Winter General Meeting

January 26-30, 1948

PITTSBURGH, PA.

Hotel William Penn

The Golden Triangle at Night—viewed from Mt. Washington across the Monongahela

FEATURING: "MINING AND STEEL"

Pittsburgh, Pa., will be host to the Winter General Meeting which will be held with headquarters in the Hotel William Penn, January 26-30, 1948. Many of the sessions will feature electrical applications in the mining and steel industries. Others treat subject matter practically throughout the entire range of technical activities. Inspection trips have been coordinated with the technical sessions. On the social side, a Smoker, Dinner-Dance, and Ladies Entertainment program have been arranged.

GENERAL SESSION: On this occasion the Edison Medal will be presented to Dr. Joseph Slepian, Associate Director of Research, Research Laboratories, Westinghouse Electric Corporation. The medal was awarded, "For his theoretical and practical contributions to power systems through circuit analysis, arc control, and current interruption."

An illustrated feature talk on the subject of "Solar Radiation and Its Effect Upon Power Transmission and Radio Communication" will be given by Jack T. Wilson, Physicist, Allis-Chalmers Manufacturing Company.

THE SMOKER: This, the most popular event of the Winter General Meeting, will be held Tuesday evening, January 27 in the William Penn Hotel. Dinner will start at 6:30 p.m. with an array of top-notch vaudeville acts following. Tables for dinner will accommodate 4 or 10 persons. Early reservations are suggested due to limited seating capacity. Tickets $7.50 per person.

THE DINNER-DANCE: This year marks the revival of the formal Dinner-Dance which will be held in the ballroom of the William Penn Hotel, Wednesday evening, January 28th. Dinner will start at 7:00 p.m. followed by dancing and a floor show. Tables for the Dinner and Dance will accommodate 4 or 10 persons. Tickets $6.00 per person.

Reservations should be addressed to Mr. M. S. Angier, Chairman, Entertainment Committee, P. O. Box 1017, Pittsburgh 30, Pa.

LADIES' ENTERTAINMENT: A varied and interesting program has been prepared for the ladies: a luncheon, teas, dinners, tours of the city including the Block House and inclined railway, trips to H. J. Heinz and the "Buhl Planetarium and Institute of Popular Science," and an afternoon at the University of Pittsburgh's Cathedral of Learning to see the unique Nationality Rooms, Heinz Chapel, and the Stephen Foster Memorial.

ETA KAPPA NU RECOGNITION DINNER: The Eta Kappa Nu recognition dinner will be held Monday evening, January 26, in the Urban Room of the William Penn Hotel. Mr. W. J. Lyman of the Duquesne Light Company has been appointed chairman of the Pittsburgh arrangements for this dinner. An award and honorable mention awards will be presented for each of the years, 1942-47 inclusive.

INSPECTION TRIPS to the following industries have been arranged. Registration fee 50¢ per person per trip except for the Tidd trip which will be $2.00 per person per trip.

1. Copperweld Steel Company—Glassport, Pa.

The manufacture of copperweld steel products will be shown and the facilities for producing and controlling the products demonstrated.
Monday, 26th—1:30 p.m.

2. Irvin Works—Carnegie Illinois Steel Corp.

This is the largest steel plate rolling plant in the world. The equipment and its operation will be inspected
Tuesday, 27th—1:30 p.m.

3. Pittsburgh Plate Glass Company—Creighton, Pa.

This company is the largest manufacturer of plate glass in the world. The operation of this plant will show how some of these products are made. *Tuesday, 27th—9:30 a.m*

4. Springdale Power Plant—West Penn Power Co.

This plant has seven large generators the most recent one being an 81,250 Kva, 3600 RPM unit. There is also an ignitron rectifier exciter. *Tuesday, 27th—9:30 a.m.*

5. Dravo Corporation—Neville Island

Construction on towboats and large freight barges will be on view and the mass-production arrangements for building these craft will be evident. *Wednesday, 28th—1:30 p.m.*

Great interest has been shown in the Summer General Meeting to be held in Mexico City, June 21-25. Travelogue pictures in color will be shown each afternoon and preceding the General Session.

AIEE WINTER GENERAL MEETING

6. Westinghouse Electric Corp.—East Pittsburgh Works

This trip will cover the manufacture aisles on large generators, circuit breakers and allied equipment. In addition a demonstration of large circuit breaker operation will be given in the high power testing laboratory. *Wednesday, 28th—1:30 p.m.*

7. 10,000 Kva Series Capacitor in 66 Kv Circuit—Duquesne Light Co.

This largest and highest voltage series capacitor will be shown in operation carrying a circuit load of approximately 50,000 Kva. Certain protective devices will be in view. *Thursday, 29th—9:30 a.m.*

8. Aluminum Company of America Research Laboratories—New Kensington, Pa.

Will visit the various divisions of this modern research laboratory which include Metallography, Paints, Mechanical Testing, and Analytical laboratories. *Thursday, 29th—1:00 p.m.*

9. Bureau of Mines Explosives Testing Stations—Bruceton, Pa.

A mine explosion will be demonstrated and an opportunity will be given for visitors to inspect the test mine.
Thursday, 29th—1:30 p.m.

10. Tidd 500 kv Test Lines and Power Station—Brilliant, Ohio

The test equipment including lines, towers, transformers, lightning arresters, and testing devices will be on view as well as the newest power plant of the American Gas and Electric Company's system.
Monday, 26th and Friday, 30th—1:30 p.m.

The following trips may be taken daily except No. 11 for which members should register.

11. University of Pittsburgh Clyclotron

A trip to see the operation of this equipment will be scheduled for several different days. The equipment and its practical uses will be explained.
Tuesday, 27th; Wednesday, 28th; and Thursday, 29th—2:30 p.m.

12. Heinz 57 Varieties Factory

Visitors may inspect this plant at certain times on any of the days of the week of January 26. Processing, preparation, preserving, packing, etc., of various food products will be observed.

13. Buhl Planetarium

The Planetarium may be visited any evening. Displays of electrical devices will be on evidence.

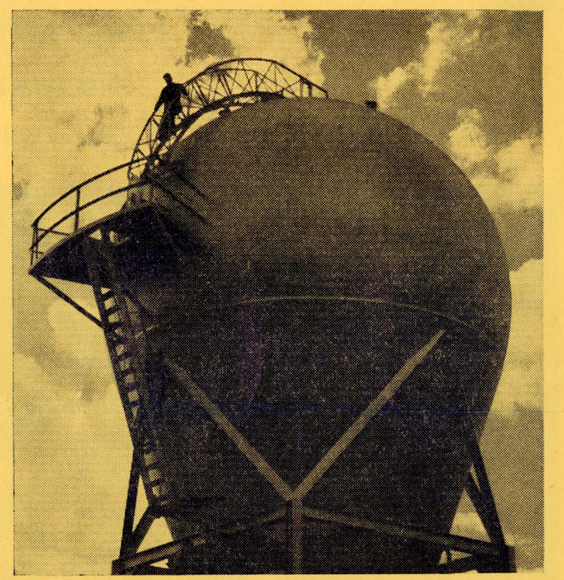
14. Inclined Railway

Opportunities will be given for visitors to ride on one of the inclined railways—probably the one which goes up Mt. Washington so that a view of downtown Pittsburgh can be seen.

HOTELS: The approximate rates of several Pittsburgh hotels are given in the accompanying table. Members should make hotel reservations by writing directly to the hotel preferred. Although arrangements have been made for sufficient rooms for the number expected to attend, they will be held only if specifically reserved by those who will occupy them. Reservations should be made promptly.

Approximate Hotel Rates

Hotel	Single Bed	Double Bed	Twin Beds	Suites
William Penn	$4.25- 7.00	$6.25-10.00	$7.00-13.00	$14.00-60.00
Roosevelt	3.75-10.00	5.50- 6.50	7.00-12.50	
Pittsburgher	3.50- 5.00	5.00- 6.00	6.50- 7.00	12.00-14.00
Keystone	3.25- 4.00	4.75- 6.00	7.00- 8.00	
Henry	2.00- 4.75	4.00- 7.25	4.25- 7.25	
Fort Pitt	2.00- 5.25	3.25- 6.25	6.25- 8.00	
Schenley (Oakland Section)	4.25 up		7.00 up	
Webster Hall (Oakland Section)	2.50- 5.00	6.00- 7.00	4.00- 7.70	



Westinghouse Atom Smasher at East Pittsburgh—Trip to the works on Wednesday afternoon

ADVANCE REGISTRATION: Members should register in advance by promptly filling in and mailing the enclosed advance registration card. This will assist the committees in making arrangements and save time at the registration desk on arrival. A non-member registration fee of $2.00 will be charged all non-members except members of the Association of Iron and Steel Engineers, members of the American Mining Congress, and members of the American Welding Society, who have been invited to take part in the industry group sessions; Enrolled Students; and the immediate families of members.

COMMITTEES: The members of the General committee for the 1948 Winter General Meeting are: C. A. Powel, chairman; C. T. Sinclair, vice-chairman; L. N. Grier, secretary-treasurer; H. S. Fitch, Paul Frederick, J. R. MacGregor, A. C. Monteith. Subcommittee chairmen: M. S. Angier, entertainment; R. L. Dunlap, finance; M. Getting, publicity; R. C. Gorham, meetings and papers; A. A. Johnson, inspection and transportation; B. M. Jones, registration and information; Mrs. G. A. Price, ladies' entertainment; C. M. Skooglund, hotels.

Monday, January 26

9:00 a.m.—Registration

9:30 a.m.—Electronic and Resistance Heating

*CP. Measurement of Interference from Radio-Frequency Heating Equipment. G. H. Brown, RCA.

*CP. Shielding of Radio Frequency Heating Equipment. J. E. Eiselein, RCA.

48-10. F.C.C. Diathermy Design for Low-Harmonic Radiation and Good Frequency Stability. E. W. Chapin, W. K. Roberts, M. C. Mobley, Jr., Federal Communications Comm. 20 cents by mail.

48-17. Some Economic Aspects of Radio Frequency Heating. L. M. Duryee, The Connecticut Lt. and Pr. Co. 35 cents by mail.

*CP. Simple Means for the Prediction of Generator Performance in Induction Heating. Eugene Mittelmann, Consulting Engr. and Physicist.

*CP. Industrial Electric Resistance Heating. L. P. Hynes, Elec. and Mech. Engr.

TECHNICAL PROGRAM

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

48-100. An X-Ray Thickness Gage for Hot-Strip Rolling Mills. C. W. Clapp, R. V. Pohl, General Elec. Co. 25 cents by mail.

48-14. X-Ray Thickness Gage for Cold Rolled Strip Steel. W. N. Lundahl, Westinghouse Elec. Corp. 30 cents by mail.

*CP. Pin Hole Detectors for the Steel Industry. M. D. Bassett, L. U. C. Kelling, General Elec. Co.

9:30 a.m.—Relays

48-6. Bibliography of Relay Literature 1944-1946. Project Committee on Relay Bibliography. 25 cents by mail.

48-12. Relaying Difficulties Disclosed by Staged Fault Tests. W. A. Morgan, Byron Evans, Bureau of Reclamation. 30 cents by mail.

48-13. Service Restoration with Automatic Air Break Switches. K. N. Reardon, West Penn Power Co. 25 cents by mail.

9:30 a.m.—Instruments for Radiation Measurements

*CP. High-Speed Counters. J. L. Lawson, General Elec. Co.
*CP. Crystal Counters. R. Hofstader, Princeton Univ.
*CP. Photomultipliers. J. W. Coltman, Westinghouse Elec. Corp.
*CP. GM Counters. L. F. Curtiss, Natl. Bureau of Stds.
*CP. Vibrating Reed Electrometer. Harold Forstat, Argonne Labs.

9:30 a m —Symposium on New Materials

*CP. Magnetic Oxides. F. G. Brockman, Philips Labs., Inc.

*CP. Development of High Permeability Iron. G. W. Elmen, E. A. Gaugler, Naval Ordnance Lab.

Dielectrics

*CP. Properties of Dielectrics Composed of Titenates of the Alkaline Earth Oxide. G. R. Shelton, Natl. Bureau of Stds.

Insulation

*CP. New Polymers for Electrical Insulation. J. R. Perkins, E. I. du Pont de Nemours, Plastics Dept.

*CP. Polyester Resins as Electrical Insulation. C. F. Hill, N. C. Foster, Westinghouse Research Labs.

*CP. Sulphur Hexafluoride. J. T. Pinkston, The Harshaw Chemical Co.

*CP. Silicone Rubber for Electrical Uses. R. O. Sauer, General Elec. Co.

*CP. Silicone Insulation for Electrical Uses. T. A. Kauppi, Dow-Corning Corp.

*CP. Permafil for Electrical Applications. J. A. Loritsch, General Elec. Co.

*CP. Synthetic Rubber as Cable Insulation. J. T. Blake, Simplex Wire & Cable Co.

*CP. New Plastic Materials for Electrical Industry. M. C. Caine, Monsanto Chemical Co.

Specialties

*CP. The Welding of Glass with a High Frequency Electric Torch. E. M. Guyer, Corning Glass Works.

Semi-Conductors

*CP. Rectification Properties of Silicon and Germanium. J. H. Scaff, Bell Tel. Labs.

1:30 p.m.—Trip to Copperweld Steel Co.

1:30 p.m.—Trip to Tidd 500-Kv Test Lines

2:00 p.m.—Power Supply to Steel Mills

*CP. Effect of Load Swings on Frequency and Tie-Line Load Control. T. E. Purcell, Duquesne Light Co.

*CP. Economics of Process Steam Generation. Mr. Zelley, John A. Roeblings and Sons.

48-15. Suddenly Applied Loads Carried by a Variable Ratio Synchronous-Induction Frequency Changer. A. G. Darling, General Elec. Co.; G. A. Kaufman, Jones and Laughlin Steel Corp. 20 cents by mail.

*CP. Power Generation for Industrial Plants. F. D. Troxel, Sargent and Lundy.

2:00 p.m.—Industrial Control

48-98. The Liquid Rheostat for Speed Control of Wound-Rotor Induction Motors. G. L. McFarland, Wm. Alvarez, General Elec. Co. 25 cents by mail.

*CP. A New Liquid Rheostat for Steel Mill Use. T. B. Montgomery, Allis-Chalmers Mfg. Co.

48-11. Improvements in Rolling Mill Preset Screw-Down Controllers. J. D. Leitch, C. A. Schurr, The Elec. Controller and Mfg. Co. 20 cents by mail.

2:00 p.m.—Relay Protection of Transmission Lines

The Project Committee of the Relay Committee has developed this subject through the study of a typical transmission system, having short, medium, and long lines. Quite complete Calculating Board studies have been made for this system, for faults, load swings and reclosing, so that the relaying schemes considered could be put to the test of quantative application data. Costs also have been determined for economic comparisons where needed.

The session will be introduced by three conference papers prepared by the groups working on the short, medium, and long lines respectively. The first paper will also discuss the general philosophy of back-up protection. The second will cover the factors involved in applications on medium length lines. The third paper will dwell chiefly on the relay problems of long, heavily loaded lines, with and without high speed reclosing. Single and three-pole reclosing are considered.

Having thus introduced the factors and problems entering into relay application on transmission lines the meeting will be opened for a general conference type discussion of the subject. It is hoped later to combine the material already prepared, as developed further by discussion at the conference, into a useful report on transmission line protection.

2:00 p.m.—Transformers

48-18. Influence of the Core Form upon the Iron Losses of Transformers. G. M. Stein, Westinghouse Elec. Corp. 40 cents by mail.

48-19. Electrical Insulation Deterioration Treated as a Chemical Rate Phenomenon. T. W. Dakin, Westinghouse Elec. Corp. 25 cents by mail.

48-20. Terratex—A Thin, Flexible Inorganic Insulation. T. R. Walters, General Elec. Co. 20 cents by mail.

2:00 p.m.—Electronic Instruments

*CP. Fail-Safe Operation of Electronic Circuits. G. D. Hanchett, RCA Mfg. Co.

48-21. Electronic Circuits of a Supersonic Reflectoscope. R. B. DeLano, Jr., Sperry Products, Inc. 20 cents by mail.

48-96. Oil Film Thickness Indicator for Journal Bearings. M. L. Greenough, Natl. Bureau of Stds. 30 cents by mail.

48-9. D-C Amplifier Stabilized for Zero and Gain. A. J. Williams, Jr., R. E. Tarpley, W. R. Clark, Leeds and Northrup Co. 40 cents by mail.

*CP. High-Voltage CROs for Surge Testing. W. G. Fockler, Allan B. DeMont Labs., Inc.

(Also see papers in Monday morning session on Applications in the Steel Industry).

Tuesday, January 27

9:30 p.m.—Trip to Pittsburgh Plate Glass Co.

9:30 p.m.—Trip to Springdale Power Plant

9:30 a.m.—Steel

Talk on Irvin Works of Carnegie-Illinois Steel Company to provide introduction to inspection trip. M. W. Reed, Vice-President, Engg., Carnegie-Illinois Steel Co.

48-22. Electric Equipment for Cold Strip Reduction Mills. W. E. Miller, General Elec. Co. 25 cents by mail.

*CP. WK^2 Aspect of High-Speed Mills. T. B. Montgomery, Allis-Chalmers Mfg. Co.

*CP. Discussion on the Time Element in Speed Changes in Mills. C. R. Hanna, Westinghouse Elec. Corp.

9:30 a.m.—Material Handling

*CP. Electric Drives with Fluid Couplings for Material Handling Equipment. F. W. Atz, Link Belt Co.

*CP. Features of New 600 Series Mill Motor for Material Handling Applications. C. B. Hathaway, Westinghouse Elec. Corp.

*CP. Selection of D-C Series Motors for Crane Applications. M. A. deFerranti, General Elec. Co.

9:30 a.m.—Switchgear I

48-23. A Study of A-C Arc Behavior Near Current Zero by Means of Mathematical Models. T. E. Browne, Jr., Westinghouse Elec. Corp. 40 cents by mail.

48-24. A Compressed Air Circuit Breaker for 23-Kv Arc Furnace Duty. H. M. Wilcox, B. P. Baker, Westinghouse Elec. Corp. 20 cents by mail.

48-26. Arcing Fault Currents in Low-Voltage Alternating-Current Circuits. C. F. Wagner, L. L. Fountain, Westinghouse Elec. Corp. 25 cents by mail.

9:30 a.m.—Rotating Machinery

48-27. Steady-State Equivalent Circuits of Synchronous and Induction Machines. Gabriel Kron, General Elec. Co. 30 cents by mail.

48-28. Induction Machinery Theory Relating to a Special Feed-Back Generator. H. Vickers, England. 20 cents by mail.

48-29. The Single-Phase Synchronous Machine. I. A. Terry, General Elec. Co.; B. L. Robertson, Univ. of Calif. 30 cents by mail.

48-30. Performance of the Single-Phase Synchronous Machine. B. L. Robertson, T. A. Rogers, Univ. of Calif. 20 cents by mail.

48-31. A Study of the Three-Phase Commutator Armature with Six Adjustable Brushes. P. W. Franklin, Continental Elec. Co. 30 cents by mail.

9:30 a.m.—Electronics

48-32. Quadrature Operation of Filamentary Thermionic Gas Tubes. V. L. Holdaway, Bell Tel. Labs., Inc. 20 cents by mail.

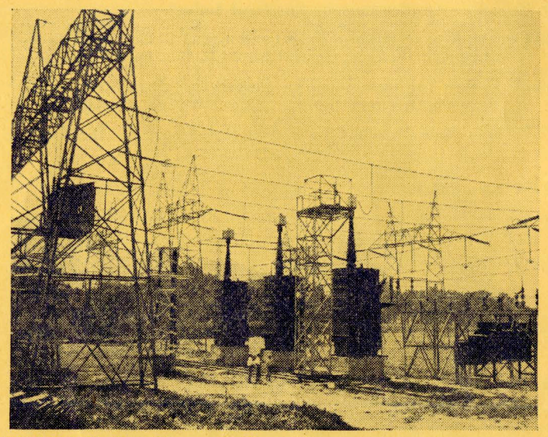
48-33. Method for the Measurement of the Ionization and Deionization Times of Thyratron Tubes. Milton Birnbaum, Washington, D. C. 25 cents by mail.

48-34. Printed Circuit Developments. Cledo Brunetti, Natl. Bureau of Stds. 40 cents by mail.

48-35. Performance of Pumped Ignitron Rectifiers. C. C. Herskind, E. J. Remscheid, General Elec. Co. 20 cents by mail.

9:30 a.m.—Symposium on Railroad Electrification

48-36. Comparative Operating Results of Steam, Diesel-Electric, and Electric Motive Power on the Great Northern Railway Electrification. J. F. N. Gaynor, Great Northern R.R. 20 cents by mail.



Tidd 500 Kv Test Line at Brilliant, Ohio, which may be visited on Monday and Friday afternoons

48-97. Power Costs and the Contribution of Existing Transmission Networks towards Cost Reduction of Power for Electrification of Main Line Railroads with Moderate Traffic. Llewellyn Evans, Tennessee Valley Authority. 20 cents by mail.

48-37. Railroad Electrification Energy Conversion and Transmission Costs. R. L. Kimball, J. G. Holm, Gibbs and Hill, Inc. 30 cents by mail.

48-38. Are the Overhead Distribution Costs Retarding Railroad Electrification? L. W. Birch, Ohio Brass Co. 40 cents by mail.

48-39. Shunt Capacitor Installation for Single-Phase Railway Service. H. F. Brown, New York, New Haven, and Hartford RR.; R. L. Witzke, Westinghouse Elec. Corp. 30 cents by mail.

1:30 p.m.—Trip to Irvin Steel Works

2:00 p.m.—Machine Tools

*CP. Electrical Engineering in Machine Tool Industry. A. L. Krause, Brown and Sharpe Co.

*CP. New Types of Adjustable Speed Motors for Machine Tools. W. M. Elder, Westinghouse Elec. Corp.

*CP. Electric Drives for Planers. J. W. Harper, General Elec. Co.

*CP. (To be announced)

2:00 p.m.—Switchgear II

48-40. A 230-Kv 3-Cycle Oil Circuit Breaker for Extra-Heavy Arc Rupturing Duty. W. M. Leeds, G. B. Cushing, Westinghouse Elec. Corp. 25 cents by mail.

48-41. Unusual Performance of Standard 230-Kv Impulse and Tank-Type Oil Circuit Breakers on Field Tests. E. B. Rietz, General Elec. Co. 20 cents by mail.

48-42. Field Tests for Development of 10-Million KVA 230-Kv Oil Circuit Breakers for Grand Coulee Power Plant. C. L. Killgore, W. H. Clagett, United States Bureau of Reclamation. 40 cents by mail.

48-43. Performance Tests of the AEG (German) Free-Jet, Air-Blast, 220-Kv., 2500-MVA, Reclosing Circuit Breaker. Alexander Dovjikov, C. C. Diemond, Bonneville Pr. Adm. 30 cents by mail.

2:00 p.m.—Telemetering

48-44. New Devices Derived from a Torque Balance Telemeter. W. H. Burnham, General Elec. Co. 20 cents by mail.

48-45. †ACO. Modern Telemetering System—Providing Kilowatt Indication, Recording, Integration and Demand. R. G. Meyerand, Union Elec. Co. of Missouri. 20 cents by mail.

48-46. A Faster Telemeter for Carrier Current Channels. E. E. Lynch, H. C. Thomas, G. S. Lunge, General Elec. Co. 20 cents by mail.

2:00 p.m.—High-Frequency Measurements

48-47. A Direct Reading D-C Bridge for Microwave Power Measurements. H. J. Carlin, Judd Blass, Polytechnic Inst. of Brooklyn. 25 cents by mail.

48-48. A Broadband Signal Generator. T. P. Hahn, John Ebert, W. A. Lynch, Polytechnic Research and Development Co. 20 cents by mail.

48-49. Microwave Frequency Measurements and Standards. B. F. Husten, Harold Lyons, Natl. Bureau of Stds. 30 cents by mail.

48-50. A Standard of Attenuation for Microwave Measurements. R. E. Grantham, J. J. Freeman, Natl. Bureau of Stds. 25 cents by mail.

2:00 p.m.—Heavy Traction

48-51. †ACO. Alternating-Current Air Conditioning for Railroad Passenger Cars. H. H. Hanft, Westinghous Elec. Corp. 20 cents by mail.

48-52. Responsive Devices on Diesel-Electric Locomotives. A. V. Johansson, General Elec. Co. 20 cents by mail.

48-53. A Unique Application of the Wheatstone Bridge to High-Speed Train Braking. C. M. Hines, Westinghouse Air Brake Co. 20 cents by mail.

48-54. Electric Locomotives with Identical Basic Components. W. A. Brecht, Charles Kerr, Jr., Westinghouse Elec. Corp. 20 cents by mail.

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

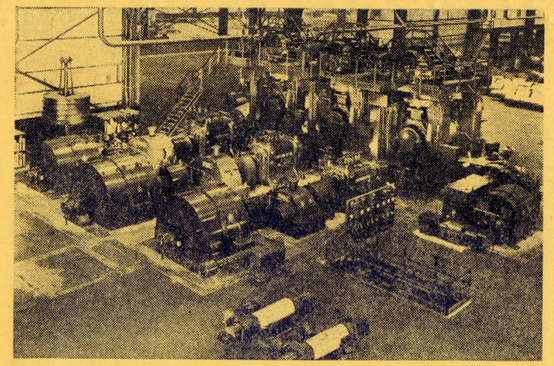
*CP. The Measurement of Large Pulse Currents. N. Rochester, D. L. Stevens, Sylvania Elec. Prod., Inc.

*CP. New Apparatus and Techniques for Cathode-Ray Oscillography. P. S. Christaldi, Allen B. DuMont Labs.

*CP. The Lead Sulphide Photoconductive Cell. R. W. Engstrom, RCA Victor Division.

*CP. The Motion Detector—An Application of Microwaves. W. C. White, General Elec. Co.

6:30 p.m.—Smoker



Three-Stand Tandem Cold-Reduction Mill at the Irvin Works of the Carnegie-Illinois Steel Corp.—Trip Tuesday afternoon

Wednesday, January 28

10:00 a.m.—General Session

Edison Medal Presentation to Dr. Joseph Slepian, Associate Director of Research, Research Laboratories, Westinghouse Elec. Corp.

Address: "Solar Radiation and Its Effect Upon Power Transmission and Radio Communication." Jack T. Wilson, Physicist, Allis-Chalmers Mfg. Co.

1:30 p.m.—Trip to Westinghouse E. Pittsburgh Works

1:30 p.m.—Trip to Dravo Shipyard

2:00 p.m.—Power Distribution in Steel Mills and Mines

*CP. Selection of Voltage for Steel Mill Power Systems. H. J. Finison, General Elec. Co.

*CP. Short-Circuit Currents in D-C Systems. William Deans, I-T-E Circuit Breaker Co.

48-26. Arcing Fault Currents in Low-Voltage Alternating-Current Circuits. C. F. Wagner, L. L. Fountain, Westinghouse Elec. Corp. 25 cents by mail.

48-16. †ACO. Features of a New A-C Bus Design. R. N. Wagner, Aluminum Co. of America. 20 cents by mail.

2:00 p.m.—Transmission and Distribution

48-55. 10,000-Kva Series Capacitor Improves Voltage on 66-Kv Line Supplying Large Electric Furnace Load. B. M. Jones, J. M. Arthur, C. M. Stearns, Duquesne Light Co.; A. A. Johnson, Westinghouse Elec. Corp. 25 cents by mail.

48-56. Design and Layout of 66-Kv 10,000-Kva Series Capacitor Substation. G. B. Miller, Duquesne Light Co. 20 cents by mail.

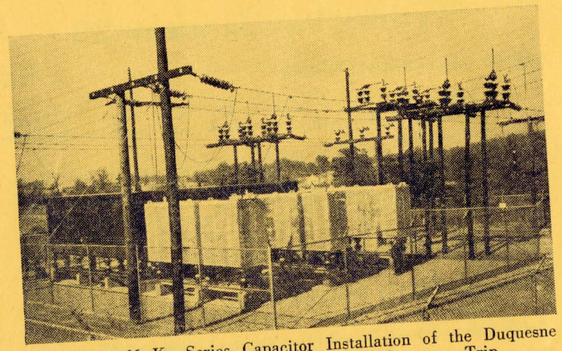
48-57. Design and Protection of 10,000-Kva Series Capacitor for 66-Kv Transmission Line. A. A. Johnson, R. E. Marbury, Westinghouse Elec. Corp.; J. M. Arthur, Duquesne Light Co. 20 cents by mail.

48-25. Transient Shaft Torques in Turbine Generators Produced by Transmission-Line Reclosing. J. W. Batchelor, D. L. Whitehead, and J. S. Williams, Westinghouse Elec. Corp. 25 cents by mail.

2:00 p.m.—Distribution Circuit Protection, Construction, Service Continuity and Fault Records

A conference on this subject was held at the Winter Meeting last year. So much interest was evidenced that the Working Group studying this subject feels that a further opportunity to exchange ideas and experiences will be welcomed by engineers working in this field. How to improve the performance of distribution circuits so as to reduce service outages due to faults in this part of electrical distribution systems is the primary purpose of the conference. This subject is of great importance because: (1) outages are becoming more seriously inconvenient as electric service is being used more extensively for such vital services as, cooking, refrigeration, heater controls, milking machines, and (2) the distribution circuit, in all but the most densely populated areas, is the most frequent offender in causing service interruptions of long duration. Improvement in service continuity may be accomplished by better methods of line construction to reduce the occurrence of faults and by better methods of relaying and sectionalizing to minimize the damage and extent of outage when faults occur. A Working Group under the joint sponsorship of the AIEE Relay Committee and the Distribution Subcommittee of the AIEE Transmission and Distribution Committee, and the Edison Electric Institute Transmission and Distribution Committee is studying the subject from both angles. G. B. Dodds is chairman of the group and C. J. Beller is chairman of the EEI representatives. Introductory conference papers will be presented after which dis-

Abstracts of most numbered papers appear in ELECTRICAL ENGINEERING for January, '48



10,000 Kva 66 Kv Series Capacitor Installation of the Duquesne Light Company—Session Wednesday afternoon; Trip Thursday morning

cussion from the floor will be invited. A discussion of methods of reporting faults, keeping records and analyzing performance is also desired, as the problem of how to determine the merits of the various construction and protection practices is one of the major problems facing the subcommittee.

2:00 p.m.—Basic Sciences

48-1. ACO. A Critical Analysis of Voltage Conventions and Double-Subscript Notations. M. B. Reed, W. A. Lewis, Illinois Inst. of Tech. 25 cents by mail.

48-58. Hystero-Viscosity in Silicone. M. G. Malti, Cornell Univ.; A. K. Chatterjee, Univ. of Illinois. 25 cents by mail.

48-68. Attenuator Materials, Attenuators, and Terminations for Microwaves. G. K. Teal, M. D. Rigterink, C. J. Prosch, Bell Telephone Labs., Inc. 35 cents by mail.

48-69. Insulation Breakdown As a Function of Area. L. R. Hill, P. L. Schmidt, Westinghouse Elec. Corp. 20 cents by mail.

48-70. Solutions of the Mathieu Equation. H. J. Gray, Richard Merwin, J. G. Brainerd, Univ. of Pennsylvania. 30 cents by mail.

2:00 p.m.—Communication Components and Techniques

48-59. Recent Improvements in Loading Apparatus for Telephone Cables. S. G. Hale, Bell Telephone Labs., Inc.; A. L. Quinlan, Western Elec. Co.; J. E. Ranges, Bell Telephone Labs., Inc. 30 cents by mail.

48-60. A Telegraph Signal Analyzer. G. L. Erickson, The Western Union Tel. Co. 20 cents by mail.

48-8. An Electro-Acoustical Locating System. E. A. Walker, The Pennsylvania State College. 20 cents by mail.

48-99. The Director for Automatic Telephone Switching Systems. Arthur Bessey Smith, Assoc. Elec. Labs., Inc. 35 cents by mail.

*CP. The Rotary Switching for Small Community Exchanges. R. W. Engsberg, Federal Tel. and Radio Corp.

2:00 p.m.—Light Traction

48-62. †ACO Electrically Propelled Vehicles Most Economical in City Transit. G. M. Woods, Westinghouse Elec. Corp. 25 cents by mail.

48-63. Trolley Coach Distribution System. G. R. McDonald, General Elec. Co. 35 cents by mail.

48-64. Three-Compartment Articulated Cars for Test on Rapid Transit Division, Chicago Transit Authority. H. A. Otis, Chicago Transit Authority. 20 cents by mail.

7:00 p.m.—Dinner-Dance

Thursday, January 29

9:30 a.m.—Board of Directors Meeting

9:30 a.m.—Trip to 66-Kv 10,000 Kva Series Capacitor Installation

9:30 a.m.—Power Distribution in the Mining and Glass Industry

*CP. Power Supply for a Glass Plant. J. E. Arberry, Pittsburgh Plate Glass Co.

*CP. Power Supply for Strip Mining. Albert Brown, Phila. and Reading Coal and Iron Co.

48-65. †ACO. The New D-C Sectionalization Application Standards. M. W. Pennybacker, Donald J. Baker, I-T-E Circuit Breaker Co. 20 cents by mail.

9:30 a.m.—Metallic Rectifiers

48-66. Twenty-five Years of Copper Oxide Rectifiers. L. O. Grondahl, Union Switch and Signal Co. 30 cents by mail.

*CP. Discussion papers.

9:30 a.m.—Arc Welding

*CP. Electric Power Supply Problems of Inert Gas Arc Welding. A. J. Welch, General Elec. Co.

*CP. Electronic Equipment for Submerged Melt Welding Processes. J. J. Kratz, Linde Air Products Co.

*CP. Power Supply for Farm Welders. A. A. Mathews, G. V. Patterson, Ohio Power Co.

9:30 a.m.—Extra-High-Voltage Cable Systems

48-71. 138,000-Volt Polyethylene Sheathed Compression Cable—Pipe-Line Type. J. E. McCormack, C. T. Hatcher, Con. Edison Co. of N. Y., Inc.; K. S. Wyatt, W. A. Del Mar, E. J. Merrell, J. H. Palmer, Phelps Dodge Copper Prod. Corp.; E. F. DeTurk, Long Island Ltg. Co. 40 cents by mail.

48-72. 115-Kv High-Pressure Oil-Filled Pipe Cable Installation at New Orleans, Louisiana. W. R. Bullard, Ebasco Services, Inc.; A. D. Pettee, General Cable Corp.; G. L. Rhodes, New Orleans Public Serv., Inc. 40 cents by mail.

48-73. Thermal Characteristics of a 120-Kv High-Pressure, Gas-Filled Cable Installation. W. D. Sanderson, J. Sticher, The Detroit Edison Co.; M. H. McGrath, General Cable Corp. 40 cents by mail.

48-3. Location of Gas Leaks in Pipe-Encased Gas-Pressure Cable Lines. J. D. Piper, The Detroit Edison Co. 35 cents by mail.

48-7. Use of Reduced-Scale Models for the Solution of Cable Temperature Problems—Part II. Andrew Gemant, Joseph Sticher, The Detroit Edison Co. 25 cents by mail.

9:30 a.m.—Conference on Applied Mathematics

The general subject to be discussed at this conference is what the engineers can do with experimental data. The speakers are:

*CP. Garrett Birkhoff—Harvard University.

*CP. H. Poritsky—General Elec. Co.

*CP. E. G. Olds, Carnegie Inst. of Tech.

*CP. A Large Scale General Purpose Electric Analog Computer. E. L. Harder, Westinghouse Elec. Corp.; G. D. McCann, Calif. Inst. of Tech.

9:30 a.m.—Facsimile and Picture Transmission.

48-74. Western Union Teletape Facsimile. L. G. Pollard, The Western Union Tel. Co. 20 cents by mail.

*CP. Use of Telephone Circuits of Picture and Facsimile Service. I. E. Lattimer, American Tel. and Tel. Co.

*CP. Consideration on Facsimile Transmission Speed. H. F. Burkhard, Signal Corps Labs.

12:30 p.m.—Board of Directors Luncheon

1:00 p.m.—Trip to Alcoa Research

1:30 p.m.—Trip to Bureau of Mines Expl. Test Station

2:00 p.m.—Resistance Welding

*CP. What is Resistance Welding? J. F. Deffenbaugh and F. A. Bodenheim, Jr., Federal Mach. and Welder Co.

*CP. Resistance Welding in the Steel Mill. J. J. Riley, Taylor-Winfield Corp.

*CP. Summary of Work and Program of the Subcommittee on Power Supply for Resistance Welding Machines, C. M. Rhoades, Chairman.

2:00 p.m.—Conference on Mechanical Rectifiers

*CP. History of Mechanical Rectifiers. J. T. Thwaites, Canadian Westinghouse Co.

*CP. The Problem of Commutation. Walther Richter, Allis-Chalmers Mfg. Co.

*CP. The German Mechanical Rectifier. Otto Jensen, I-T-E Circuit Breaker Co.

*CP. Commutating Reactors. B. D. Bredford, General Elec. Co.

2:00 p.m.—Fault Limiting Devices

47-237. Present-Day Grounding Practices on Power Systems. AIEE Subject Committee on Present-Day Grounding Practices, late R. D. Evans, Chairman. 40 cents by mail.

48-78. Survey of Lightning Protective Equipment for Rotating A-C Machines. AIEE Lightning Protective Devices Subcommittee. 20 cents by mail.

48-79. Expulsion-Type Lightning Arresters Impulse Sparkover Volt-Time Characteristics. AIEE Lightning Protective Devices Subcommittee. 20 cents by mail.

2:00 p.m.—Symposium on Electrical Network Theory

During the war years, although great advances were being made in the field of Electrical Network Theory, very little material was published, principally due to restrictions for military reasons. This symposium will review the results of recent developments (within the last 10 years) and dscussions of new problems, in the field of linear network theory.

The speakers for this symposium are:

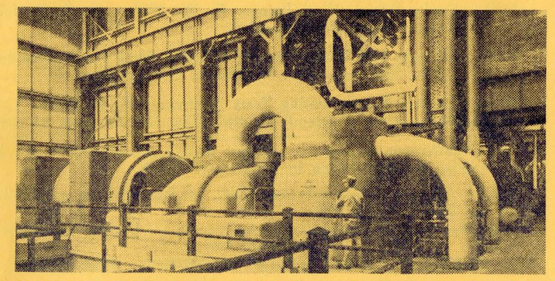
*CP. R. L. Dietzold, Bell Telephone Labs.

*CP. Gabriel Kron, General Elec. Co.

*CP. C. F. Wagner, Westinghouse Elec. Corp.

*CP. E. L. Harder, Westinghouse Elec. Corp.

*CP. E. A. Guillemin, Mass. Inst. of Tech.



81,250 Kva Unit in the Springdale Power Station of the West Penn Power Company, which may be visited Tuesday morning

2:00 p.m.—Magnetic Recording

48-75. Magnetic Recording Tapes. Marvin Camras, Armour Research Foundation. 25 cents by mail.

48-76. Turn-in-Gap Erase Head for Magnetic Recorders Providing Intense High-Frequency Fields. D. E. Wiegand, R. E. Zenner, Armour Research Foundation. 20 cents by mail.

48-77. †ACO. The Practical Application of Supersonic Bias in Magnetic Recording. H. A. Howell, Indiana Steel Prod. Co. 20 cents by mail.

*CP. Distortions in Magnetic Tape Recording Due to the Configuration of the Bias Field. S. J. Begun, Brush Dev. Co.

*CP. Drive Mechanism for High Fidelity Magnetic Tape Recorders (Including Demonstration). R. H. Ranger, R. H. Kuhnapfel, Ranger Tone, Inc.

2:00 p.m.—Conference on Safety

Selling the Public on Safety from Low-Voltage Electrical Hazards.

1. Motion picture: "The Shocking Truth," a technicolor film on low-voltage hazards. Courtesy of The Liberty Mutual Ins. Co.

2. Symposium on How to Enforce and Caution the Public Against the Hazards of Low-Voltage Shocks.

Friday, January 30

9:30 a.m.—General Applications to Mining

*CP. Conversion Equipment for Mine Power. W. R. Morton, General Elec. Co.

*CP. Motors and Controls for Underground Mining Machines. D. E. Renshaw, Westinghouse Elec. Corp.

48-80. Electrical Control Problems in Coal Mines. C. O. Wood, Goodman Mfg. Co. 20 cents by mail.

9:30 a.m.—Electrothermal Processes

*CP. Electrode Control and Associated Operating Mechanisms. E. A. Hanff, Swindell-Dressler Corp.

*CP. Experience in Design and Control of Ferro-Alloy Furnaces. F. V. Adreas, Southern Ferro Alloys Co.

*CP. Electrode Control for Arc Furnaces. C. E. Valentine, E. H. Browning, Jr., Westinghouse Elec. Corp.

*CP. Electrical Equipment and Operation of Graphitizing Furnaces. F. M. Baxandall, E. R. Cole, Dow Chemical Co.

*CP. Electrode Control for Arc Furnaces. A. R. Oltrogge, General Elec. Co.

9:30 a.m.—Excitation and Speed Governing

48-2. Generator Stability at Low Excitation. E. L. Michelson, L. G. Lischer, Commonwealth Edison Co. 30 cents by mail.

48-81. Underexcited Operation of Turbine-Generators. C. G. Adams, J. B. McClure, General Elec. Co. 20 cents by mail.

48-82. Rototrol Excitation Systems. J. E. Barkle, C. E. Valentine, Westinghouse Elec. Corp. 20 cents by mail.

48-83. Main Exciter Rototrol Excitation for Turbine Generators. C. Lynn, C. E. Valentine, Westinghouse Elec. Corp. 20 cents by mail.

48-90. Precise Turbine Governor. H. E. Warren, Lombard Governor Corp. 20 cents by mail.

48-89. †ACO. Hydraulic Turbine Governor Specification. E. B. Strowger, Buffalo Niagara Elec. Corp.; C. L. Avery, Woodward Governor Co. 20 cents by mail.

ADVANCE COPIES OF PAPERS

Members may obtain preprints of technical papers by mail by remitting price indicated to the AIEE Order Department, 33 West 39th Street, New York 18, N. Y.; if purchased at AIEE Headquarters or at the meeting 5c. less per copy. For convenience an order form is enclosed. Only numbered papers will be available in advance-copy form. Mail orders (particularly from out-of-town members) are advisable, inasmuch as an adequate supply of each paper at the meeting cannot be assured. Most of the papers ultimately will be published as AIEE PROCEEDINGS and in the TRANSACTIONS.

Nonmember prices by mail 100% more than listed less 5c on each paper.

Please order by number and enclose remittance.

48-4. †ACO. Recommended Specification for Speed-Governing of Steam Turbines Intended to Drive Electric Generators Rated 500 Kw and Up. Joint AIEE-ASME Committee on a Recommended Specification for Prime Mover Speed Governing; M. J. Steinberg, Chairman. *Presentation by title.* 35 cents by mail.

48-5. †ACO. Recommended Specification for Speed-Governing of Hydraulic Turbines Intended to Drive Electric Generators. Joint AIEE-ASME Committee on a Recommended Specification for Prime Mover Speed Governing; M. J. Steinberg, Chairman. *Presentation by title.* 35 cents by mail.

9:30 a.m.—Conference on Substations

This conference will have two or three papers on each of the following subjects:

*CP. 1. Protection of Pilot Wire Used for Telemetering and Supervisory Control.

*CP. Problems Relating to A-C and Low Voltage D-C.

9:30 a.m.—Servomechanisms and Measurements

48-84. The Effect of Coulomb Friction on the Performance of Servomechanisms. G. D. McCann, F. C. Lindvall, C. H. Wilts, Calif. Inst. of Tech. 30 cents by mail.

48-85. Graphical Analysis of Control Systems. W. R. Evans, Washington Univ. 35 cents by mail.

48-94. Relation between Electrical and Mechanical Parameters of a Permanent Magnet Movable Coil Instrument Having a General Circuit. W. N. Goodwin, Jr., Weston Elecl. Instr. Corp. 30 cents by mail.

48-67. A Bridge Method for Determining the Motional Characteristics of Permanent Magnet-Movable Coil Instrument Mechanisms. R. W. Gilbert, Weston Elecl. Instr. Corp. 20 cents by mail.

9:30 a.m.—Synthetic Crystals

48-86. Crystal Filters Using Ethylene Diamine Tartrate in Place of Quartz. E. S. Willis, Bell Telephone Labs., Inc. 20 cents by mail.

48-87. Design and Performance of Ethylene Diamine Tartrate Crystal Units. J. P. Griffin, E. S. Pennell, Bell Telephone Labs., Inc. 20 cents by mail.

48-88. Growing Crystals of Ethylene Diamine Tartrate. A. C. Walker, G. T. Kohman, Bell Telephone Labs., Inc. 20 cents by mail.

1:30 p.m.—Trip to Tidd 500 Kv Test Lines

2:00 p.m.—Electric Cables in Mines

*CP. Discussion of Electric Cable Practice in Coal Mines of Illinois. C. C. Conway, Consolidated Coal Co.

*CP. Mechanical Experience with Trailing Cables on Mobile Mine Machinery. G. W. Jones, Logan County Coal Corp.

*CP. Safe Use and Installation of Electric Cables in Coal Mines. T. R. Weichel, Bureau of Mines.

*CP. A Machinery Manufacturer Looks at Cable. Frank Hugus, Joy Mfg. Co.

*CP. Improvements in Mining Machine Cables. R. A. Schatzel, Rome Cable Co.

*CP. Essential Characteristics of Design and Materials for Maintaining Cables. G. J. Crowdes, Simplex Wire & Cable Co.

2:00 p.m.—General System Engineering

*CP. Electric Power and Our National Defense. W. L. Cisler, The Detroit Edison Co.

Symposium on Controllable Factors Affecting System Load

*CP. Results of Frequency and Voltage Reduction Tests on an Isolated System. C. B. Kelly, United Light and Railways Serv. Co.

*CP. Operating Tests of Voltage-Load Reductions. D. P. Reed, New England Pr. Co.

*CP. Voltage and Frequency Reduction as Tools for Handling Emergency Capacity Conditions. H. W. Phillips, Pennsylvania-New Jersey Interconn.

*CP. Technical Approach As to the Effect of Voltage and Frequency Reductions on System Load. J. E. McCormack, Cons. Edison Co. of N. Y., Inc.

2:00 p.m.—Industrial Control

*CP. Steel Mill Control Practices and Trends. A. W. Schmitz, General Elec. Co.

*CP. Two Overload Relays versus Three on 3-phase Systems. K. Pinder, E. I. DuPont de Namours, Inc.

*CP. Heavy Duty D-C Contactors, 6000 A, 3000 A, and 1500 A. R. M. Peeples, C. R. Peter, Allis-Chalmers Mfg. Co.

2:00 p.m.—Radio Relay Systems

*CP. The Philco Philadelphia-New York Microwave Television Relay System. W. H. Forester, Philco Corp.

*CP. Portable Television Studio to Transmitter Link. C. A. Rosencrans, RCA.

48-91. A 150-Kilocycle Carrier System for Radio Relay Applications. J. E. Boughtwood, Western Union Teleg. Co. 25 cents by mail.

48-92. Filters for a 150-Kilocycle Carrier System. R. C. Taylor, The Western Union Teleg. Co. 25 cents by mail.

2:00 p.m.—Symposium on Electric House Heating

48-93. The Heat Pump from the Utility's Point of View. S. W. Andrews, American Gas and Elec. Serv. Corp. 20 cents by mail.

*CP. Temperature Distribution and Effect of Ice Formation Around the Ground Coil of a Heat Pump. A. D. Kafadar, R. A. Budenholzer, I. B. Fieldhouse, Armour Research Foundation.

*CP. Engine-Driven Heat Pumps. K. W. Miller, N. C. Penfold, Armour Research Foundation.

*CP. Climatic and Usage Factors Affecting Heat Pump Selection. D. W. McLenegan, G. W. Brown, General Elec. Co.

48-95. †ACO. Electric House-Heating Tests in Oregon. W. L. Sharp, A. E. Opdenweyer, Portland General Elec. Co. 30 cents by mail.

*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.

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