. Rodek, Stromberg-Carlson Co.

57-139. The Bell System Speakerphone. W. F. Clemency and F. F. I Romanow, Bell Telephone Laboratories, and A. F. Rose, American Telephone and Telegraph Company.

9:30 a.m.—Production and Application of Light

CP.* Development and Application of High Frequency Fluorescent Lighting. J. H. Campbell and Q. D. Dobras, General Electric Co.

CP57-34. 840 Cycle Fluorescent Lighting. R. H. Burnham, The Wakefield Company.

CP57-203. High Frequency Power and Distribution. V. C. Geckler, General Motors Corp.

CP.* High Frequency Fluorescent vs. Standard Fluorescent Lighting Systems. W. H. Johnson and J. Winpisinger, Westinghouse Electric Corp.

9:30 a.m.—Recording and Controlling Instruments

57-220. Improved Direct-Acting Electrical Recording Instruments. I E. W. Clark and H. E. Albright, General Electric Company.

57-17. Dynamics of Electronic Self-Balancing Systems. G. R. I Jacob, Minneapolis-Honeywell Regulator Company.

57-222. The BTU Computer—An Advanced Data System for Indus- I try. F. W. Hannula, Foxboro Company.

57-221. Advanced Data System in the Power Industry. G. M. Keyser I and J. R. Leslie, Hydro-Electric Power Commission of Ontario.

CP57-11. A Continuous Multi-Receiver D. C. Potentiometer Recorder. H. H. Koppel, Bailey Meter Company.

2:00 p.m.—Transmission and Distribution

57-164. Investigation of Radio Noise from Existing Lines and Equipment to Aid in the Design of Future Exera-High Voltage Lines. F. L. Taylor, C. J. Crockford and R. V. Nicolson, The Detroit Edison Company.

57-165. The Calculation of Radio and Corona Characteristics of III Transmission Line Conductors. C. J. Miller, Jr., The Ohio Brass Company.

CP57-166. Radio Interference from High-Voltage Transmission Lines as Influenced by the Line Design. G. E. Adams, General Electric Company.

57-167. Relationship Between Corona and Radio Noise on Transmission Lines, Laboratory Studies Part I—Point and Conductor Corona. T. W. Liao, W. A. Keen, Jr. and D. R. Powell, General Electric Company.

CP.* Relationship Between Corona and Radio Noise on Transmission Lines—Laboratory Studies, Part II—Insulator, Hardware and Conductor Corona. T. W. Liao, General Electric Company.

2:00 p.m.—Rotating Machinery—Synchronous

CP57-129. Effect of Clearing Time on Synchronous Machine Transient Stability. G. Shackshaft and A. S. Aldred, The University of Liverpool.

CP57-130. A New Stator Coil Transposition for Large Machines. W. L. Ringland and L. T. Rosenberg, Allis-Chalmers Mfg. Co.

57-131. Gland Seal Systems for Modern Hydrogen-Cooled Turbine Generators. R. A. Baudry and L. P. Curtis, Westinghouse Electric Corporation.

2:00 p.m.—Electronic Circuitry

57-78. Elimination of the Ballast Resistor in D-C Power Supplies. I Stewart Krakauer, The United States Time Corp.

57-79. Economics of Multimillion Joule Inductive Energy Storage. I H. C. Early, University of Michigan, and R. C. Walker, Bucknell University.

CP57-80. A Combined Mean and Sidereal Frequency Divider. H. F. Hastings, Naval Research Laboratory.

57-81. Transient Analysis of Second Order Flip-Flops. L. M. Vallese. Polytechnic Institute of Brooklyn.

56-759. Synchronization Accuracy Obtainable with Multiplier Phototubes. Leo Levi, Fairchild Controls Corp.

56-757. Magnetically Keyed, Phase-Sensitive Demodulators. R. B. Mark, P. R. Johannessen and W. X. Johnson, Massachusetts Institute of Technology.

2:00 p.m.—Symposium on Radiation Effects

CP.* The Effects of Radiation on Mylar. E. L. Brancato, Naval Research Laboratories.

CP.* The Effect of Rate of Irradiation on the Breakdown Dosage for Kel-F. J. Goodman, Radiation Research Corporation.

CP.* The Effect of Temperature and Gamma Radiation on the Mechanical Properties of Some Wire Enamels and a Silicone. E. L. Mincher, General Electric Company.

CP.* The Effects of Radiation on the Properties of Dielectric Materials. P. H. Klein, General Electric Company.

2:00 p.m.—Magnetic Amplifiers

57-95. Core-Reset Functions in Magnetic Amplifier Analysis, Part I I —A Core-Reset Function. G. C. Feth, General Electric Co.

CP57-96. Steady-State Operation of the Push-Pull Saturable-Core Transformer with Resistive Load. R. E. Anderson, General Electric Company.

57-97. Analysis of the Full-Wave Magnetic Amplifier Circuits Con- I sidering the Change of the Width of Dynamic Hysteresis Loop. Tadashi Kikuchi, Polytechnic Institute of Brooklyn.

CP57-3. The Dynamically and Statically Controlled Magnetic Amplifier as a Multi-Purpose Relay. John Baude, Allis-Chalmers Mfg. Company.

CP57-98. Progress Report of the Standards Subcommittee of the AIEE Magnetic Amplifier Committee.

2:00 p.m.—Cathodic Protection

CP.* The Use of Pipe-to-Soil Potential Measurements in Determining the Corrosion of Underground Pipe Lines by Bernard Husock, Harco Corporation.

CP.* The Value of Fused Electrical Connections in Cathodic Protection Circuits by H. R. Leuth, Erico Products, Inc.

CP.* The Use of Magnesium Anodes for Cathodic Protection of Gas Distribution Systems by Peter R. Skule, East Ohio Gas Company.

2:00 p.m.—Wire Communications

57-10. Development in Communications in the Lower St. Lawrence I Valley. F. C. Doak and J. R. Tennet, Quebec Telephone Company. Re-presented for discussion.

CP.* A Transistorized Repeater for 45 BN Carrier. R. H. Fish and V. Babin, Lenkurt Electric Company.

CP.* A Miniaturized Negative Impedance Voice Repeater Employing Transistors. A. S. Howell, Stromberg-Carlson Company.

57-140. Buried Telephone Distribution Systems. G. L. Chilberg, I American Telephone and Telegraph Company.

2:00 p.m.—Education

CP57-211. A Philosophy for Electrical Engineering Education by J. Stuart Johnson, Purdue University.

CP57-210. The Dimensions of an Electrical Engineering Curriculum, by O. D. McCann and F. C. Lindvall, California Institute of Technology.

CP.* An Electrical Engineering Curriculum with a Systems Philosophy by W. A. Lynch, Polytechnic Institute of Brooklyn.

CP57-212. Circuits and Signals in a Fundamental Electrical Engineering Course, by F. H. Middleton, The Johns Hopkins University.

2:00 p.m.—Management

CP.* Individual and Company Responsibilities for Development of the Engineer. H. B. Kiphuth

CP.* Effective Appraisal of Engineers. J. A. Newman, Booz, Allen and Hamilton.

2:00 p.m.—Petroleum Industry

CP57-37. Diesel-Electric Oil Well Drilling Equipment. O. J. Graham and Hillert Vitt, General Electric Company.

57-38. Digital Telemetering and Print Out of Pipe Line Information. Max T. Nigh, Service Pipe Line Company.

CP57-39. Electronic Protective Devices for Pumping Units. Haskell Ginns, Indikon Co. and William W. Holt, Jr., Plantation Pipe Line Co.

2:00 p.m.—Satellite Telemetering

CP.* Earth Satelline Instrumentation Program by N. W. Matthews, Naval Research Lab.

CP.* Earth Satellite Telemetry Coding System Using Transistors and Magnetic Cores by R. W. Rochelle, Naval Research Lab.

CP.* Communication and Non-destructive Readout of Magnetic Memory Cores in Earth Satellite by R. L. Van Allen and C. B. House, Naval Research Lab.

CP.* Magnetic Core Event Counter for Earth Satellite Memory by D. H. Schaefer, Naval Research Lab.

Thursday, January 24

9:30 a.m.—Transmission and Distribution

57-168. Distribution System Load Characteristics and Their Use in III Planning and Design. R. H. Sarikas, Illinois Power Co., and H. B. Thacker, Westinghouse Electric Corp.

57-169. Economic Analysis of Residential Secondary Distribution Systems. H. E. Campbell and H. E. Sinnott, General Electric Company.

CP57-170. High Speed Magnetic Air Breaker for Distribution Circuits. H. P. Sleeper, Public Service Electric and Gas Co., and J. D. Findley, Westinghouse Electric Corp.

CP*. Switching Surges on Switching A Line and Transformer as a Unit. L. O. Barthold, I. B. Johnson and A. J. Schultz, General Electric Co.

57-171. Switching Surges Due to De-Energization of Capacitive Cir- III cuits. Working Group on Switching Surges.

9:30 a.m.—Rotating Machinery—Induction

57-132. Stopping Time and Energy Loss of A. C. Motors with D. C. III Braking. O. I. Butler, University of Sheffield.

57-133. Low Inertia Induction Motors. Maurice Apstein and Lester III Blum, Ordnance Corps, Diamond Ordnance Fuze Laboratories.

57-134. The Calculation of Can Losses in Canned Motors. R. C. III Robinson, I. Rowe and L. E. Donelan, Westinghouse Electric Corp.

57-135. Induction Motor Speed-Torque-Current Curves with a Constant Rotor Temperature. R. F. Horrell and W. E. Wood, Electric Machinery Mfg. Company.

CP57-8. Circuit Constants of High Starting Torque Induction Motors From Tests. J. F. H. Douglas, Engineering Consultant, Milwaukee, Wisconsin.

9:30 a.m.—Switchgear

57-174. A New Compressed Air Dead Tank Circuit Breaker for Inter- III rupting 10,000,000 KVA at 138 KV. J. E. Schrameck and R. E. Kane, Westinghouse Electric Corp.

57-54. A New 138 Kv, 10,000 Mva Air Blast Circuit Breaker. R. B. III Shores and J. W. Beatty, General Electric Company.

57-175. Design Features in a New Line of Outdoor Oil Circuit III Breakers Rated 14.4 to 69 KV. F. B. Johnson and G. B. Cushing, Westinghouse Electric Corp.

CP57-176. Low Voltage Testing for Oil Circuit Reclosers. T. M. Urban and E. J. Field, I-T-E Circuit Breaker Company.

9:30 a.m.—Satellite Communications

CP57-213. Scientific Instrumentation in IGY Satellites by Dr. H. Friedman of the Naval Research Laboratory.

CP.* Telemetering in Earth Satellites by N. W. Mathews of the Naval Research Laboratory.

CP.* Radio Tracking the Earth Satellite by J. T. Mengel of the Naval Research Laboratory.

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

CP57-84. The Effect of Composition on the Oxidation Stability of Electrical Oils. J. L. Jezl, A. P. Stuart and E. S. Ross, Sun Oil Company.

CP.* Effects of Arcs on Silicone Liquid Dielectrics. C. G. Currin and J. F. Dexter, Dow Corning Corporation.

CP.* The D. C. Conductivity of Simple Chlorinated Hydrocarbons. J. Hart and A. G. Mungall, National Research Council of Canada.

CP.* The Gassing of Liquid Dielectrics Under Electric Stress—The Influence of Voltage and Pressure. H. Basseches and Mrs. M. W. Barnes, Bell Telephone Laboratories.

57-2. Phenomena Accompanying Transient Low-Voltage Discharges I in Liquid Dielectrics II. Cathode Phenomenas at Low Currents. E. M. Williams and R. E. Smith, Carnegie Institute of Technology.

9:30 a.m.—Magnetic Amplifiers

57-99. Circuit for a Magnetic Subharmonic Pulser. K. C. Hu, Min- I neapolis-Honeywell Regulator Company, and Y. H. Ku, University of Pennsylvania.

57-206. Proposed Size Standards for Toroidal Magnetic Tape-Wound Cores. Report of Magnetic Amplifiers Material Subcommittee.

CP57-100. Magnetic Amplifier Analog Computation Techniques. H. W. Patton, Airpax Products Company.

CP57-101. A New Static Magnetic Switching Circuit Using Combined "And" and "Or" Functions. R. E. Morgan, General Electric Company.

CP57-102. Static Control with Magnetic Amplifier Logic Elements. J. Sheets, General Electric Company.

9:30 a.m.—Research

CP.* Commemoration of 50th Anniversary of Dr. Lee deForest's patent on the electron tube. J. V. Hogan, Hogan Laboratories.

CP.* Research Needed on Transmission Limitations. Frank E. Sanford, Commonwealth Associates, Incorporated.

CP.* Research in Europe for American Industry. J. E. Hobson.

9:30 a.m.—System Engineering and Power Generation

57-142. Effect of Speed Governor Dead Band on Tie-Line Power and III Frequency Control Performance. C. Concordia and L. K. Kirchmayer, General Electric Company, and E. A. Szymanski, Wayne University.

57-143. Automatic Economic Dispatching and Load Control—Ohio III Edison System. R. H. Travers, Ohio Edison Company.

CP57-144. Economic Aspects of General Electric Automatic Dispatching System at Kansas City. D. H. Cameron and E. L. Mueller, Kansas City Power and Light Company.

57-145. Forced Outage Rates of High Pressure Steam Turbines and III Boilers. Reported by the AIEE Joint Subcommittee on Application of Probability Methods to Power System Problems of the AIEE Power Generation and System Engineering Committees.

9:30 a.m.—Semi-Conductors

CP.* The First Decade of Transistors—1948-1958. Harry L. Owens, Texas Instruments Corporation.

CP.* Germanium and Silicon Rectifiers—Present and Future. Raymond A. York, General Electric Company.

CP.* Properties and Applications of Transistor Switches. E. N. Ross, Bell Telephone Laboratories.

CP.* Present Status of Electroluminescence. Manuel Aven, General Electric Company.

9:30 a.m.—Computing Devices and Education

CP.* Requirements for Trained Personnel in the Data Processing Fields. S. N. Alexander, National Bureau of Standards, and L. W. Cohen, National Science Foundation.

Brookhaven National Laboratory, Upton, N. Y.

CP.* The University of Michigan Curriculum Computer Applications. N. R. Scott, University of Michigan.

CP.* A Curriculum in Computer Applications at the Moore School. S. Gorn, A. Matz, G. W. Patterson, Moore School of Electrical Engineering.

CP.* The Role of Digital Computers in Engineering Education. A. J. Perlis, Carnegie Institute of Technology.

CP.* The University of Illinois Curriculum in Digital Computers. A. H. Taub, University of Illinois.

56-957. The Application of a Digital Computer in Design Engineering. J. C. White, General Electric Company. Re-presented for discussion.
I

9:30 a.m.—Industrial Control

CP.* Static Switching Systems for Industrial Applications. J. C. McMahon and B. P. Chausse, General Electric Company.

CP57-188. Static Digital Control of a 6-way Milling and Drilling Machine Tool. H. D. Stuart, Westinghouse Electric Corp., and T. J. Becker, Michigan Drill Head Company.

CP57-189. Static Control in Automatic Warehousing. L. L. Bosch and A. J. Fanthorp, Bosch and LaTour, and J. W. Stuart, Westinghouse Electric Corp.

CP57-190. Cypak Computing Circuits. J. J. McNeill, Westinghouse Electric Corp.

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

57-172. A Quarter Century of Experience in Insulation Coordination: Basic Philosophy, Application, and Operating Experience on the American Gas & Elec. Co. System. Philip Sporn and I. W. Gross, American Gas and Electric Service Corp.

57-25. Operating Experience on AG&E 132 KV System with Trans-
III former Insulation Reduced Two Classes. P. S. Pugh and C. P. Zimmerman, American Gas & Electric Service Corp.

CP.* Transformers Designed for Operating Conditions. F. J. Vogel and G. W. Lengnick, Allis-Chalmers Manufacturing Company.

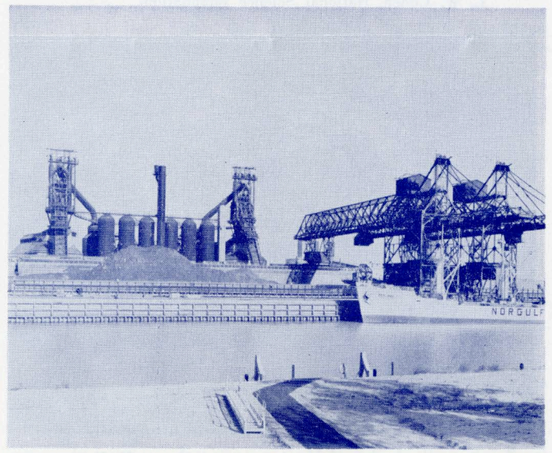
57-19. Reduced Transformer Insulation. E. M. Hunter, J. R. Mea-
III dor and W. J. Rudge, General Electric Company.

57-173. Insulation Coordination as Affected by New Arrester Charac-
III teristics. A. M. Opsahl, Westinghouse Electric Corp.

2:00 p.m.—Switchgear

57-177. Current Density and Temperature of High-Current Arcs.
III T. H. Lee, W. R. Wilson and J. C. Sofianek, General Electric Company.

CP57-178. New Line of High Power Interrupters for Breakers Rated 69 KV and Above. A. W. Hill and R. E. Friedrich, Westinghouse Electric Corp.



Fairless Works, U. S. Steel Corp. *Anthony Lynch*

CP.* A New Approach to Automatic High Speed Grounding. C. W. Upton and F. G. Goldner.

CP57-50. A New Concept of Control Panels for Automatic Switching of Power System Feeders. M. C. Harman, S. & C. Electric Company.

2.00 p.m.—Optical-Electronic Tubes and Microwave Noise Source

57-7. Characteristics and Applications of the Iation Storage Tube. W. D. Davis, Farnsworth Electronics Co.

CP.* Miniaturization in Multiplier Phototubes. F. W. Schenkel, Allen B. DuMont Laboratories.

CP.* Electrostatic Shutter Image Converter Tubes. B. R. Linden, Allen B. DuMont Laboratories, Inc.

CP.* A Half-Tone Display Storage Tube with Magnetic Deflection. M. E. Craig, Radio Corporation of America.

CP.* Multicolor Storage Tube. C. D. Berntema, S. T. Smith and L. L. Van Hull, Hughes Research Laboratories.

CP.* New Noise Sources for Monitoring the Performance of Microwave Systems. R. H. Geiger,

2:00 p.m.—Symposium on Thermal Aging

CP.* Statistical Methods Applied to Thermal Evaluation of Insulating Materials. Working Group Report.

CP.* Heat Aging of Class B Varnish Wire Enamel Systems. Heat Resistance of Insulating Varnishes. J. R. Learn, General Electric Company.

CP.* Heat Aging of Glass Cloth Laminates. C. D. Doyle, H. T. Plant and L. S. Lazar, General Electric Company.

CP57-85. Progress Report-Development of Test Methods for Thermal Stability of Varnished (Coated) Fabric Electrical Insulating Materials—Prepared by Task Force, Section F, Subcommittee VII, ASTM Committee D-9. L. E. Sieffert, Bureau of Ships, H. K. Graves, N. Y. Naval Shipyard.

CP.* Thermal Stability of Flexible Sheet Insulation Using Wrapped Bar Method. R. L. Griffeth, Mica Insulator Company.

2:00 p.m.—Transatlantic Telephone Cable

This session will be a joint meeting of AIEE in New York, Institution of Electrical Engineers in London, and the Engineering Institute of Canada in Montreal, using the new transatlantic submarine telephone cable system to tie the three sessions together. Discussions of the unique features of the new system will take place over the cable, and the audiences in all three cities will be able to hear the discussions.

Prominent engineers and scientists in the three cities will take part. The presidents of the societies will preside at their respective meetings.

2:00 p.m.—System Engineering, Computing Devices, and Transmission and Distribution

57-146. Digital Computation of Driving Point and Transfer Imped-
III ances. H. W. Hale and J. B. Ward, Purdue University.

57-147. Digital Solutions for Large Power Networks. R. J. Brown
III and W. F. Tinney, U. S. Dept. of the Interior.

CP57-148. Tests and Experiences in the Use of Pulse-Type Electronic Fault Analyzer on Transmission Lines. H. E. McCormack, Appalachian Electric Power Co.

57-149. Some Features and Performance of Type C Transmission
III Line Fault Locators. Y. Miyoshi and S. Saba, Tokyo Shibaura Electric Co., Ltd.

57-150. Analog Computer Representation of Alternators for Parallel Operations. Luiz Boffi, Massachusetts Institute of Technology and V. B. Haas, Jr., The University of Connecticut.

2:00 p.m.—Industrial Control

57-191. An Ignitron Contactor for Direct Press Drives. D. L. Pettit
II and R. Montross, Square D Company.

CP.* A Dual Circuit Electronic Regulator. J. J. Dailey, Jr., Reliance Electric and Mfg. Co.

57-4. Design and Calculation of Induction Heating Coils. R. M.
II Baker, Westinghouse Electric Corp.

CP57-192. Heat Conduction in the Coils of an Industrial Controller a Factor in Temperature Rise. J. F. H. Douglas, Marquette University.

2:00 p.m.—Solid State Dielectric Devices

CP.* Introduction: C. A. Rosen, General Electric Co.

CP.* Ferroelectric Devices: R. B. Delano, D. E. Mattiat, E. A. Sack.

CP.* Electrophoto-Transducers: E. E. Loebner.

CP.* Electrostatic Recording and Reproducing Devices: H. Epstein and G. R. Mott.

2:00 p.m.—Ethics

CP.* The ECPD Program in the Field of Professional Ethics. C. T. Chave, Stone and Webster Engineering Corp.

CP.* The NSPE Program in the Field of Professional Ethics. Ezra K. Nicholson, Bryn Mawr, Pennslyvania.

CP.* Attitudes and Ethical Values of Present-Day Electrical Engineering Students. D. S. Babb, M. S. Helm. University of Illinois.

2:00 p.m.—Industrial Power Systems

CP.* Load Dispatching in a Large Industrial Plant. J. R. Eckert and J. M. Petruska, Curtis-Wright Corporation.

CP.* Acquiring a Modern Power Distribution System. Tom Charles, General Electric Company.

CP.* Arrestor and Capacitor Location on Industrial Power Systems. A. Knable and D. Dalasta. Allis-Chalmers Manufacturing Company.

CP.* Operating Characteristics of High Capacity Air-Break Contactors on Industrial Power Systems. S. R. Durand and Thad Bellinger, Allis-Chalmers Mfg. Co.

Friday, January 25

9:30 a.m.—Switchgear

57-180. New 13.8 KV, 750-MVA Metal-Clad Switchgear with Mag-
III netic-Type Power Circuit Breakers. J. G. Torbit and E. M. Troischt, General Electric Co.

CP.* A New "De-Ion" Air Breaker for 750 Mva, 13.8 Kv. Russell Frink and J. M. Kozlovic.

57-181. A Motor-Powered Stored-Energy Operating Mechanism for
III Magnetic-Type Power Circuit Breakers in Metal-Clad Switchgear. E. T. McCurry and J. A. Favre, General Electric Co.

CP.* A New 4.16-KV, 75-MVA Air-Magnetic-Type Power Circuit Breaker in Metal-Clad Switchgear. A. W. Simpson and L. D. Shaw, General Electric Company.

9:30 a.m.—Protective Devices

CP57-22. Report on Lightning Arrester Applications for Stations and Substations. A Report Prepared by a Working Group of the Lightning Protective Devices Subcommittee of the AIEE Protective Devices Committee.

57-52. Lightning Protection Practices at 220-KV and 66-KV Switch-
III ing Structure of the Southern California Edison Company. C. L. Sidway and B. R. Loxley, Southern California Edison Company.

57-42. Experience Revises Substation Lightning Protection. E. H.
III Gehrig and R. S. Gens, U. S. Dept. of Interior, Bonneville Power Administration.

CP57-110. Lightning Protection Practices of High Voltage Switching Structures on the Virginia Electric and Power Company System. J. A. Rawls, Virginia Electric and Power Company.

9:30 a.m.—System Engineering and Power Generation

57-142. Effect of Speed Governor Dead Band on Tie-Line Power and
III Frequency Control Performance by C. Concordia, L. K. Kirchmayer, General Electric Co. E. A. Syzmanski, Wayne University.

57-143. Automatic Economic Dispatching and Load Control, Ohio
III Edison System by R. H. Travers, Ohio Edison Co.

CP57-144. Economic Aspects of General Electric Automatic Dispatching System at Kansas City by D. H. Cameron and E. L. Mueller, Kansas City Power and Light Co.

57-145. Forced Outage Rates of High Pressure Steam Turbines and
III Boilers. Final Report by the AIEE Joint Subcommittee on Application of Probability Methods to Power System Problems by C. W. Watchorn.

9:30 a.m.—System Engineering

57-45. The Effect of Interconnections on Economic Generation Ex-
III pansion Patterns. L. K. Kirchmayer, A. G. Mellor and H. O. Simmons, Jr., General Electric Company.

57-151. Operations Research Determination of Generation Reserves.
III E. L. Arnoff and J. C. Chambers, Case Institute of Technology..

57-152. Some New Mathematical Aspects of Fixed Charges. C. W.
III Bary and W. T. Brown, Philadelphia Electric Company.

CP57-202. A New Approach to Loss Minimization in Electrical Power Systems. J. F. Calvert and T. W. Sze, The University of Pittsburgh.

57-9. Survey of Arc Furnace Installations on Power Systems and
III Resulting Lamp Flicker. System Planning Subcommittee of the System Engineering Committee.

9:30 a.m.—Power and High Frequency Tubes

56-518. Rectilinearity of Electron Beam Focusing Fields from Transverse Component Determinations. P. P. Cioffi, Bell Telephone Labs., Re-presented for Discussion.

CP.* Trends in Power Electron Tube Design Techniques. V. J. De Santis, General Electric Company.

CP57-86. A Series of Power Triodes Using Coaxial Terminal Construction. C. V. Weden, Machlett Laboratories, Inc.

CP.* Design of a Medium Power Ceramic Tetrode. J. W. Kendall, Jr., Eitel-McCullough, Inc.

CP.* A Barkhausen Oscillator of the Resonant Cavity Type. D. T. Davis and E. M. Boone, Ohio State University.

CP.* Development of a Thirty Ampere Thyratron. C. R. Wetter and A. M. Wohlert, National Electronic, Inc.

9:30 a.m.—Dielectrics

CP.* Thermal Aging of Elongated Enameled Wire. E. J. Croop, Westinghouse Electric Corp.

CP.* End Points in the Thermal Aging of Magnet Wire. W. W. Pendelton, Anaconda Wire & Cable Company.

CP.* Effect of Wire Material on Thermal Life of Enameled Magnet Wire. J. Thomas, J. F. Dexter, Dow Corning Corp.

CP.* Corona and Thermal Degradation on Magnet Wire. M. C. Halleck, General Electric Company.

CP57-141. Thermal Stability of Laminated Thermosetting Plastics, I. W. B. Kouwenhoven, and G. G. Knickerbocker, The Johns Hopkins University, Kenneth Wechsler, Mica Insulator Co.

9:30 a.m.—Computing Devices

CP57-195. The Transistor Nor Circuit. W. D. Rowe, Westinghouse Electric Corp.

57-196. The Transistor Nor Circuit Design. W. D. Rowe and G. H.
I Royer, Westinghouse Electric Corp.

CP.* The Transistor Nor Circuit Logic and Applications. L. F. Stringer and W. D. Rowe, Westinghouse Electric Corp.

CP.* The Nordic Computer. W. D. Rowe, Westinghouse Electric Corp.

CP.* The Arithmetic Design of the Nordic Computer. T. A. Jeeves and W. D. Rowe, Westinghouse Electric Corp.

9:30 a.m.—Feedback Control Systems

57-204. A Study of the Transfer Function of Contact-Modulated
II Amplifiers. F. H. Krantz, Burroughs Corp. and O. M. Salati and R. S. Berkowitz, The Moore School of Electrical Engineering

57-182. A Quick Method for Estimating Closed-Loop Poles of Con-
II trol Systems. Kan Chen, Westinghouse Electric Corp.

CP57-183. The Response of Relay Amplifiers with Feedback. J. E. Gibson and F. B. Tuteur, Yale University.

57-201. Evaluation of Feedback Control Systems Subjected to Large
II Signals. V. B. Haas, Jr., University of Connecticut.

57-184. A Two-Dimensional Feedback Control System. Philip Sara-
II chik and J. R. Ragazzini, Columbia University.

9:30 a.m.—Applications in the Steel Industry

CP.* Magnetic Amplifier Arc Furnace Regulator. E. J. Borrebach, Westinghouse Electric Corporation.

57-55. Arc Furnace Corrective Equipment Using a High Value of Buffer Reactance. H. W. Harper, Northeastern Steel Corp.; T. R. Macon, General Electric Company and A. F. Sedgwick, United Illuminating Company.

57-56. Selection of Buffer Reactors and Synchronous Condensers on
II Power Systems Supplying Arc Furnace Loads. C. Concordia and L. G. Levoy, General Electric Company; and C. H. Thomas, University of Kansas.

CP.* Static Switching Systems for the Steel Industry. R. E. Manko, General Electric Company.

56-875. Modern Computer Analysis for the Design of Steel Mill Control Systems. J. E. Reider and Philip Spergel, Industrial Nucleonics Corp. Re-presented for disccusion.

9:30 a.m.—TV and Aural Broadcasting Systems

CP.* Color Television Switching Systems. Edward Pores, National Broadcasting Company.

CP.* Color Television Recording Employing Lenticular Film. R. D. Kell, Radio Corporation of America.

CP.* Color Television Picture Reproducers. Peter C. Goldmark. Columbia Broadcasting Systems Laboratories.

2:00 p.m.—Power Generation

57-179. Electrical Features of Eastlake Generating Station Units 1, 2, and 3 by C. F. Paulus, Cleveland Electric Illuminating Co.

57-51. New Problems in Auxiliary System Design—Supercritical Pressure and Nuclear Plants by A. R. Jones and C. J. Baldwin, Jr., Westinghouse Electric Corp.

CP57-217. Turbine-Generator Rotor Prewarming by W. J. Gilson, Jr. and M. Temoshok, General Electric Co.

57-218. Thermal Plants for Firming Up Hydro by Vernon W. Ruskin, B. C. Engineering Co., Ltd.

CP57-219. Dynamic Balancing of Hydroelectric Units in the Field by H. N. Hill, R. S. Barker and J. B. Murtland, Aluminum Company of America.

2:00 p.m.—Computing Devices

CP57-197. The A-C Network Analyzer is an Asset in Teaching "Power" Courses. P. E. Shields, The Pennsylvania State University.

CP.* Automatic Addressing for Random Access Memories. W. W. Peterson, University of Florida.

CP.* Shift Register Decimal Counter. J. A. O'Brien, Bell Telephone Laboratories.

CP.* The Transient Solution of Non-Linear Circuits on a Digital Computer. J. C. Morgan, International Business Machines Corp.

CP57-198. Biquinary Arithmetic. Walter Brooks, Ivan Flores and Gregory Laserson, Nuclear Development Corp. of America.

57-199. Shifting Counters. C. Eldert, H. J. Gray, Jr., H. M. Gurk and M. Rubinoff, University of Pennsylvania, Moore School of Electrical Engineering. Re-presented for discussion.

57-200. The Logical Design of a Digital Computer for a Large-Scale Real-Time Application. M. M. Astrahan, B. Housman, International Business Machines Corp.; J. F. Jacobs, R. P. Mayer, Mass. Institute of Technology; and W. H. Thomas, International Business Machines Corp.

2:00 p.m.—Electrical Techniques in Medicine and Biology

57-73. The Control of Air Ionization and Its Biological Effects. W. W. Hicks and J. C. Beckett, Wesix Electric Heater Co.

CP.* Standards for Measurement of Brightness Intensification in Fluoroscopic Image Intensifiers. Walter S. Lusby, Westinghouse Electric Corp.

CP.* Remote Stimulation of Cortical Areas in Primates. G. C. Riggle and George I. Johnston, National Institute of Health.

2:00 p.m.—Feedback Control Systems

57-185. A New Stability Criterion of Linear Servomechanisms by a Graphical Method. Toshio Numakura and T. Miura, Hitachi, Central Research Laboratory.

57-186. Transfer Matrix Stability Criterion Applied to an Amplidyne Servo Network. P. M. Honnell, Washington University, and D. Wolffenstein, Washington University.

57-41. Non-Interacting Controls in Linear Multi-Variable Systems. R. J. Kavanagh, University of Toronto.

57-44. A Synthesis Method for Multipole Control Systems. H. Freeman, Sperry Gyroscope Company.

57-187. Compensation of an Error-Sampled System by a Multi-Rate Controller. G. M. Kranc, Columbia University.

2:00 p.m.—Television Equipment Developments

CP.* Television Translators and Satellites. Benjamin Adler, Adler Communications Laboratories.

CP.* Transistorized Television Cameras Using the Miniature Vidicon. Leslie E. Flory, Radio Corporation of America Laboratories.

CP.* Control of Radiation from FM and TV Receivers. Richard J. Farber, Hazeltine Research Corporation.

CP.* Automatic Program Control for Television Broadcasting. A. C. Angus, General Electric Company.

2:00 p.m.—Communication Switching Systems

57-47. The Automatic Line Concentrator and Subscriber Telephone Applications. H. G. Evers and J. R. Wylie, Leich Electric Company.

CP.* Optimal Utilization and Expansion of Interoffice Trunking Facilities. R. E. Kalaba and M. L. Juncosa, The Rand Corp.

57-105. A New Family of Transistor Switching Circuits. Morris Rubinoff, University of Pennsylvania.

57-106. Transistor Two-Terminal Switches. Abraham Har'el, University of Pennsylvania.

CONTINUED FROM PAGE 2

air conditioner ratings and standard cells and resistors maintained at a constant temperature and checked periodically at the National Bureau of Standards. A mechanical laboratory maintains facilities for conducting environmental tests such as humidity, temperature, altitude, vibration, shock, etc.

New York Coliseum, New York, N. Y. (Thursday afternoon, January 24). New York's fabulous Coliseum is truly the exposition capital of the world. This 20-story, $35 million custom-built engineering marvel embodies the finest features of an office building and exposition hall.

As an example of the facilities available, each display booth is furnished with gas, electricity, telephone, television, steam, water, vacuum, radio, drainage, and compressed air. With an average load of 18 watts per square foot the exhibition floors provide complete air conditioning and high-intensity illumination (combined in each lighting unit) as well as dramatic spotlighting for all staging. The tour will be conducted by the designers of the building affording us the opportunity of gaining the maximum benefit from this visit.

LADIES ENTERTAINMENT: Each member should procure a badge for his wife at the time he registers. It will be possible for the ladies who have received their badges, to register for the respective activities at the Ladies Headquarters in the Washington Room. This room will be open on Sunday from 2:00 to 4:00 P.M. (prior to the informal tea), and every day thereafter from 9:00 A.M. to 5:00 P.M.

Every morning, beginning on Monday, there will be the usual Coffee Hour at Ladies Headquarters, starting at 8:30 A.M.

Monday afternoon, the "Get Acquainted Tea" will be held from 4:00 until 5:30 P.M.

There will be a tour of lower New York on Tuesday. This will include stops at Trinity Church and the Stock Exchange, followed by luncheon at the historical Fraunces Tavern. A visit will be made to the Little Church Around the Corner after lunch. This tour is limited to 100. For those who desire a shorter tour, a visit will be made to the steamship Liberte of the French Line on Tuesday afternoon.

Tuesday evening, while the Smoker is being held in the Grand Ball room, the ladies will gather for cocktails and dinner in the Penn Top of the Hotel Statler. The ladies will share in part of the Smoker entertainment.

A United Nations tour is scheduled for Wednesday morning. A "Dutch Treat" luncheon will be served in the Delegates Dining Room. Wednesday afternoon will be free for shopping or the theater.

There will be a breakfast at B. Altman & Company on Thursday morning, at which interesting table settings will be shown. The annual luncheon and fashion show for out-of-town ladies will be held at the Ambassador Hotel at 12:30 P. M.

Ladies are requested to register for the various activities as early as possible.

WINTER GENERAL MEETING COMMITTEE: Members of the 1957 Winter General Meeting Committee are: D. M. Quick, Chairman; R. T. Weil, Jr., Vice-Chairman; J. J. Anderson, Secretary; L. F. Stone, Budget Coordinator and AIEE Vice-President for District 3; W. R. Clark, Technical Operations Department; F. S. Black, Public Relations; W. A. Clark, General Session; D. V. Buchanan, Hotel Accommodations; F. L. Williams, Registration; J. A. Mulligan, Inspection Trips; R. R. Meola, Monitors; H. B. Snow, Smoker; W. F. Anselm, Dinner-Dance; S. Friend, Jr., Theater and Broadcast Tickets; Mrs. C. T. Hatcher, Ladies Entertainment; A. J. Cooper, Ex-Officio Member (Past Chairman).

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