



Fall General Meeting

OCTOBER 11-15, 1954

Chicago, Illinois

Headquarters
Morrison Hotel



The Chicago Skyline

Kaufman & Fabry Photo

Chicago, the center of one of the greatest diversified industrial areas in the world, has been chosen for the 1954 Fall General Meeting. The technical program, inspection trips, and social events will occupy the entire facilities of the Morrison Hotel, meeting headquarters, for the full five days of the meeting, October 11th to 15th.

This Fall General Meeting program is the largest since these Mid-western meetings were instituted and is due to the central location of Chicago and its accessibility by air and rail from all parts of the North American continent. Special attention is being given this year to Air Transportation and Rotating Machinery. Eight and seven sessions respectively are scheduled on these two subjects, Monday to Friday. Other papers will cover subjects in all fields of the electrical industry. Of note are two sessions on higher secondary distribution voltages scheduled for Wednesday, October 13th.

GET ACQUAINTED TEA—On Sunday afternoon from 4:00 to 6:00 there will be an informal get-acquainted tea for early arrivals. Members and their wives are cordially invited.

A SMOKER for the members has been planned for Tuesday evening, October 12th, in the Terrace Casino Room of the Morrison Hotel. A delicious dinner and a fine program of entertainment will be preceded by a hospitality hour. Address requests for tickets to: J. A. Romano, Delta Star Electric Co., 2437 Fulton Street, Chicago 12, Illinois. All requests should be accompanied by a remittance to ensure a reservation. Price \$10.00.

DINNER DANCE—Wednesday evening, members and their wives will enjoy a dinner in the Ballroom of the Morrison Hotel. The dance will be preceded by a "get acquainted" social hour. Formal dress is optional. Tickets are \$8.00 per person. Tickets may be purchased in advance by writing to E. R. Whitehead, Chairman, AIEE Dinner Dance Committee, Illinois Institute of Technology, 3300 Federal Street, Chicago 16, Illinois.

ETA KAPPA NU ACTIVITIES—This year is the Fiftieth Anniversary of the founding of Eta Kappa Nu Association, Electrical Engineering Honor Society. A Golden Jubilee Celebration will be held on the University of Illinois campus at Urbana the weekend of October 15th and 16th with most of the alumni activity on Saturday.

A fitting program to commemorate the Fiftieth Anniversary of Eta Kappa Nu is planned for these days, with many events scheduled that will interest not only all members but their families as well.

Additional information on this program can be obtained by writing Prof. D. S. Babb, 155 Electrical Engineering Building, University of Illinois, Urbana, Ill.

LADIES PROGRAM—Mrs. Roger R. O'Conner and her committee have plans for many interesting activities and trips for the ladies including a "you pick it—we'll take you" promise. There are planned tours to:

St. Peter's Cathedral.

Board of Trade.

Hull House.

Night Tour of Chicago.

Swift and Company.

Kungsholm Restaurant for Dinner and Famous Miniature Grand Opera.

On the North Shore as Far as Bahai Temple.

Free radio and TV tickets will be available for all days of the convention.

Breakfast Club TV Broadcast tickets will be available. This broadcast is from the Convention Headquarters Hotel. It is the coast-to-coast Don McNeil show that only this spring went on TV.

Coffee Hours each morning—From 9:00 a.m. to 10:30 a.m. coffee and rolls will be served in the Ladies Headquarters. Hostesses will be there to explain the program and help the ladies choose their entertainment for the day.

You Pick It—We'll Take You—Ladies are invited to name the places they would like to see. Hostesses will be available to see that it is possible for the visiting ladies to make the trips of their choice. Among these might be:

Chicago Historical Society.

Chicago Museum of Science and Industry with Coleen Moore's Doll House.

Chicago Art Institute.

Adler Planetarium.

Shedd Aquarium.

Chicago Natural History Museum.

Retail Stores—Marshall Field and Company, Carson Pirie Scott and Company, and others.

THEATER AND SPORTING EVENTS—Tickets for all theatrical and sporting events will be available at the ticket desk throughout the entire week of the convention. Arrangements have been made with one of the local ticket agencies so that reasonably choice seats will be available. For typical \$5 tickets the agency fee is \$2.

TELEVISION AND RADIO—Tickets for those TV and radio programs which are showing during the week of the convention will be available at the desk. Tickets for these programs will be available at no charge. The two television shows for which tickets will be available are "Breakfast Club" with Don McNeil and "Welcome Travelers" with Tommy Bartlett.

Continued on page 8

ADVANCED COPIES OF PAPERS

Members may obtain preprints of numbered papers at the uniform price of 30c each (60c each to nonmembers), by sending enclosed order form and remittance to the AIEE Order Department, 33 West 39th Street, New York 18, N. Y. Mail orders (particularly from out-of-town members) are advisable, inasmuch as an adequate supply of each paper at the meeting cannot be assured. Coupon books in \$9 denominations are available for those who wish to avoid remittance by check or otherwise. Numbered papers will be published in the bimonthlies and in the Transactions. *Conference Papers* denoted by CP.** are intended for presentation only, and are not available.

Monday, October 11

10:00 a.m.—General Session

Address of Welcome, John W. Evers, President, Commonwealth Edison Co.
Your Institute—Its Problems, President A. C. Montieth.
Technology in Defense, Donald A. Quarles, Assistant Secretary of Defense.

2:00 p.m.—Air Transportation

- 54-355. Correlation of Rating Data for Rotating Electrical Machinery. E. O. A. Naumann, Wright-Patterson Air Force Base.
- 54-346. Ten Years of Progress in Predicting the Aerodynamic, Thermodynamic and Output Characteristics of Blast-Cooled Aircraft Generators. D. H. Scott, Naval Research Lab.
- 54-414. Thermal Developments in Aircraft Generators. C. G. Martin, Jack and Heintz, Inc.
- 54-415. High Altitude Aircraft Inverters. P. W. Franklin, The Leland Electric Co.

2:00 p.m.—Carrier Current

- 54-321. A Study of the Use of Tone Modulation over Complex Carrier Channels. J. C. G. Carter, Westinghouse Electric Corp.

"Application of Microwave Equipment to Power Systems."

This will be a group discussion covering application problems and experiences with microwave equipment guided by a panel composed of both users and manufacturers of microwave equipment.

2:00 p.m.—Induction Machinery

- CP.** Dynamic Braking of Induction Motors with D-C Excitation. C. T. Button, National Pneumatic Co., Inc.
- 54-323. Nonuniform Torque in Induction Motors Caused by Unbalanced Rotor Impedances. O. I. Elgerd, Washington University.
- 54-349. Internal Fault Currents in Multi-Circuit Induction Machines. D. L. Lafuze, General Electric Co.
- 54-381. An Equivalent Thermal Circuit for Non-Ventilated Induction Motors. R. L. Kotnik, Reliance Electric & Engineering Co.
- CP.** Predicting Temperature Rise in Electric Motors by the Use of an Equivalent Circuit. W. J. Wittke and C. H. Crouse, Robbins & Meyers, Inc.

2:00 p.m.—Magnetic Amplifiers

- 54-375. Derivative Controlled Magnetic Amplifiers. A. D. Schnitzler, Naval Research Laboratory.
- 54-364. The Biased Rectifier Amplifier—A Pulse Magnetic Amplifier. R. E. Morgan, General Electric Co.
- 54-388. Saturating Transformer Reference Circuit. W. G. Evans, Westinghouse Electric Corp.
- 54-376. Alteration of the Dynamic Response of Magnetic Amplifiers by Feedback Techniques. R. O. Decker, Westinghouse Electric Corp.
- 54-389. An Analog Computer Technique Using Magnetic Amplifiers. B. E. Davis and I. H. Swift, Naval Ordnance Test Station.

2:00 p.m.—Metallic Rectifiers

- CP.** Power Germanium Rectifiers for a High Current and Voltage Surge Application. E. F. Losco and H. R. Camp, Westinghouse Electric Corp.
- 54-416. A Magnetically Regulated Portable Battery Charger. R. E. D. Anderson, Bell Telephone Labs., Inc.
- 54-417. The Suitability of the Silicon Alloy Junction Diode as a Reference Standard in Regulated Metallic Rectifier Circuits. D. H. Smith, Bell Telephone Labs., Inc.
- 54-418. Some Applications of Semiconductor Devices in the Feedback Loop of Regulated Metallic Rectifiers. B. H. Hamilton, Bell Telephone Labs., Inc.
- CP.** Review of AIEE Metallic Rectifier Standards. E. A. Harty, General Electric Co.

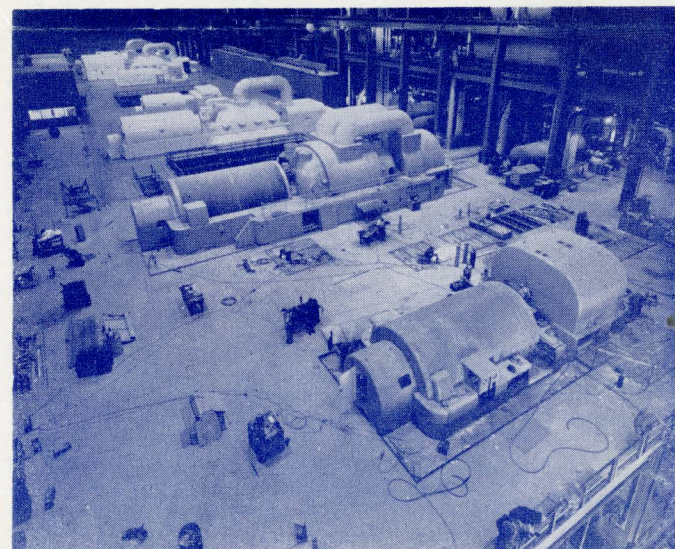
2:00 p.m.—Instrumentation

- CP.** Discussion of Precision in a Meter Checking Program. R. E. McCallum, Sandia Base.
- 54-354. A New Standard for Direct Current. F. C. Fitchen, F. P. Schwiag, W. H. Tucker, General Electric Co.
- CP.** A Symmetrical Component Synthesizer and Analyzer. E. B. Kurtz and C. R. Lodge, State University of Iowa.
- CP.** A New Electrical Hygrometer. W. C. White, General Electric Research Lab.

Tuesday, October 12

9:00 a.m.—Industrial Power Systems, Transmission and Distribution, Production and Application of Light

- 54-329. Current Distribution in Paired-Phase Bus Bars under Unbalanced Load Conditions. J. B. Cataldo and N. Shackman, Bull Dog Electric Products Co.
- 54-333. A Field Method for Determining the Leading and Lagging Regulator in an Open Delta Connection. H. E. Lokay and R. L. Custard, Westinghouse Electric Corp.
- CP.** Network Application at 277/480 Volts for a Medium Density Area. E. A. Rothfus, Commonwealth Associates, Inc.; J. R. Oberholzer, Commonwealth Services, Inc. and W. R. Folck, Central Illinois Light Co.
- CP.** Hi-Volt-Cycle Lighting is Launched in a Hi-Wide Building. J. H. Campbell, H. D. Kurt and H. E. Schultz, General Electric Co.



Commonwealth Edison Co., Ridgeland Station

9:00 a.m.—Electrical Safety in College Laboratories

- CP.** The Need for Education in the Field of Safety. R. C. Peterson, Illinois Institute of Technology.
- CP.** Problems of Safety in College Electrical Laboratories. M. S. Coover, Iowa State College.
- CP.** Safety in Electrical Laboratories. R. L. Lloyd, National Bureau of Standards.
- CP.** Psychological Aspects of Accident Prevention. M. S. Viteles, Philadelphia Electric Co.

9:00 a.m.—Air Transportation

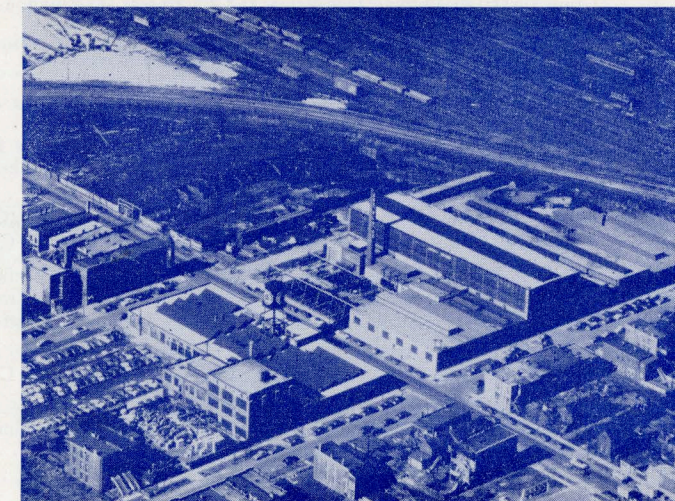
- 54-356. Carbon Pile Regulator Theory, Calibration, Adjustment and Factors Affecting its Operation. H. H. C. Richards, Westinghouse Electric Corp.
- CP.** A Static Exciter for Aircraft AC Generators. D. G. Scorgie, Naval Research Lab.
- CP.** Results of a Transient Stability Study on an Aircraft-Type Single Phase AC System. H. B. James, Westinghouse Electric Corp.
- 54-419. A High Power Servo Analyzer. Sterling Gorrill, Hanson-Gorrill-Brian, Inc. and O. C. Walley, Jack and Heintz, Inc.

9:00 a.m.—Induction Machinery

- CP.** Present-Day Techniques of Noise Measurement. B. G. Watters, Bolt Beranek and Newman, Inc.
- CP.** Techniques for Estimating Sound Levels in Industrial Areas. R. O. Fehr, General Electric Co.
- CP.** The Noise Levels of Some Typical Polyphase Induction Motors. R. L. Wall, General Electric Co.
- CP.** Techniques of Reducing Noise in Machinery with Particular Application to Electric Motors. B. J. Schweitzer and H. C. Hardy, Armour Research Foundation of Illinois Institute of Technology.
- CP.** Hysteresis Torque and Core Loss Variation in Induction Motors. J. F. H. Douglas and J. Frank, Marquette University.

9:00 a.m.—The Author Meets the Publisher

- Part I—So You're Thinking of Writing a Book.
- CP.** Words of Wisdom from a Book Publisher. J. S. Snyder, John Wiley and Sons, Inc.
- CP.** Comments from an Author. R. F. Shea, General Electric Co.
- Part II—Writing for a Scientific or Technical Journal.
- CP.** A Publisher Presents Some Ideas. Gerard Piel, Scientific American, Inc.



Delta-Star Division of H. K. Porter Co.

- CP.** An Editor's Viewpoint. W. W. MacDonald, McGraw-Hill Publishing Co.
- CP.** Comments from an Author. E. H. Vedder, Westinghouse Electric Corp.

9:00 a.m.—Effect of Low Frequency and Low Voltage on Thermal Plant Capability

- 54-390. The Effect of Frequency and Voltage. Richard Holgate, Philadelphia Electric Co.
- 54-391. Operation at Low Frequency in Great Britain. P. J. Squire, British Electricity Authority.
- 54-370. The Effect of Frequency Reduction on Plant Capacity and on System Operation. H. A. Bauman, G. R. Hahn and C. N. Metcalf, Consolidated Edison Co. of N. Y., Inc.
- 54-368. Effect of Reduced Voltage and/or Frequency upon Steam Plant Auxiliaries. O. D. Butler and C. J. Swenson, Commonwealth Edison Co.
- 54-320. Forced Outage Rates of High Pressure Steam Turbines and Boilers. Joint Subcommittee on Application of Probability Methods to Power System Problems.

9:00 a.m.—Magnetic Amplifiers

- 54-325. Techniques for Measuring Cascaded Self-Saturating Magnetic Amplifier Performance. Henry Kaplan and Gerald Wolff, Ford Instrument Co.
- 54-392. Magnetic Characteristics Pertinent to the Operation of Cores in Self-Saturating Magnetic Amplifiers. R. W. Roberts, Westinghouse Electric Corp.
- 54-393. Single-Ended Saturable Reactor Circuit with Quiescent Current Compensation. R. J. Radus, Westinghouse Electric Corp.
- 54-377. Magnetic Amplifier Control of R-F Generators. G. R. Mohr and Reuben Lee, Westinghouse Electric Corp.
- 54-509. Analysis of Magnetic Amplifiers by the Use of Difference Equations. P. R. Johannessen, Massachusetts Institute of Technology.

2:00 p.m.—Air Transportation

- 54-420. The Nature of Voltage Ripple on D. C. Generators. F. N. Colamore, Jack and Heintz, Inc.
- CP.** Aircraft AC Generator Electrical Machine Constants As Affected by Design Variations. R. P. Judkins, Westinghouse Electric Corp.
- CP.** Some Design Criteria for Aircraft A-C Generating Systems. T. B. Owen, Hughes Aircraft Co.
- CP.** Build Up Problems in AC Generators for Aircraft. R. M. Fisher and E. F. Hanson, General Electric Co.

2:00 p.m.—Rotating Machinery Insulation

- 54-366. New Performance Standards for Electrical Insulation of Rotating Machines. Working Group on Evaluation of Insulation for Rotating Machines.
- 54-373. Insulation Systems for Random Wound Motors Evaluated by Motorette Tests. T. J. Gair, General Electric Co.
- CP.** Comparison of Test Methods for Evaluating Motor Insulation. R. H. Rech and E. Topcozewski, A. O. Smith Corp.
- CP.** Results of Co-operative Tests on Enameled Wire. J. F. Dexter, Dow-Corning Corp.
- CP.** Progress Report of Insulation Functional Evaluation Program on Test Bars and Model Windings. G. L. Moses, Westinghouse Electric Corp.

2:00 p.m.—Load Relief During Power System Emergencies

- 54-369. Load Shedding Program in the Pacific Northwest. J. O. Swanson and J. P. Jolliffe, Bonneville Power Administration.
- 54-345. Load Reduction by Underfrequency Relays during System Emergencies. W. C. Gierisch, Houston Lighting & Power Co.
- 54-372. Application and Test of Frequency Relays for Load Shedding. L. L. Fountain and J. L. Blackburn, Westinghouse Electric Corp.

54-330. Automatic Digital Computer Solution of Load Flow Studies. J. M. Henderson, General Electric Co.

2:00 p.m.—Management

CP.** Organization and Management of an Atomic Power Station. Titus LeClair, Commonwealth Edison Co.

CP.** Organization of a Small Company for Complex Engineering Work. John Logan, Cambridge Corp.

2:00 p.m.—Industrial Control

54-387. Accurate Control of Relative Speed and Cut in a Continuous Process Line. E. G. Anger and D. L. Pettit, Square D Co.

CP.** Servo Type Speed Regulator. N. L. Peterson, Cutler-Hammer, Inc.

CP.** Ambient-Compensated Thermal Overload Relays for Outdoor Control Centers. R. M. Brokaw, General Electric Co.

CP.** Speed Regulation of Press with Eddy Current Clutch and Brake. A. E. Lewis and J. W. Fox, Clark Controller Co.

2:00 p.m.—Cathodic Protection

CP.** Electrical Grounding and Cathodic Protection at the Fairless Works. W. E. Coleman and H. G. Frostick, U. S. Steel Corp.

CP.** Magnetic Amplifier Control of Cathodic Protection Equipment. D. R. Werner, American Tel. & Tel. Co.

CP.** Cathodic Protection Circuits. E. W. Schwarz and R. M. Wainwright, University of Illinois.

CP.** Whether Cathodic Protection. L. M. Plym, Illinois Bell Telephone Co.

Wednesday, October 13

9:00 a.m.—Higher Distribution Voltage for Metropolitan Areas

Note: The papers in this session have been published as a part of Special Publication S-66.

S-66. A New Approach to the Problem of Higher Distribution Voltages. A. M. DeBellis, Consolidated Edison Co. of N.Y., Inc., and S. B. Griscom, Westinghouse Electric Corp.

S-66. Economics of Various Secondary Voltages for Commercial Areas. T. C. Duncan, J. P. Neubauer, J. M. Comly, Consolidated Edison Co. of N. Y., Inc., R. F. Lawrence and Miles Maxwell, Westinghouse Electric Corp.

S-66. Distribution Equipment Used on 265/460 Volt Networks and Its Operating Features. L. Brieger, C. P. Xenis, A. J. Bisson, J. DeLellis, Consolidated Edison Co. of N. Y., Inc.

S-66. Secondary Network Equipment for 250 to 600 Volt Systems. R. L. Schwab and E. W. Stohr, Westinghouse Electric Corp.



Western Electric Co.

S-66. Future Utilization Voltages. L. G. Smith, Consolidated Gas, Electric Light & Power Co. of Baltimore.

9:00 a.m.—Air Transportation

54-327. Overvoltage Detection in Single and Multigenerator Aircraft A-C Systems. W. M. Tucker and M. Trbovich, Naval Research Lab.

CP.** Protection of Aircraft Parallel AC Systems Against Excitation Failures. H. H. Britten, S. C. Caldwell and A. J. Wood, General Electric Co.

54-357. A Weight Analysis of Modern Aircraft Electric Systems. H. L. Garbarino, A. K. Hawkes and J. A. Granath, Armour Research Foundation of Illinois Institute of Technology.

CP.** British Aircraft Electrical Engineering Practice. H. Zeffert.

9:00 a.m.—Nucleonics

9:00 a.m.—Feedback Control Systems

9:00 a.m.—Land Transportation

54-350. Diesel-Electric Locomotive Wheel Slipping—Causes, Effects and Methods of Control. R. I. Fort, Illinois Central Railroad.

54-339. Maintenance Testing of Insulation Resistance on Diesel-Electric Locomotives. W. E. Kelley, Pennsylvania Railroad Co.

54-344. Operating Experience in Diesel-Electric Locomotives Results in Design Changes. L. E. Legg, Chicago & Northwestern R. R.

54-382. Gearing for Diesel-Electric Locomotives. G. T. Bevan, International General Electric Co.

54-343. The Toronto Subway. J. G. Inglis, Toronto Transit Commission.

9:00 a.m.—Visual Output Devices: Printers and Plotters

CP.** Servomechanical Devices as Aids to Analysis, Data Handling and Control. F. L. Moseley, F. L. Moseley Co.

CP.** An X-Y Recording System for Computers. D. L. Pickens and B. L. Waddell, Telecomputing Corp.

CP.** History of X-Y Recorders. J. D. Kennedy, Electronic Associates.

CP.** Ferromagnetography. J. P. Hanna, General Electric Co.

9:00 a.m.—Rotating Machinery Insulation

54-365. The Motorette as a Tool for the Development of Improved Insulation Systems. W. B. Penn, General Electric Co.

CP.** The Evaluation of Modified Silicone Insulation Systems in Motors. Jack McDonald, Westinghouse Electric Corp.

CP.** Insulation Systems Evaluated Using Motorettes and Formettes. Lanier Greer, Reliance Electric & Engineering Co.

CP.** A Statistical Method for Predicting Insulation Life in Motors from Experimental Data. W. H. Horton, Westinghouse Electric Corp.

CP.** Proposed Test Procedure for Evaluation Systems of Insulation for High Voltage Generators. G. L. Moses, Westinghouse Electric Corp.

2:00 p.m.—Higher Distribution Voltage for Metropolitan Areas

Note: The papers in this session have been published as a part of Special Publication S-66.

S-66. The Relative Feasibility of 460 Volt or 208 Volt Service in Commercial Buildings. H. G. Barnett, R. A. Zimmerman and H. E. Lokay, Westinghouse Electric Corp.

S-66. Progress in Power System Engineering for Commercial Buildings. H. D. Kurt and Donald Beeman, General Electric Co.

S-66. Service Voltage Spread and its Effect on Utilization Equipment. H. G. Barnett and F. R. Lawrence, Westinghouse Electric Corp.

S-66. 480Y/277 Volt Power System in Telephone Building at Menands, New York. D. S. Brereton, General Electric Co. and H. J. Donnelly, New York Telephone Co.

S-66. The Advantages of 240/416 Volts as a Standard Secondary Voltage. J. B. Hodtun, Allis-Chalmers Mfg. Co.

2:00 p.m.—Communication Switching Systems

54-502. Interoffice Trunking and Signalling. F. H. Nolke, Rural Electrification Adm.

54-503. Some Recent Advances in the Economy of Routing Calls in Nationwide Toll Dialing. Imre Molnar, Automatic Electric Co.

CP.** Nationwide Dialing. D. W. Haskins, American Tel. & Tel. Co.

54-347. Automatic Percussion Welding. A. L. Quinlan, Western Electric Co., Inc.

2:00 p.m.—Air Transportation

54-359. Calculations on Voltage Unbalance for Three-Phase Synchronous Systems. B. J. Wilson and W. K. Gardner, Naval Research Lab.

54-374. Experimental Determination of 400 Cycle Impedance of Wire in Aircraft Power Distribution Circuits. J. D. Andrew, Douglas Aircraft Co., Inc.

CP.** Comparison of Solid and Split Bus Two Generator AC Systems. S. C. Caldwell and G. A. Phillips, General Electric Co.

CP.** Evaluation of Selenium Rectifiers and Capacitors for Use in Aircraft. R. A. Yereance and A. A. Balafas.

2:00 p.m.—Power Generation

54-504. Underexcited Reactive Ampere Limit for Modern Amplidyne Voltage Regulator. A. S. Rubenstein and M. Temoshok, General Electric Co.

54-384. Synchronous Condenser Operation with Negative Field Currents. K. R. McClymont and P. L. Dandeno, Hydro Electric Power Commission of Ontario.

54-505. Motor-Driven Excited Sets for Power Stations. J. B. Tice and M. Temoshok, General Electric Co.

54-506. The Gas Turbine Today. C. F. Kottcamp, Gulf Oil Corp. Re-presented for discussion.

54-507. The Success of the Steam Boiler. G. V. Williamson, Union Electric Co. of Missouri. Re-presented for discussion.

54-508. Turbine Generators—Present and Future. E. H. Krieg, Stone and Webster Engineering Corp. Re-presented for discussion.

54-509. Turbine Generators—Present and Future. E. H. Krieg, Stone and Webster Engineering Corp. Re-presented for discussion.

54-510. Turbine Generators—Present and Future. E. H. Krieg, Stone and Webster Engineering Corp. Re-presented for discussion.

2:00 p.m.—Visual Output Devices: Displays and Applications

CP.** The Charactron as a Digital Computer Read-Out. J. T. McNaney, Consolidated Vultee Aircraft.

CP.** A New Technique of Binary Addition. W. J. Schart, Consolidated Vultee Aircraft.

CP.** Automatic Data Transfer and Display Boards. G. E. Fenimore, Civil Aeronautics Adm.

CP.** Simultaneous Aircraft Position and Identification Display. J. T. McNaney, Consolidated Vultee Aircraft.

2:00 p.m.—Feedback Control Systems

9:00 a.m.—Air Transportation

CP.** Performance Characteristics of a Constant Speed Differential Hydraulic Transmission System. R. S. Conrad, Chance Vought Aircraft.

CP.** Controlled Speed AC Generator Drive Selection for the Light Weight Combat Airplane. R. E. Thorn and T. E. Abraham.

CP.** Accessory Design Problems. J. E. Wolf, Marquardt Aircraft Co.

CP.** Air Turbine Drives—Performance and Limitations. L. Royce, Stratos, Div. of Fairchild Engine & Airplane Corp.

9:00 a.m.—Relays and Transmission and Distribution

54-332. The Probability of Coincident Primary-Feeder Outages in Secondary Networks. D. N. Reys, Westinghouse Electric Corp.

54-363. Co-Ordination of Construction and Protection of Distribution Circuits—5 KV Class Based on Operating Data for Years 1949-50-51. Joint AIEE-EEI Working Group.

CP.** Fundamentals of Fuse-Breaker Coordination. L. D. Cronin, Chase Hutchinson and D. M. MacGregor, Ebasco Services, Inc.

CP.** Coordination of Sectionalizing Devices for Primary Feeder Protection. H. B. Thacker, Westinghouse Electric Corp.

CP.** Eight Years Experience with Oil Circuit Reclosures in Substations. A. C. Fagerlund and G. D. Stevens, Consumers Power Co.

9:00 a.m.—Transformers

54-324. Auto Transformers for Power Systems. O. T. Farry, Wagner Electric Corp.

54-395. A Proposed New Standard Control Scheme for Paralleling Transformers with Under-Load Tap Changers. J. Cosar, Hydro Electric Power Commission of Ontario.

54-379. Electrostatic Voltage Distribution and Transfer in Three-Winding Transformers. P. A. Abetti, General Electric Co.

54-380. Surge Transfer in Three-Winding Transformers. P. A. Abetti, General Electric Co. and H. F. Davis, Massachusetts Institute of Technology.

54-380. Surge Transfer in Three-Winding Transformers. P. A. Abetti, General Electric Co. and H. F. Davis, Massachusetts Institute of Technology.

9:00 a.m.—International Communications

CP.** A Transatlantic Telephone Cable. M. J. Kelly, G. W. Gilman, Bell Telephone Labs., Inc.; Sir Gordon W. Radley, R. J. Halsey, Post Office of the United Kingdom.

54-424. Rural Automatization in the Swedish Telephone System. Bertil Bjurel, Presented by Dr. Hakon Sterky, Direction Generale des Telecommunications de Suede.

54-424. Rural Automatization in the Swedish Telephone System. Bertil Bjurel, Presented by Dr. Hakon Sterky, Direction Generale des Telecommunications de Suede.

9:00 a.m.—Direct Current Machinery

54-322. An Improved Wide-Range Adjustable-Speed Drive. A. G. Conrad, A. R. Perrins, R. R. Shank, Yale University.

54-367. A Method of Finding Equalizer Section for D-C Armature Winding. T. C. Tsao, Ebasco International Corp., and N. F. Tsang, University of Arkansas.

54-319. Equations Depicting the Operation of the Direct-Current Motor. R. W. Ahlquist, University of Detroit.

CP.** Measurement of Dynamic Parameters of D-C Dynamos. L. D. Harris and R. E. Stephenson, University of Utah.

54-351. Air Humidity and Brush Contact Drop: The Effect of Water Vapor, Sulfur Dioxide and Hydrogen Sulfide. H. M. Elsey, L. E. Moberly and J. L. Johnson, Westinghouse Electric Corp. Re-presented for discussion.

54-351. Air Humidity and Brush Contact Drop: The Effect of Water Vapor, Sulfur Dioxide and Hydrogen Sulfide. H. M. Elsey, L. E. Moberly and J. L. Johnson, Westinghouse Electric Corp. Re-presented for discussion.

9:00 a.m.—Basic Sciences

54-361. A Comparison of Metals and Ferrites for High-Speed Pulse Operation. D. R. Brown, D. A. Buck and N. Menyuk, Massachusetts Institute of Technology. Re-presented for discussion.

54-361. A Comparison of Metals and Ferrites for High-Speed Pulse Operation. D. R. Brown, D. A. Buck and N. Menyuk, Massachusetts Institute of Technology. Re-presented for discussion.

Thursday, October 14

9:00 a.m.—Air Transportation

CP.** Performance Characteristics of a Constant Speed Differential Hydraulic Transmission System. R. S. Conrad, Chance Vought Aircraft.

CP.** Controlled Speed AC Generator Drive Selection for the Light Weight Combat Airplane. R. E. Thorn and T. E. Abraham.

CP.** Accessory Design Problems. J. E. Wolf, Marquardt Aircraft Co.

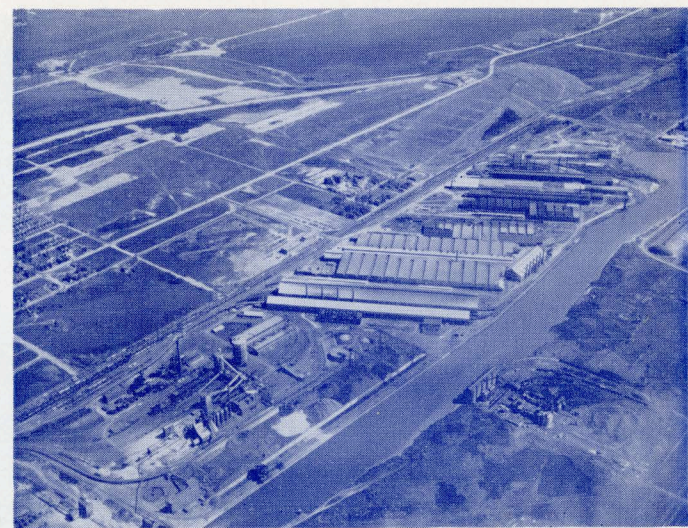
CP.** Air Turbine Drives—Performance and Limitations. L. Royce, Stratos, Div. of Fairchild Engine & Airplane Corp.

9:00 a.m.—Relays and Transmission and Distribution

54-332. The Probability of Coincident Primary-Feeder Outages in Secondary Networks. D. N. Reys, Westinghouse Electric Corp.

54-363. Co-Ordination of Construction and Protection of Distribution Circuits—5 KV Class Based on Operating Data for Years 1949-50-51. Joint AIEE-EEI Working Group.

CP.** Fundamentals of Fuse-Breaker Coordination. L. D. Cronin, Chase Hutchinson and D. M. MacGregor, Ebasco Services, Inc.



Chicago Aerial Survey Co.
Republic Steel Corp.

Friday, October 15

- 54-510. Characteristics of the High Current Argon Arc with Various Electrode Materials. J. W. Dzimianski, Allis-Chalmers Mfg. Co. and T. B. Jones, The Johns Hopkins University.
- 54-511. The Measurement of Electrostatic Potential Due to Net Ion Space Charge in Air. J. S. Carroll and S. B. Hammond, Stanford University.
- 54-512. Harmonic Analysis for Non-Linear Characteristics. L. J. Lewis, University of Washington.

2:00 p.m.—Air Transportation

- CP.** Use of Analogs in Jet Engine Control Development. S. Crowell, E. Poston and C. Thompson.
- CP.** An Airborne Transceiver. K. E. Vaughn.
- CP.** A Simplified Omni-Range System for Terminal Navigation (TVOR). D. O. McCoy.
- 54-358. Aircraft Tachometer Indicator—An Analysis of Design Factors Affecting Starting Performance. L. T. Akeley, General Electric Co.

2:00 p.m.—Transmission and Distribution

- 54-337. Economics of Switched Shunt Capacitors and Synchronous Condenser Kilovar Supply for Transmission Systems. P. G. Brown, G. W. Otte, L. E. Saline and V. C. Talley, General Electric Co.
- 54-385. An Evaluation of Power Factor Correction on a System Basis. H. R. Tomlinson and R. O. Bigelow, New England Power Service Co.
- 54-331. Transient Stability Studies—I Synchronous and Induction Machines. D. F. Shankle, C. M. Murphy, R. W. Long and E. L. Harder, Westinghouse Electric Corp.
- 54-501. Practical Application of Sag and Tension Calculations to Transmission Line Design. J. Lummis and H. D. Fischer, Jr., Southern California Edison Co.

2:00 p.m.—High Fidelity and Magnetic Recording

- CP.** A New High-Fidelity High-Powered Amplifier and Speaker Reproducing System. F. H. McIntosh, Consulting Engineer.
- CP.** General Problems of Standardization in the Electronic Industries with Reference to the Definition of High Fidelity. F. H. Slaymaker, Stromberg-Carlson Co.
- 54-383. A Survey of Magnetic Recording. S. J. Begun, Clevite-Brush Development Co.

2:00 p.m.—Direct Current Machinery

- 54-326. A New Method of Investigating Commutation as Applied to Automotive Generators. E. I. Shobert II and J. E. Diehl, Stackpole Carbon Co.
- CP.** Reconditioning of Electrical Equipment Which has been Submerged in Salt Water. W. H. Fifer, Bureau of Ships, U. S. Navy.
- CP.** Plant Maintenance for Brushes and Commutators. L. D. Cook, Commonwealth Edison Co.
- CP.** Field Problems in DC Machinery. H. Q. Griffith, Belyea Co., Inc.

2:00 p.m.—Relays and Transformers

- 54-396. Detection of Corona in Oil at Very High Voltages. T. W. Liao and J. S. Kresge, General Electric Co.
- 54-397. The Effect of Reclosing Practice on Short Circuit Thermal Limits of Transformers. J. E. Clem, Consulting Engineer.
- 54-398. Operating Experience with 230 Kv Automatic Reclosing on BPA System. D. A. Gillies, Bonneville Power Administration.
- 54-518. Bibliography on Transformer Noise. AIEE Transformer, Subcommittee on Subject No. 30, Working Group No. 1.

9:00 a.m.—Air Transportation

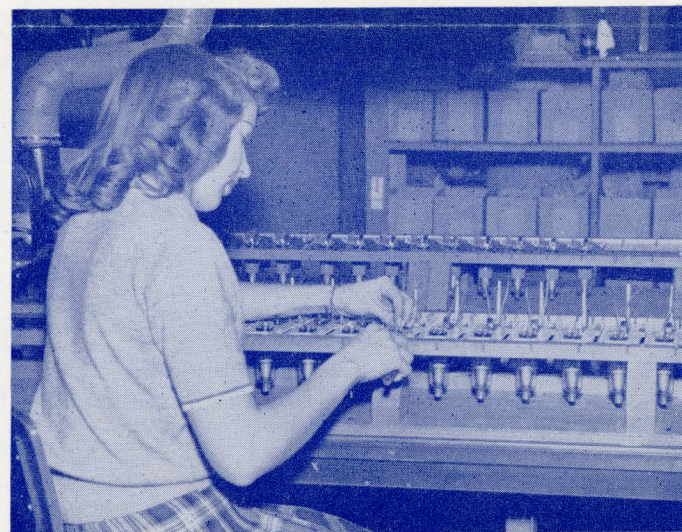
- CP.** Aircraft Equipment Electrical Insulation Problems. L. B. Kilman and J. P. Dallas, Hughes Tool Co.
- 54-422. Environmental Testing of Small Electronic Components at High Sound Intensities. F. Mintz and M. B. Levine, Armour Research Foundation of Illinois Institute of Technology.
- 54-423. Development of Large-Ratio Release Circuit-Breaker Mechanism. J. A. Scarcelli and R. Steiner, U. S. Naval Air Development Center.
- 54-352. Comments on Aircraft Switch Testing. T. R. Stuelpnagel and J. P. Dallas, Los Angeles, Calif.
- 54-353. Reliability Improvement—A Plan to Achieve and Measure Reliability of Aircraft Equipment. J. E. Luckman, U. S. Naval Air Development Center.

9:00 a.m.—Insulated Conductors

- CP.** A Classified Bibliography for Insulated Conductors—A Committee Report. A. S. Brookes, Chairman Standards and Publications Subcommittee.
- 54-399. Moisture Studies on Ozone Resisting and Type RHRW Rubber Insulations. E. C. DeBaene and C. A. Anderson, The Detroit Edison Co.
- CP.** The Effects of High-Energy Gamma Radiation on Dielectric Solids. P. H. Klein and C. Mannal, General Electric Co.
- CP.** X-Ray Cable—Its Design for Long Service. L. A. Duna, American Steel and Wire Co.

9:00 a.m.—Switchgear

- 54-342. Adaptation of a Conventional Oil Circuit Breaker to Capacitance Switching. E. J. Simmons, Long Island Lighting Co. and V. A. Treat, Pacific Electric Mfg. Corp.
- 54-341. Maintenance Testing of Oil Circuit Recloser Insulation with High Voltage D-C. R. W. Bethke and L. C. Westphal, Line Material Co.
- 54-340. A New 69 Kv Oil Circuit Breaker for High Interrupting Duty. V. E. Phillips and K. G. Darrow, General Electric Co.
- CP.** The Design of Industrial Distribution Systems: An Epitomization of Available Data—Part II. T. J. Higgins, University of Wisconsin.



Marshall Marker Photo
Production Line of Motorola, Inc.

9:00 a.m.—Color Television and International Broadcasting

- 54-334. Differential Phase and Gain Measurements in Color Television Systems. H. P. Kelly, Bell Telephone Labs., Inc.
- CP.** Recording Color Television Programs. E. D. Goodale, National Broadcasting Co.
- CP.** The Engineering Development of the Voice of America. E. T. Martin, Julius Ross and George Jacobs, U. S. Information Service.
- CP.** Very-High-Powered Long-Wave Broadcasting Station. C. E. Smith, Carl E. Smith Consulting Radio Engineers; J. R. Hall and J. O. Weldon, Continental Electronics Mfg. Co.

9:00 a.m.—Metal Industry

- CP.** A New Method of Calculating D. C. Dynamic Braking for Wound Rotor Motors. B. H. Carlisle, Clark Controller Co.
- 54-348. A-C Power System at the Fairless Works. S. S. Watkins, Gibbs & Hill Inc.; W. A. Derr, L. L. Fountain and R. B. Squires, Westinghouse Electric Corp.
- CP.** Modern Tinplate Annealing. John Soyering, U. S. Steel Corp. and A. C. Parsons, General Electric Co.
- CP.** Modern Controls for New 4-Stand Cold Mill at Youngstown Sheet and Tube Co. C. E. Homer, Youngstown Sheet and Tube Co. and R. E. Manko, General Electric Co.

9:00 a.m.—Electric Circuit Theory

- 54-513. The Transmission-Matrix of N Alike Cascaded Networks. Leo Storch, Hughes Aircraft Co.
- 54-514. Acceleration Plane Method for Analysis of a Circuit with Nonlinear Inductance and Nonlinear Capacitance. Y. H. Ku, Moore School of Electrical Engineering.
- 54-515. Analysis of Nonlinear Coupled Circuits. Y. H. Ku, Moore School of Electrical Engineering.
- 54-516. A Rectifier Algebra. D. H. Schaefer, Naval Research Lab.
- 54-394. A Symbolic Method for Synthesis of Two-Terminal Switching Circuits. D. Zeheb and W. P. Caywood, Carnegie Institute of Technology.

2:00 p.m.—Insulated Conductors

- 54-338. Economics and Comparison of Reliability of Leaded and Non-Leaded Secondary Distribution Systems. E. L. Leinbach, The Detroit Edison Co. and C. P. Xenis, Consolidated Edison Co. of N. Y., Inc.
- 54-378. A Progress Report on Performance of Secondary Network Cables. E. C. DeBaene, F. M. Hull and R. H. Hiester, The Detroit Edison Co.
- 54-335. High Pressure Self-Contained Gas-Filled Cable Installation. G. B. Shanklin, General Electric Co.

2:00 p.m.—Protective Devices

- 54-360. Grounding of Sub-Transmission Systems. G. D. Breuer, I. B. Johnson and S. V. Lyon, General Electric Co.
- 54-400. Protective Spark Gaps with Radio-Active Substances. D. R. Hardy, The University of Manchester.
- CP.** The Control of High-Voltage Impulse Generators. D. R. Hardy and T. E. Broadbent, The University of Manchester.

2:00 p.m.—Mining Industry

- CP.** Modern Electric Power Shovels. J. F. Weis, Marion Power Shovel Co.
- CP.** Magnetic Amplifier Regulator Control for Mine Hoist. R. E. Peterson, Westinghouse Electric Corp.
- CP.** Substitutes for Frame Grounding of Mining Machinery. E. J. Gleim, U. S. Bureau of Mines.
- CP.** Special Motor Applications for Underground Mining Machinery. C. C. Boesewetter and R. M. Buckeridge, Goodman Mfg. Co.

2:00 p.m.—Radio and Wire Communications

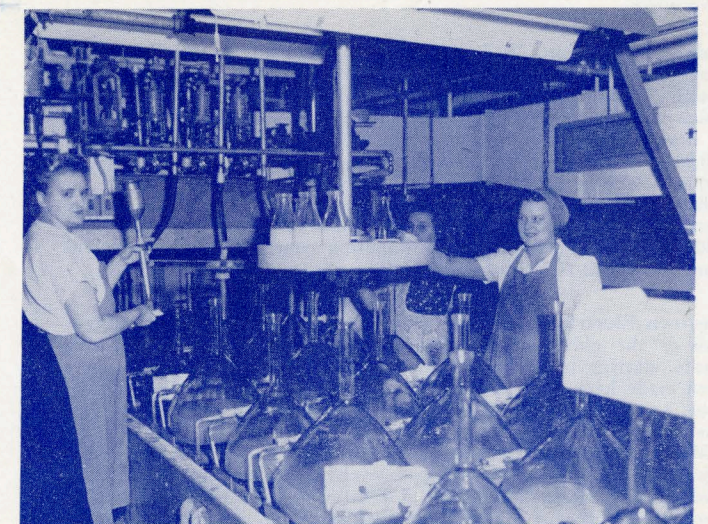
- A Single Presentation Will Be Made of the First Six Papers.*
- 54-401. A New Multichannel Teletype Terminal for Use on Long Rang HF Radio Systems. A. Mack and R. H. Levine, Signal Corps Engineering Labs.
 - 54-402. Telegraph Terminal AN/FGC-29 Equipment Features. F. H. Cusack, Western Union Telegraph Co.
 - 54-403. Telegraph Terminal AN/FGC-29 Circuit Design Aspects. J. E. Boughtwood, Western Union Telegraph Co.
 - 54-404. Considerations for a New Military Radio Relay System. M. L. Ribe and S. P. Brown, Signal Corps Engineering Labs.
 - 54-405. A New UHF Multichannel Military Radio Relay System. J. G. Nordahl, Bell Telephone Labs., Inc.
 - 54-406. Equipment Features of a UHF Multi-Channel Military Radio Relay System. V. I. Crusier, Bell Telephone Labs., Inc.
 - 54-407. A Private Microwave Radio System for Power Company Use. D. F. Hazen, Illinois Power Co. J. W. Danser and G. S. Zilis, Illinois Bell Telephone Co.
- A Single Presentation Will Be Made of the Following Papers.*

- 54-408. Considerations for Development of New Military Carrier Telephone Systems. R. S. Boykin, J. H. Johnson and S. D. Bedrosian, Signal Corps Engineering Labs.
- 54-409. A New Cable Design for Military Carrier Telephone Systems. H. F. X. Kingsley, Signal Corps Engineering Labs.
- 54-386. New Military Carrier Telephone Systems. G. H. Huber, W. R. Miller and C. W. Schramm, Bell Telephone Labs., Inc.
- 54-410. New Military Carrier Telephone Systems Equipment Features. J. P. Hoffmann, Bell Telephone Labs., Inc.
- 50-411. Simplified Transmission Engineering in Exchange Cable Plant Design. L. B. Bogan, and K. D. Young, American Tel. & Tel. Co.

2:00 p.m.—Single Phase and Fractional HP Machinery

- 54-336. Space Harmonics Generated by Concentric Windings. A. J. Berman, G. Farmanfarma and R. Schinzinger, University of California.
- 54-328. Iron Loss in Universal Motors. W. E. Wier, Westinghouse Electric Corp.
- 54-412. Permanent Magnet Excited Synchronous Motors. F. W. Merrill, General Electric Co.
- 54-413. Unbalanced Magnetic Pull in Induction Motors with Eccentric Rotor. A. Covo, Westinghouse Electric Corp.

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



Depositing the Fluorescent Screen at the Rauland Corp.

AIEE FALL GENERAL MEETING

HOTEL RESERVATIONS—Hotel room reservation requests should be sent to Convention Department, Morrison Hotel, Madison and Clark Streets, Chicago 2, Illinois, or to the hotel of your choice. AIEE should be mentioned in the request, and a copy sent to G. L. Welch, Hotel Arrangements Committee, c/o Westinghouse Electric Corporation, Merchandise Mart, Chicago 54, Illinois.

Rates per day at the Morrison Hotel are:

Single Room (one person)	\$ 5.50 to \$12.00
Double Room—Double Bed (2 persons) ..	9.00 to 16.00
Double Room—Twin Beds (2 persons) ...	11.50 to 16.00
Suites—Parlor, Bedroom (Double Bed) ..	18.00 and 22.00
Suites—Parlor, Bedroom (Twin Beds) ...	27.00 to 37.00

All rooms with bath, Servidor and circulating ice-water.

INSPECTION TRIPS—Aliens should give advance notice of plans to make inspection trips. Some of these trips will require 24 hours minimum to make arrangements for aliens to visit plants. They should state their names, nationalities, business connections, and the nature of their business in this country. Registration for each inspection trip will be limited. Transportation for the Ridgeland Station inspection trips will be furnished by the Commonwealth Edison Company. There will be no charge for this trip. Other inspection trips—\$2.00 each. Send request for advance registration *and fees* to: D. C. Percy, N. M. Mintz & Associates, 1809 East 74th Street, Chicago 49, Illinois.

Delta Star Division of H. K. Porter Co., Tuesday afternoon—This plant manufactures high tension electrical switching equipment, heavy duty, metal enclosed bus runs, outdoor substations and allied equipment. The company was founded in 1908 and has been located at the present address since 1912. It was founded by H. W. Young and Allen S. Pearl and continued under their ownership until December 1950, when all the capital stock was purchased by the H. K. Porter Company.

The main office and factory in Chicago include a steel fabricating shop, sheet metal shop, galvanizing machine shop, switch assembly and laboratory. Total available floor space is 187,000 sq. ft. In addition to the buildings, 52,000 sq. ft. of fenced space is used for insulator storage and parking facilities. The total number of employees in Chicago is about 700.

Production machinery consists essentially of metal cutting, forming, drilling, tapping, welding, and heat treating equipment. Principal equipment includes non-automatic screw machines, engine lathes, milling machines, drill presses, grinders, welders, shapers and hydraulic presses up to 700-ton size. Laboratory and test facilities include: a 1,000,000-v, 60 cycle transformer bank for dielectric tests, 7,000 and 12,000-amp, 3-phase, 60-cycle transformer banks for conducting heat run tests, a 50,000 lb. mechanical testing machine, transformers for short-time current testing at values up to 100,000 RMS amp, and an ice chest for simulating ice conditions on outdoor switches.

Buses for this trip will go via Commonwealth Edison's Jefferson St. Substation affording guests a brief opportunity to see this unusual installation.

Ridgeland Station, Wednesday morning and afternoon. This is the newest and most modern of 11 generating plants of the Commonwealth Edison Company. It is located on the Illinois Waterway which supplies condensing water and provides for delivery of coal by barge. The station will have an ultimate generating capacity of 600,000 kw. Of particular interest at Ridgeland are the cyclone furnaces with which the boilers are equipped.

Ridgeland has one of the largest coal storage piles in the middle west. Space is provided for a reserve stockpile which might reach 1,300,000 tons and modern coal handling equipment and operations alone are worth the trip to Ridgeland.

Western Electric Company—Hawthorne Plant—Tuesday morning—This is the oldest of Western Electric Company's manufacturing plants, starting in 1905. More than half the world's telephones have been made here. This is one of the largest industries in the Chicago Area, employing nearly 20,000 people. Total annual payroll last year was \$94,000,000.

Main products are: panel, step-by-step and cross-bar central office equipment, lead-covered and Alpeh exchange cable, copper line wire, loading coils, message registers, automatic message accounting equipment, steel wire and strand, pole line hardware, apparatus cabinets, power boards and fuse panels, keys, jacks, and heat coils.

Hawthorne plant covers 128 acres and has over 4,000,000 sq. ft. of floor space. It has its own telephone exchange, library, stores, power plant, police and fire departments, and restaurants.

Republic Steel—Thursday afternoon—The visit to the Republic Steel Company plant at South Chicago will provide members with an opportunity to see the complete steel-making operation in a single plant. Republic is the world's largest producer of electric furnace steel, about half of which is made in nine furnaces at the Chicago plant.

Visitors to the South Chicago plant will have an opportunity to see the blast furnace, coke ovens, 44-inch blooming mill, 36-32 inch bar-mill, 21-inch billet mill, seamless tube mill, 10-inch combination bar and rod mill, 12-inch bar mill, tube mill finishing operations, tilting open hearth and electric furnace melt shop, wire mill, and ore, coal and limestone dock.

Motorola, Inc.—Thursday afternoon—Motorola, Inc. is one of the world's largest radio manufacturers, a leader in the manufacture of two-way radio communications equipment, and one of the big-four television set producers. The Motorola plant is unique because of its astounding growth. At the start of World War II, Motorola occupied 185,000 sq. ft. of plant area in Chicago. Today it occupies over 1,000,000 sq. ft. It is the world's largest independent manufacturer of automobile radios.

University of Chicago Institutes for Basic Research—Thursday morning—Chicago University's Institutes of Basic Research include the Institute for Nuclear studies and the Institute for the study of metals. Guests on this trip will visit the Radio Carbon Laboratory, the Coincidental Counting Laboratory, the Low Temperature Laboratory, and the Cyclotron and Betatron Laboratory. They will have an opportunity to see the 450 million electron volt cyclotron, the 100 million electron volt betatron, electronic circuits for millimicrosecond coincidence counting, determining the age of ancient objects with C14, and the low-temperature laboratory, one degree K.

Rauland Corporation—Wednesday afternoon—At the Rauland Corporation plant visitors will see complete facilities for development and mass production of special tubes and other electronic devices to military specifications. The plant has more than a mile of flexible conveyor systems and there are over 120,000 sq. ft. of sprinklered floor space, much of it air conditioned, in the main plant. There is an additional 45,000 sq. ft. in outside plants.

There is large special purpose automatic and semi-automatic production equipment, much of it designed and built by Rauland, for metal-to-glass sealing, high vacuum pumping and sealing, baking and annealing, washing, and handling of gases.

Production cleanliness and quality control facilities are also features of this unusual plant.

There are complete research facilities in the field of higher electronics, ceramics, photosensitive and infrared devices, thin films, gases, metal welding, and metal-to-glass sealing, and tri-color tubes.

Registration—Members can simplify registration procedures by returning the accompanying registration card promptly filled out. This will save time in completing registration details upon arrival at the hotel. The registration desk in the Morrison Hotel will be open Sunday afternoon, October 10th, and will be open daily thereafter during convention hours. The registration fee will be \$3.00 for members and \$5.00 for non-members. No fee will be required of enrolled students and immediate families of members.

Members of the 1954 Fall General Meeting Committee are: Francis A. Cox, General Chairman; Frank D. Troxel, Vice-Chairman; Howard R. Stevens, Secretary; Marvin V. Maxwell, Treasurer; William M. Ballenger, Hotel Arrangements; John C. Woods, Finance and Budget; Arthur B. Bronwell, Technical Program; Elmer G. Norell, Registration; Merlin J. Adams, Trips-Transportation; Edwin R. Whitehead, Dinner Dance; John Romano, Smoker; L. E. Randall, Entertainment; Leonard R. Janes, Sales of Papers; Mrs. R. R. O'Conner, Ladies Activities; Rudolph C. Erickson, Hospitality; Nathan Cohn, Chicago Section Representative, General Session Program; and Ed Allen, Publicity.

Issued by
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS
33 West 39th Street, New York 18, N. Y.

PRINTED IN U.S.A.