

**American Institute of  
Electrical Engineers**



**FALL**

**GENERAL**

**MEETING**

**Program**

*Please retain for use during  
entire meeting*

**CINCINNATI, OHIO**

**OCTOBER 17-21**

**1949**

*Meeting Headquarters*

**NETHERLAND PLAZA HOTEL**

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## GENERAL INFORMATION

This meeting in Cincinnati, Ohio is the third of the general meetings to be held annually each fall. This year we have five technical groups of Institute activity, namely: Communications, Industry, Science and Electronics, General Applications and Power, and, each is represented in the technical program.

The general session is scheduled for Tuesday morning October 18 when we will have the pleasure of hearing Mr. Robert S. Peare, Vice-President in charge of Public Relations of the General Electric Company, and our president, Mr. James F. Fairman.

On the social side, there will be a stag smoker, a dinner dance and special entertainment for the ladies.

**Registration Fees Required.** In accordance with the policy as set up by the Board of Directors, a registration fee of \$3.00 has been established for members and a fee of \$5.00 for nonmembers. This is to help make the meeting self-supporting and obviate the need for raising the annual dues. Enrolled students and the immediate families of members will not be required to pay any fee.

**Information** on all features may be obtained at the registration desk. Efforts will be made to deliver telegrams and messages promptly. Members who expect to receive mail are asked to inquire frequently at the mail and registration desk.

**Technical Sessions and Discussions** are covered by the "Conduct of Technical Sessions" at the discretion of the presiding officers. Usually 10 minutes will be allowed for the presentation of each paper and 5 minutes for each discussion. To receive consideration for publication, discussions in triplicate must be left with the chairman or sent to Edward C. Day, AIEE, 33 West 39th Street, New York 18, N. Y., before November 4, 1949. Discussions received later will be returned. The original typewritten double-spaced copy, together with original illustrations with photostats or blueprints should be submitted.

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

**Advance Copies of Papers** may be purchased by members at the registration desk at the uniform price of \$.30 each (\$.60 each to nonmembers). Only numbered papers are available. 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 \$9.00 denominations are available for those who wish to avoid remittance by check or otherwise. Mail orders should be addressed to the AIEE Order Department, 33 West 39th Street, New York 18, N. Y. Most of the papers will ultimately be published as AIEE Proceedings and in the TRANSACTIONS.

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**Schedule of Events**

(See Separate Schedule for the Ladies)

**MONDAY, OCTOBER 17**

8:30 a.m. Registration  
9:30 a.m. Rotating Machinery  
Probability Methods  
Industrial Power Systems  
1:30 p.m. Trip to the Baldwin Piano Company  
Trip to the Proctor and Gamble Company  
2:00 p.m. Rotating Machinery  
Speed Governing  
Instruments and Measurements  
Conference on Undervoltage Protection of Motorized Devices

**TUESDAY, OCTOBER 18**

10:00 a.m. General Session  
1:30 p.m. Trip to the Baldwin Piano Company  
Trip to the Proctor and Gamble Company  
2:00 p.m. Rotating Machinery  
System Economics  
Industrial Control  
Problem and Thesis Subjects from Industry  
7:00 p.m. Stag Smoker

**WEDNESDAY, OCTOBER 19**

9:30 a.m. Protective Devices  
Conference on Applications of Conformal Mapping in Electric Circuit Analysis  
Conference on Railroad Communication  
Rotating Machinery  
11:30 a.m. Trip to Engineering Society of Cincinnati  
1:15 p.m. Trip to Fisher Body Plant  
Trip to Miami Fort Generating Station  
2:00 p.m. Protective Devices  
Conference on Voltage Induction  
Symposium on Technical Design of Coaxial Television and Telephone Systems  
Aluminum  
7:00 p.m. Dinner-Dance

**THURSDAY, OCTOBER 20**

9:00 a.m. Trip to Miami Fort Generating Station  
9:30 a.m. Transmission and Distribution  
Mining and Metal Industry  
Radio  
Conference on Machine Tools  
1:15 p.m. Trip to Fisher Body Plant  
1:30 p.m. Trip to Oakley Colony  
2:00 p.m. Mining and Metal Industry  
Television

**FRIDAY, OCTOBER 21**

9:30 a.m. Relays  
Insulated Conductors and Accessories  
Electronic Power Converters  
Conference on Machine Tools  
2:00 p.m. Substations  
Conference on Machine Tools

## Monday, October 17

### 9:30 a.m.—Rotating Machinery

Pavillon Caprice  
B. H. CALDWELL, Presiding

- 49-225. The Design of Direct Current Motors for Use in Automatic Control Systems. Paul Lebenbaum, Jr., General Electric Company. Presentation by title only.
- 49-226. Limitations in Design of D-C Adjustable Speed Motors. L. G. Opel, Westinghouse Electric Corporation. Presentation by title only.
- 49-227. Use of Cumulative and Differential Series Fields in the Parallel Operation of D.C. Motors. A. W. Kimball, Westinghouse Electric Corporation. Presentation by title only.
- 49-31. Measuring Commutation with an Indicating Instrument. R. T. Lundy, General Electric Company. Presentation by title only.
- 49-229. Transient Characteristics of D.C. Motors and Generators. A. T. McClinton, E. L. Brancato, and Robert Panoff, Naval Research Laboratory.
- 49-230. The Eccentric Pole Face—A Means to Better D.C. Machine Performance. M. A. Baker, General Electric Company.
- 49-231. An Analysis of Rotating Amplifiers. Bernard Litman, Arma Corporation.
- 49-232. Temperature Rise Values for D-C Machines—II. Subcommittee on D-C Machinery.

### 9:30 a.m.—Probability Methods

Parlor I  
G. CALABRESE, Presiding

- 49-278. A Convenient Method for Determining Generator Reserve. H. P. Seelye, The Detroit Edison Company.
- 49-279. Allocation of Capacity Savings Resulting from Interconnecting Two or More Generating Systems. ACO.\* C. W. Watchorn, Pennsylvania Water and Power Company.
- CP.\*\* Determination of Reserve Capacity by the Probability Theory—Simplified Methods. G. Calabrese, New York University.
- CP.\*\* Relation of Thermal Plant Design to Reserve Capacity Requirements. M. J. Steinberg, Consolidated Edison Company of New York, Inc.

### 9:30 a.m.—Industrial Power Systems

Parlor E  
J. S. GAULT, Presiding

- 49-233. Electrical Distribution System for a Mexican Cement Plant. ACO.\* Leo Dolkart, Latin American Export Service.
- CP.\*\* Power Distribution in Textile Mills. John Wesley Davis, George Wrigley, J. E. Serrine Company.
- CP.\*\* Electrical Maintenance Problems in Continuous

Process Plants. T. O. Sweatt, Wearn, Vreeland, Carlson and Sweatt, Inc.

- CP.\*\* Interior Wiring Design for Commercial Buildings. Subcommittee on Interior Wiring Design, for Commercial Buildings.

### 2:00 p.m.—Rotating Machinery

Pavillon Caprice  
J. L. FULLER, Presiding

- 49-234. Progress Report on AIEE Test Code for Electric Brushes. Joint Subcommittee on Electric Brushes.
- 49-235. Differential Leakage of the Different Patterns of a Fractional Slot Winding. M. M. Liwschitz, Polytechnic Institute of Brooklyn.
- 49-236. Flywheel—Induction Motor Drives. Joseph Ben Uri, ACO.\* Tel-Aviv, Palestine.
- 49-237. Motor Tests Evaluate Thermal Endurance of Class H Insulation and Silicone Varnish. George Grant III, T. A. Kauppi, Dow Corning Corporation; G. L. Moses, G. P. Gibson, Westinghouse Electric Corporation.

### 2:00 p.m.—Speed Governing

Parlor I  
B. G. A. SKROTZKI, Presiding

- 49-288. Governors and the AIEE ASME Governor Performance Specification. A. F. Schwendner, Westinghouse Electric Corporation; Wayne Astley, Philadelphia Electric Company.
- 49-289. A New Automatic Load Control for Turbine Generators. H. B. Ruud, Iowa-Illinois Gas and Electric Company; S. B. Farnham, General Electric Company.
- 49-290. Determining Incremental Regulation and Dead Band of Governors on Steam Turbine Generators Under System Load Conditions. E. L. Tornquist, I. L. Wade, Public Service Company of Northern Illinois.
- 49-291. The Performance of a Topped Steam Power Plant on Sudden Load Reduction. John G. Noest, Consolidated Edison Company of New York, Inc.

### 2:00 p.m.—Instruments and Measurements

North Hall  
J. T. LUSIGNAN, JR., Presiding

- 49-275. A Circuit to Correct Ammeter and Wattmeter Reading for Current Drawn by Voltmeter and Wattmeter Potential Coils. ACO.\* L. L. Shumaker, G. A. Neyhouse, Delco Products, Division of General Motors Corporation.
- 49-276. The Irradiation of Spark Gaps for Voltage Measurement. ACO.\* D. R. Hardy, J. D. Craggs, The University of Liverpool.
- 49-277. A Double-Input Oscilloscope for the Study of ACO.\* Laboratory A-C Circuits. Paul M. Kintner, University of Illinois.

49-292. Ammeter as Direct Reading Power Factor Meter. ACO.\* Joseph Ben Uri, Tel-Aviv, Palestine.

**2:00 p.m.—Conference on Undervoltage Protection of Motorized Devices**

Parlor E  
J. S. GAULT and G. W. HEUMANN, Presiding

- CP.\*\* The Effect of Undervoltage Protection on the Power System. W. R. Weise, Cincinnati Gas and Electric Company.
- CP.\*\* Undervoltage Protection of Equipment. R. A. Hess, Armco Steel Corporation.
- CP.\*\* Undervoltage Protection of Motorized Devices. J. C. Lynch, Hammermill Paper Company.
- CP.\*\* Undervoltage Protection of Motor Drives. J. E. Arberry, Pittsburgh Plate Glass Company.
- CP.\*\* Aspects of Time-Delay Undervoltage Protection as it Affects Industrial Control. E. H. Alexander, General Electric Company.

**Tuesday, October 18**

**10:00 a.m.—General Session**

Pavillon Caprice

President J. F. Fairman, Presiding

“Welcome.” Dr. Raymond Walters, President, University of Cincinnati.

“Professional Unity at the Grass Roots”. J. F. Fairman, President

“Address.” Robert S. Peare, Vice-President, in charge of Public Relations, General Electric Co.

“Presentation.” Prize Paper Awards.

**2:00 p.m.—Rotating Machinery**

Pavillon Caprice  
S. S. WOLFF, Presiding

- 49-238. General Theory of Multiple Cage Induction Motors. S. S. L. Chang, Robbins and Myers, Inc.
- 49-239. Reactive Speed-Torque Control of Squirrel-Cage Induction Motors. R. V. Tiede, Major, U. S. Army.
- 49-240. Saturation Effect on Leakage Reactance. S. S. L. Chang, T. C. Lloyd, Robbins and Myers, Inc.
- 49-241. The Torques of the Synchronous Tie—A Steady-State Analysis. L. A. Finzi, H. M. McConnell, Carnegie Institute of Technology.

**2:00 p.m.—System Economics**

North Hall  
A. P. HAYWARD, Presiding

- 49-242. Coordination of Fuel Cost and Transmission Loss by Use of Network Analyzer to Determine Plant Loading Schedules. E. E. George, H. W. Page, Ebasco Services, Inc.; J. B. Ward, Purdue University.
- CP.\*\* Phase Shifting 22 Kv Regulators Save System Investment. V. E. Hill, Duquesne Light Company.

49-287. New Suspension Clamp for Transmission Line Conductors. Sverre Sandberg, Svenska Aluminium-kompaniet.

**2:00 p.m.—Industrial Control**

Parlor I  
G. W. HEUMANN, Presiding

- 49-243. Press Control with an Eddy-Current Drive. B. H. Carlisle, Jr., The Clark Controller Company.
- CP.\*\* Spotting Control of Synchronous Motors. S. C. Ewing, E. A. E. Rich, General Electric Company.
- CP.\*\* A Proposed Classification of Regulating Systems. S. L. Burgwin, Westinghouse Electric Corporation.
- CP.\*\* Fundamentals of Analysis of Regulating Control Systems for Industrial Applications. W. Alvarez, E. S. Dygve, General Electric Company.
- 49-244. Prediction of Ultimate Temperature Rise from Early Heat Run Data. J. E. Ryan, General Electric Company. Presentation by title only.

**2:00 p.m.—Problem and Thesis Subjects from Industry**

Parlor E  
B. R. TEARE, JR., Presiding

- CP.\*\* Electrical Application Problems for Engineering Education. F. R. Benedict, W. R. Harris, R. L. Witzke, Westinghouse Electric Corporation.
- CP.\*\* Electrical Design Problems for Engineering Education. T. M. Linville, K. B. McEachron, Jr., General Electric Company.
- CP.\*\* Industrial Electronic Problems for Engineering Education. Walther Richter, Allis-Chalmers Manufacturing Company.

**Wednesday, October 19**

**9:30 a.m.—Protective Devices**

Pavillon Caprice  
W. J. RUDGE, Presiding

- 49-280. Application Guide on Methods of Neutral Grounding of Transmission Systems. Working Group of Subcommittee on Fault Limiting Devices. E. M. Hunter, Chairman.
- 49-281. Application Guide for the Grounding of Synchronous Generator Systems. Working Group of Subcommittee on Fault Limiting Devices. E. M. Hunter, Chairman.
- 49-282. Operation of A Ground Fault Neutralizer on a Regulated Distribution System. H. R. Tomlinson, F. B. Hunt, New England Power Service Company.
- 49-283. Guide for Application of Ground-Fault Neutralizers. ACO.\* Working Group of Subcommittee on Fault Limiting Devices. J. E. Clem, General Electric Co.

**9:30 a.m.—Conference on Applications of Conformal Mapping in Electric Circuit Analysis**

Parlor I  
T. J. HIGGINS, Presiding

- CP.\*\* Basic Theory of the Generalized Schwarz-Christoffel Transformations and Their Use in Electric Circuit Analysis. Thomas J. Higgins, The University of Wisconsin.
- CP.\*\* The Potential Analogue in Network Synthesis and Analysis. W. H. Huggins, Air Material Command.
- CP.\*\* Unification of Network Synthesis Viewpoints Through Conformal Representation and the Electrostatic Potential Analogy. DeForest L. Trautman, Jr., University of California.

**9:30 a.m.—Conference on Railroad Communication**

Parlor E  
E. W. KENEFAKE, Presiding

- CP.\*\* Train Communication in Railroad Operations. F. H. Menagh, Erie Railroad.
- CP.\*\* Wire Communication System of the Santa Fe Railroad. L. R. Thomas, A.T.&S.F. Railroad.
- 49-245. Centralized Traffic Control for Railroads. W. D. Hailes, General Railway Signal Company.
- CP.\*\* Line Circuits for Centralized Traffic Control. G. W. Baughman, Union Switch and Signal Company.

**9:30 a.m.—Rotating Machinery**

North Hall  
W. R. HOUGH, Presiding

- 49-294. Transients in 2-Phase Synchronous Machines. N. E. Wilson, University of Massachusetts.
- 49-296. Design of Auxiliary Circuits of Single-Phase Induction Motors. M. S. Thacker, H. V. Gopalakrishna, Indian Institute of Science.
- 49-295. The Dynamoelectric Amplifier—Class A Operation. R. M. Saunders, University of California.

**2:00 p.m.—Protective Devices**

Pavillon Caprice  
W. J. RUDGE, Presiding

- 49-284. Report on Survey of Unbalanced Charging Currents on Transmission Lines as Affecting Ground-Fault Neutralizers. Working Group of Subcommittee on Fault Limiting Devices. J. E. Clem, General Electric Co.
- 49-286. Performance Characteristics of Lightning Protective Devices. Subcommittee on Lightning Protective Devices.

**2:00 p.m.—Conference on Voltage Induction**

Parlor I  
L. V. BEWLEY, Presiding

- CP.\*\* The Vibration Pressure Hypothesis for Electric Repulsion. H. B. Dwight, Massachusetts Institute of Technology.
- CP.\*\* Ambiguities in the Teaching of the Inductance

Concept. Henry B. Hansteen, Brookhaven National Laboratory.

- CP.\*\* Electromagnetic Induction. T. J. Higgins, Illinois Institute of Technology.
- CP.\*\* Flux Leakages and Electromagnetic Induction. L. V. Bewley, Lehigh University.
- CP.\*\* Electromagnetic Induction. George I. Cohn, Illinois Institute of Technology.

**2:00 p.m.—Symposium on Technical Design of Coaxial Television and Telephone Systems**

Parlor E  
L. C. ABRAHAM, Presiding

- 49-246. Attenuation and Delay Equalizers for Coaxial Lines. W. R. Lundry, Bell Telephone Laboratories, Inc.
- 49-247. Stability of Tandem Regulators in the L-1 Carrier System. J. P. Kinzer, Bell Telephone Laboratories, Inc.
- 49-248. Equalization of Coaxial Lines. K. E. Gould, Bell Telephone Laboratories, Inc.
- 49-249. Television Terminals for Coaxial Systems. L. W. Morrison, Jr., Bell Telephone Laboratories, Inc.

**2:00 p.m.—Aluminum**

North Hall  
T. B. MONTGOMERY, Presiding

- 49-250. Aluminum and the Electrical Industry. Donald M. ACO.\* White, The Aluminum Association.
- CP.\*\* Aluminum Rolled Products in Relation to the Electrical Industry. D. W. Smith, The Permanente Metals Corporation.
- CP.\*\* Aluminum Extruded and Drawn Products in Relation to the Electrical Industry. H. V. Menking, Reynolds Metals Company.
- CP.\*\* Aluminum Castings in Relation to the Electrical Industry. Arthur Townhill, Thompson Products, Inc.

**Thursday, October 20**

**9:30 a.m.—Transmission and Distribution**

Pavillon Caprice  
F. V. SMITH, Presiding

- 49-251. Report of a Survey on the Performance of Shunt Capacitors. Joint Working Groups of the Capacitor Subcommittee of AIEE and EEI Transmission and Distribution Committees. C. E. Parks, Chairman.
- 49-252. Report on the Operation and Maintenance of Shunt Capacitors. Working Group of Capacitor Subcommittee of Transmission and Distribution Committee. E. R. Hendrickson, Chairman.
- 49-253. The Calculated Risk of Operating Capacitors Without Individual Fuses. Hamilton Brooks, Westinghouse Electric Corporation.
- 49-254. Connection Arrangements and Protective Practices for Shunt Capacitor Banks. N. R. Clark, S. B. Farnham, General Electric Company.

**9:30 a.m.—Mining and Metal Industry**

Parlor I  
J. J. FITZGIBBON, Presiding

- 49-255. Selection of Optimum Rating of Mercury Arc Rectifiers for Coal Mining Service. L. W. Scott, General Electric Company, J. A. Dunn, Island Creek Coal Company.
- CP.\*\* Redesign of 5 HP Open Motors for Explosion Proof, Pumping and Conveyor Service. W. R. Wood, The Berwind-White Coal Mining Company.
- CP.\*\* Analysis of Power Costs of Bituminous Coal Mines. H. P. Musser, West Virginia Engineering Company.
- CP.\*\* Electric Machinery Inspection Technique and Problems. W. W. Mattson, Armco Steel Corporation.

**9:30 a.m.—Radio**

Parlor C  
G. T. ROYDEN, Presiding

- 49-256. Design of Mobile Radio Communications Equipment for Land-Mobile Services Operating on Frequencies Between 152-174 MC. R. A. Beers, W. A. Harris, and A. D. Zappacosta, Radio Corporation of America.
- CP.\*\* The Transition Air Navigation System and Its Evolution. Col. S. A. Mundell, U. S. Air Force.
- CP.\*\* Technical Features of Airborne and Ground Distance Measuring Equipment. C. J. Hirsch, R. B. Brunn, H. L. Blaisdell, Hazeltine Electronics Co.

**9:30 a.m.—Conference on Machine Tools**

North Hall  
W. B. WIGTON, Presiding

- CP.\*\* The Application of the Rototrol to Machine Tools. M. H. Fisher, Westinghouse Electric Corporation.
- CP.\*\* Electrification of a Large Planer Type Milling Machine. J. W. Harper, General Electric Company.
- CP.\*\* Electronic Control as Applied to Grinders. J. M. Morgan, Cincinnati Milling Machine Company.

**2:00 p.m.—Mining and Metal Industry**

Parlor I  
A. C. MUIR, Presiding

- CP.\*\* Shuttle Cars and Electrical Problems Encountered in Their Use. J. W. Woolf, Joy Manufacturing Company.
- CP.\*\* Electrical Control of Belt Conveyors. W. R. Roberts, The Jeffrey Manufacturing Company.
- CP.\*\* Cable Reel for Use on Mine Locomotives. J. R. Doig, General Electric Company.
- CP.\*\* Trolley Phone Mine Communication. W. P. Place, Farmers Engineering and Manufacturing Company.

**2:00 p.m.—Television**

Pavillon Caprice  
J. B. COLEMAN, Presiding

- 49-257. A 500 Watt Visual 250 Watt Aural Television Transmitter. L. Voorhees, Allen B. Du Mont Laboratories, Inc.

49-258. Low Voltage and High Voltage Power Supplies for ACO.\* Home Television Receivers. Victor Wouk, Beta Electric Corporation.

49-259. Effect of Man-Made Noise on Television Receivers. ACO.\* G. D. Hulst, Allen B. Du Mont Laboratories, Inc.

CP.\*\* Microwave Television Relay for Navy Training Program. H. Cook, Western Union Telegraph Co.

**Friday, October 21**

**9:30 a.m.—Relays**

Pavillon Caprice  
E. L. MICHELSON, Presiding

- 49-260. A New Loss-of-Excitation Relay for Synchronous Generators. C. R. Mason, General Electric Company.
- 49-261. A One Slip Cycle Out-of-Step Relay Equipment. W. C. Morris, General Electric Company.
- 49-262. Novel Test Circuits for Protective Relays. W. K. Sonnemann, Westinghouse Electric Corporation.
- 49-263. Insulation Level of Relay and Control Circuits. Project Committee on Insulation Level of Relay and Control Circuits.

**9:30 a.m.—Insulated Conductors and Accessories**

Parlor I  
HERMAN HALPERIN, Presiding

- 49-264. A New Technique in the Manufacture of Soldered Porcelain Potheads. A. E. Papp, J. H. Nicholas, G. & W. Electric Specialty Company. Presentation by title only.
- 49-265. Design Fundamentals of Potheads 69000 Volts and Below. J. H. Nicholas, G. & W. Electric Specialty Company.
- 49-266. Cable Accessory Design Utilizing New Laboratory Techniques. P. N. Bosworth, H. K. Farr, General Electric Company.
- 49-267. A Theoretical and Practical Approach to the Design of High-Voltage Cable Joints. H. D. Short, Canada Wire and Cable Company.
- 49-268. Transient Temperature Phenomena of Three-Conductor Cables. F. O. Wollaston, B. C. Electric Railway Company.

**9:30 a.m.—Electronic Power Converters**

Parlor E  
C. C. HERSKIND, Presiding

- 49-269. Protection of Electronic Power Converters—Part ACO.\* II. Subcommittee on Electronic Converter Circuits.
- 49-270. Diagnosis of Rectifier Ailments. I. K. Dortort, Allis-Chalmers Manufacturing Company.
- CP.\*\* Preliminary Report on Survey of Operation of Mercury Arc Rectifiers. Subcommittee on Electronic Converter Application.
- 49-271. Rectifier Transformer Characteristics. Subcommittee on Rectifier Transformers. Presentation by title only.

**9:30 a.m.—Conference on Machine Tools**

North Hall  
D. R. PERCIVAL, Presiding

- CP.\*\* Automatic Programming of Machine Cycles. R. N. Eck, Cutler Hammer, Inc.
- CP.\*\* Motor Ripple Voltage and Its Application to Plugging Relays. S. Noodleman, Standard Dayton Corporation.
- CP.\*\* What the Automotive Industry Expects of Electrical Equipment on Machine Tools. W. B. Nichol, Chevrolet Division of General Motors Corporation.
- CP.\*\* A New Control for Direct Drive Presses. W. E. Large, Westinghouse Electric Corporation.

**2:00 p.m.—Substations**

Pavillon Caprice  
G. S. LUNGE, Presiding

- 49-272. Space Code Selector Supervisory System. E. F. Forrest, P. W. Schirmer, General Electric Company.
- 49-285. Basic Single-Line Diagrams for Substations. H. P. ACO.\* Cadario, H. P. Smith, The Hydro-Electric Power Commission of Ontario.
- 49-273. Functional Development of 66 Kv Switching and Transformer Stations. N. N. Smeloff, Pennsylvania Power and Light Company.
- 49-293. A-C Tripping and Reclosing of Line Sectionalizing Circuit Breakers. C. E. Winegartner, H. E. Bonheimer, The Cleveland Electric Illuminating Company.
- 49-228. Proposed American Standard Guide for Loading AC.\* Oil-Immersed Step-Voltage and Induction-Voltage Regulators. Working Group on Operating Guide for Regulators. Presentation by title only.
- 49-274. Safety in Substation Design. J. O. Leslie, D. L. ACO.\* Greene, Gilbert Associates, Inc.

**2:00 p.m.—Conference on Machine Tools**

North Hall  
L. W. HERCHENROEDER, Presiding

- CP.\*\* Opportunities for Electrification of Machine Tools in Railroad Shops. V. P. Schmidt, The Pennsylvania Railroad.
- CP.\*\* Magnetic Clutch and Brake Application on Production Lathes and Milling Machines. B. T. Anderson, Sundstrand Machine Tool Company.
- CP.\*\* General Principals of Applying Clutches and Brakes to Machine Tools. Glenn Spohn, Gregg and Spohn, representing Warner Electric Brake Manufacturing Company.

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

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

**MEETING FEATURES**

**STAG SMOKER:** Tuesday evening, October 18 at 7:00 p.m., the stag smoker will be held in the Pavillon Caprice of the Netherland Plaza Hotel. The cost will be \$6.00 per person.

**DINNER DANCE:** Wednesday evening, October 19 at 7:00 p.m., a dinner-dance will be held in the Pavillon Caprice of the Netherland Plaza Hotel. The cost will be \$4.00 per person. Dress is optional.

Dancing will be from 8:30 p.m. to 12:30 a.m.

**LADIES' PROGRAM:** A program for the ladies visiting the meeting will begin Monday afternoon with a "Get Acquainted Tea" in the Julep Room at the Netherland Plaza Hotel.

At 9:00 a.m. Tuesday, the ladies will board chartered busses for a trip to Procter and Gamble Company, the world's largest manufacturer of soaps, also manufacturers of Drene, Crisco, and numerous other products.

At 2:00 p.m. Tuesday, busses will again pick up visitors for a trip to the Taft Art Museum for tea. This Museum, the home of Mr. and Mrs. Charles Taft, is considered the finest example of early Federal Architecture in the United States. The fine collection of paintings, furnishings, and Chinese porcelains were the gift of the Tafts also. Tea will be preceded by a short talk on the Museum and its treasures, which will make this one of the highlights of the meeting.

Tuesday evening, while the men attend the traditional smoker, some outstanding entertainment will be provided for the ladies.

Wednesday morning, busses will again pick up the visiting ladies for a scenic tour of the city ending with luncheon at the Hyde Park Country Club.

Thursday morning, the ladies will be guests at a luncheon at the attractive Dean Schneider Memorial, headquarters of the Engineering Society of Cincinnati. This luncheon will be sponsored by the Women's Committee of the Engineering Society.

No formal entertainment has been planned for Friday, but individual arrangements will be made for those remaining in the city for sightseeing, shopping, etc.

The entire program, including all ladies entertainment functions and transportation, will be offered to the ladies for a total charge of \$3.00.

**INSPECTION TRIPS:** The following inspection trips have been scheduled during the 1949 Fall General Meeting. Admission will be by ticket only and it is very important that members and their guests register at the Inspection Trip Desk whether you have private transportation or not. The registration is necessary in the cases of men having their own transportation since the number of men permitted to make the inspection trips is definitely limited in most cases.

**I. The Baldwin Company.** A tour through the Baldwin Company manufacturing plant affords the visitor an unusual opportunity to observe a remarkable association of



modern engineering and scientific proficiencies allied with age old traditions of artistic skill and craftsmanship—a unique combination not often found in American Industry. Here one may see many unhurried processes whose effectiveness has been proven by centuries of development and perfection in the art of creating fine pianos and one may see also the laboratories where engineers and technologists study the science of musical instruments and the development of new forms such as the Baldwin Electronic Organ.

To show that the science and art of making pianos is not a static thing, the acoustic studio and Piano Research Laboratory will be visited, with a short non-technical discussion and demonstration of the interesting work of this activity.

The tour is brought to an interesting conclusion with a "Pops" Concert and demonstration in the popular scientific manner.

This trip is scheduled for Monday and Tuesday, October 17 and 18 at 1:30 p.m.

**2. The Procter and Gamble Company.** The Ivorydale Factory of the Procter and Gamble Company is the heart of the largest soap manufacturing center of the world. Ivorydale is composed of 123 buildings spread over 173 acres, and employs over 2,000 people. Many hundreds more are employed in the company's St. Bernard and Drug Products Factories nearby. Visitors to the plant will see soap made in the giant three-story kettles and processed into bars, flakes and granules. Of particular interest are the high-speed packaging machines which form cartons, fill, seal, and pack them. Visitors will also see the control laboratory where over 30,000 tests are run each month, and the company's vegetable shortening facilities where Crisco and bulk shortenings are made.

This trip is scheduled for Monday and Tuesday, October 17 and 18 at 1:30 p.m.

**3. Fisher Body Plant—General Motors Corporation—Hamilton, Ohio.**

This plant is engaged in the fabrication of metal parts for General Motors automobile bodies. The acceleration, speed, and torques developed by the motor operating the large presses and stamping machines, as well as the safety features incorporated in all of the equipment, should be of special interest.

This trip is scheduled for Wednesday and Thursday, October 19 and 20 at 1:15 p.m.

**4. Miami Fort Generating Station—The Cincinnati Gas and Electric Company.**

This station, located on the Ohio River twenty miles west of Cincinnati, was placed in operation in 1925. With the completion of the present addition, scheduled for operation by November 1, 1949, the station will have a rating of 336,000 KW.

The present construction program covers the installation of a 13,800 volt, 80,000 kw, .8 pf., 1250 psi, 950° F, hydrogen cooled turbo-generator directly connected through 5000 ampere, isolated phase bus duct to a 100,000 KVA

class FOW, 13.2-132 KV transformer bank. Previous installations had 13.2 KV horizontal phase separated switching with fault bus protection in both concrete cell and metal enclosed types.

Power is transmitted from this station over 33 KV, 66 KV, and 132 KV lines. The 132 KV switching structures are fault bus protected.

All coal is received in barges operating on the Ohio River and is conveyed from the unloading tower to the station by endless belt conveyors. Coal is handled to and from storage by means of wagon scrapers. Pulverizing is accomplished by means of a centralized bin system and also by unit pulverizers.

This trip is scheduled for Wednesday, October 19 at 1:15 p.m., and Thursday, October 20 at 9:00 a.m.

**5. Engineering Society of Cincinnati.**

The inspection trip and forum will put on display the fine facilities provided by Cincinnati's Herman Schneider Foundation for use by the engineering, scientific, and technical organizations in the vicinity and will indicate how the Foundation, The Engineering Society of Cincinnati, and the societies participating in Cincinnati's Council of Technical and Scientific Societies, complement and supplement each other in a unique program of cooperation.

This trip is scheduled for Wednesday, October 19 at 11:30 a.m. Luncheon at the Foundation will be served at 12:30 p.m.

**6. Oakley Colony** includes The Cincinnati Milling and Grinding Machine Company, the Cincinnati Planer Company and The Cincinnati Bickford Tool Company.

We will see the latest applications of electrical control to milling machines, grinding machines, planes, and drilling machines. At the same time, we will be shown the modern plants in which these machines are made, and the machines themselves in various stages of construction. The Oakley Colony is probably one of the largest and most modern centers of machine tool production.

This trip is scheduled for Thursday, October 20 at 1:30 p.m.

**7. Crosley Broadcasting Corporation,** Television Station WLW-T, and Frequency Modulation Station WLW-A.

An inspection trip will be made to the television station and studios of stations WLW-T and WLW-A. Station WLW-T has a visual power of 34 kilowatts and an aural power of 17 kilowatts. Station WLW-A has a frequency modulated output of 20 kilowatts. The entire station will be inspected including studios, control rooms, transmitter rooms, movie projection rooms and a movie film development room. A special triplex filter for the antenna, which is used for both WLW-T and WLW-A (FM) signals, will be explained. The studio building is one of the highest concrete block buildings in the country. An excellent panoramic view of the City of Cincinnati can be seen from the entrance porch to the station. (Note: The scheduling of this trip will depend on the Studio Schedule.)

# American Institute of Electrical Engineers

## FALL GENERAL MEETING COMMITTEE

E. S. FIELDS, *Chairman*      J. P. QUITTER, *Secretary*  
 R. J. ROCKWELL, *Vice-Chairman*      W. H. McNUTT, *Treasurer*  
 J. C. STRASBOURGER      R. E. STROPPEL      F. E. WIATT

### Committee Chairmen

<i>Technical Program</i>	<i>Transportation</i>	<i>Publicity</i>
A. C. BURROWAY	J. A. NOERTKER	R. E. COLADO
E. F. NEUZEL		
<i>Inspection Trips</i>	<i>Registration</i>	<i>Ladies</i>
W. T. PAVELY	D. T. MICHAEL	MRS. J. A. NOERTKER
<i>Entertainment</i>	<i>Finance</i>	<i>Hotel and Equipment</i>
S. B. STORER	F. W. WILLEY	H. E. BARNETT

## COMMITTEE MEETINGS

### Monday, October 17

9:30 a.m.—Executive, District No. 2 ..... Parlor J  
 9:30 a.m.—Correlation of Standard Temperature Rise  
 Subcommittee ..... Parlor L  
 12:00 noon—Luncheon—Executive, District No. 2 ..... Parlor A  
 12:00 noon—Luncheon—D. C. Machinery Subcommittee ..... Parlor B  
 2:00 p.m.—Executive, District No. 2 ..... Parlor J  
 2:00 p.m.—Executive Committee of Protective Devices  
 Committee ..... Parlor L

### Tuesday, October 18

9:00 a.m.—Transformer Heat Run Methods Subcommittee Parlor A  
 12:00 noon—Luncheon—Rotating Machinery Administrative  
 Subcommittee ..... Parlor C  
 2:00 p.m.—Transformers ..... Parlor B  
 2:00 p.m.—Domestic and Commercial Applications ..... Parlor A  
 2:00 p.m.—Science and Electronics Coordinating ..... Parlor L  
 4:00 p.m.—Planning and Coordination ..... Parlor J

### Wednesday, October 19

9:30 a.m.—Power Generation ..... Parlor J  
 9:30 a.m.—System Engineering ..... Parlor A  
 9:30 a.m.—Mining and Metal Industry ..... Parlor B  
 9:30 a.m.—Capacitor Subcommittee of T. & D. Committee Parlor C  
 12:00 noon—Luncheon—Industrial Control ..... Parlor L  
 12:00 noon—Luncheon—Induction Machinery Subcommittee Parlor C  
 1:00 p.m.—Towers, Poles, and Conductors Subcommittee Parlor B  
 2:00 p.m.—Education ..... Parlor A  
 2:00 p.m.—Transmission and Distribution ..... Parlor B  
 2:00 p.m.—Instrument Transformer Subcommittee ..... Parlor D  
 2:00 p.m.—Electric Welding ..... (Cleveland, Ohio)

### Thursday, October 20

9:30 a.m.—Board of Directors ..... Parlors E and F  
 9:30 a.m.—Electronic Power Converter Applications  
 Subcom. .... Parlor L  
 12:00 noon—Luncheon—Board of Directors ..... Parlors A and B  
 2:00 p.m.—Electronic Power Converter Circuits  
 Subcommittee ..... Parlor L  
 2:00 p.m.—Board of Directors ..... Parlors E and F  
 2:00 p.m.—Power Coordinating Committee ..... Parlor J  
 2:00 p.m.—Rectifier Inductive Coordination Subcommittee Parlor C  
 2:00 p.m.—Fractional Horsepower Machinery  
 Subcommittee ..... Parlor D  
 8:00 p.m.—Technical Program Committee ..... Parlor J  
 8:00 p.m.—Distribution & Conversion Substations  
 Subcommittee ..... Parlor L

### Friday, October 21

9:00 a.m.—Protective Devices ..... Parlor J  
 9:30 a.m.—Substations ..... Parlor L  
 10:00 a.m.—Edison Medal ..... Parlor C  
 12:00 noon—Luncheon—Insulated Conductor Administrative  
 Subcommittee ..... Parlor B  
 12:00 noon—Luncheon—General Industry Applications ..... Parlor A

# NETHERLAND PLAZA

## FOURTH FLOOR PLAN

