

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

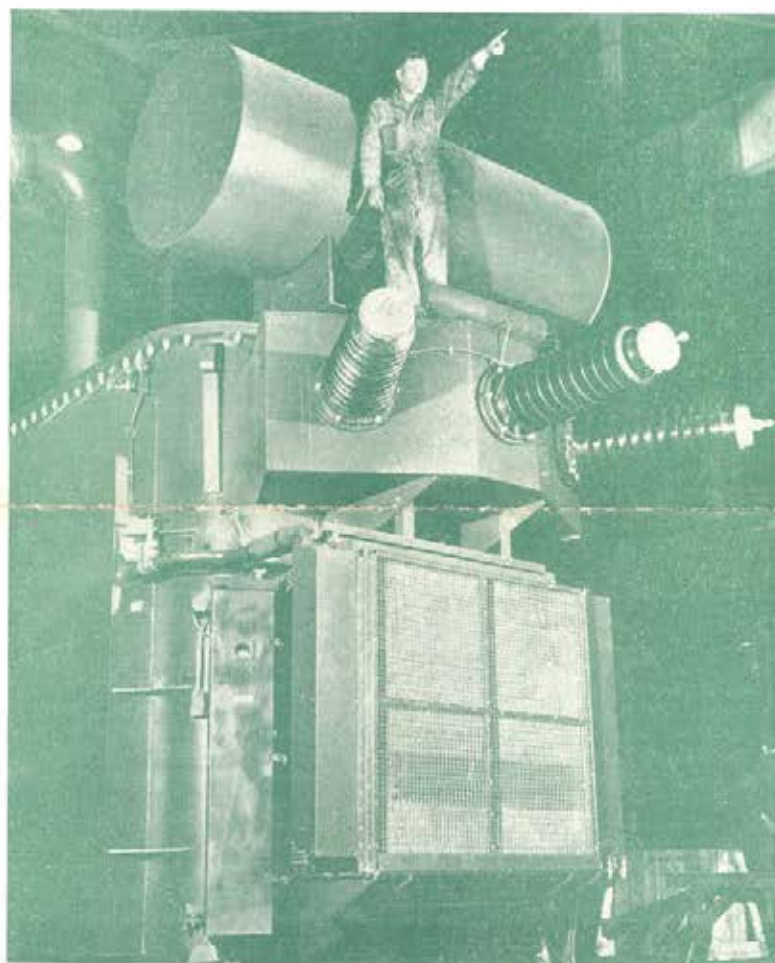
# WINTER CONVENTION

January 26-30, 1942



*Headquarters*

ENGINEERING SOCIETIES BUILDING  
33 West 39th Street  
New York, N. Y.



Multi-Range High-Voltage Mobile Transformer for Emergencies  
*To be discussed in the Symposium on Distribution Systems in War Time*

# AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

## ADVANCE COPIES OF PAPERS

Preprints of technical papers may be obtained by mail by remitting price indicated to the AIEE Order Department, 33 West 39th Street, New York, N. Y.; if purchased at AIEE headquarters or at the convention 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. Coupon books in \$5.00 denominations are available for those who wish to avoid remittance by check or otherwise. Most of the papers ultimately will be published in **ELECTRICAL ENGINEERING** or **TRANSACTIONS**.

## Monday, January 26

### 9:30 a.m.—Power Generation

- 41-158. A Turbine-Governor Performance Analyzer. W. O. Osbon, Westinghouse Electric and Manufacturing Company. 15 cents by mail.
- 42-72. Control of Tie-Line Power Swings. C. Concordia and H. S. Shott, General Electric Company, and C. N. Weygandt, University of Pennsylvania. 25 cents by mail.
- 42-73. Supplementary Control of Prime Mover Speed Governors. S. B. Cray and J. B. McClure, General Electric Company. 15 cents by mail.

### 9:30 a.m.—Light Traction

- 42-49. A Control System for Modern Multiple Unit Rapid Transit. H. G. Moore, General Electric Company. 15 cents by mail.
- 42-50. Modern Electrical Equipment for Industrial Diesel-Electric Locomotives. Lanier Greer, General Electric Company. 15 cents by mail.
- 42-52. P C C Car Operating Results in Pittsburgh. W. J. Clardy, Westinghouse Electric and Manufacturing Company. 15 cents by mail.

### 9:30 a.m.—Conference on Use of Substitute Materials in the Communication Industry

Following a brief introductory statement outlining the general situation which necessitates the use of substitute materials, there will be brief talks by representatives of the various branches of the communication industry telling what has already been done, what is under way, and what remains to be done in connection with the use of substitute materials. There will be ample opportunity for informal general discussion, questions, etc., following the talks.

### 2:00 p.m.—Power Generation and Transmission

Address: "Power for War Needs." J. A. Krug, Chief of the Power Branch, O.P.M.



View over Lower Manhattan

Report of Joint A.I.E.E.-A.S.M.E. Committee on a Specification for Speed Regulation for Prime Movers Intended to Drive Electric Generators. M. J. Steinberg, Chairman

Address: "Induction Heating Aids Progress of Electric Welding." C. J. Holslag, President, Electric Arc Cutting and Welding Company

- 42-36. Synthetic or Equivalent Load-Curves. R. F. Hamilton, Consulting Engineer. 30 cents by mail.
- 42-53. Facilities for the Supply of Kilowatts and Kilovars. H. K. Sels and Theodore Seely, Public Service Electric and Gas Company. 20 cents by mail.

### 2:00 p.m.—Heavy Traction

- 42-54. Single-Phase A-C Electric Locomotives on the Pennsylvania Railroad—Protection and Tonnage Rating. H. C. Griffith, Pennsylvania Railroad Company. 15 cents by mail.
- 42-23. Progress in Design of Electrical Equipment for Large Diesel-Electric Locomotives. G. F. Smith, Westinghouse Electric and Manufacturing Company. 15 cents by mail.
- 42-55. Electropneumatic Brakes for High-Speed Trains with Particular Reference to Their Electrical Features. J. C. McCune, Westinghouse Air Brake Company. 20 cents by mail.

### 2:00 p.m.—Conference on National Defense Lighting

A symposium has been arranged on the part that modern lighting will play in civilian and military defense. Emphasis will be placed on the research and test data now available as a result of many investigations undertaken during the past year. The speakers have been actively engaged in these investigations and are well qualified to discuss authoritatively the following subjects:

1. A Civil Defense Program for the United States
2. Lighting for Adequate Civil Defense
  - (a) Black-outs, dim-outs—glare barrages
  - (b) Lighting for civilian activities during black-out
3. Lighting for Night Maneuvers

Discussions on all subjects by those attending the conference are invited.

## Tuesday, January 27

### 9:30 a.m.—Switching Equipment

- 42-12. Field Tests on High-Capacity Station Breakers. H. D. Braley, Consolidated Edison Company of New York, Inc. 15 cents by mail.
- 42-30. Field Tests on High-Capacity Air-Blast Station-Type Circuit Breakers. H. E. Strang and W. F. Skeats, General Electric Company. 15 cents by mail.
- 42-41. A 2,500,000-Kva Compressed-Air Powerhouse Breaker. L. R. Ludwig, H. M. Wilcox, and B. P.

# TECHNICAL PROGRAM, JANUARY 26-30, 1942

## 2:00 p.m.—Lightning Arresters and Protection

- 42-66. Back-Up Protection of the Boulder-Dam-City of Los Angeles. C. P. Garman, Bureau of Power and Light, City of Los Angeles, and L. F. Kennedy, General Electric Company. 15 cents by mail.
- 42-17. Field Investigation of the Characteristics of Lightning Currents Discharged by Arresters. I. W. Gross, American Gas and Electric Service Corporation, and G. D. McCann and Edward Beck, Westinghouse Electric and Manufacturing Company. 20 cents by mail.
- 42-28. Distribution-Type Lightning Arrester Performance Characteristics (Report). Lightning Arrester Subcommittee, Committee on Protective Devices. 15 cents by mail.
- 42-10. Temperature and Electric Stress in Impregnated Paper Insulation. J. B. Whitehead and W. H. MacWilliams, Jr., The Johns Hopkins University. 15 cents by mail.

## 2:00 p.m.—Air Transportation Session and Conference

*Attendance restricted to members of the Institute who are U. S. citizens.*

- \*\*A Direct-Current Telemeter or D-C Selsyn for Aircraft. R. G. Jewell and H. T. Faus, General Electric Company
- \*\*The Magnetic Drag Tachometer. R. G. Ballard, General Electric Company
- \*\*Aircraft Voltage Regulator and Cutout. R. C. Jones, D. W. Exner, and S. H. Wright, Westinghouse Electric and Manufacturing Company
- \*\*The Application of Voltage Regulators to Aircraft Generators. L. W. Thompson and F. E. Crever, General Electric Company

## Friday, January 30

### 9:30 a.m.—Protective Relays

- 42-13. Multichannel Carrier-Current Facilities for a Power Line. P. N. Sandstrom and G. E. Foster. 15 cents by mail.
- 42-20. Loss-of-Field Protection for Generators. G. C. Crossman, H. F. Lindemuth, and R. L. Webb, Consolidated Edison Company of New York, Inc. 25 cents by mail.
- 42-39. Transient Characteristics of Current Transformers during Faults. C. Concordia and H. S. Shott, General Electric Company, and C. N. Weygandt, University of Pennsylvania. 25 cents by mail.
- 42-11. Current Transformer Performance Based on Admittance Vector Locus. A. C. Schwager, Pacific Electric Manufacturing Corporation. 15 cents by mail.
- 42-40. Linear Couplers for Bus Protection. E. L. Harder, E. H. Klemmer, W. K. Sonnemann, and E. C. Wentz, Westinghouse Electric and Manufacturing Company. 25 cents by mail.

### 9:30 a.m.—Electrical Machinery Session and Conference

- 42-1. Progress Report of D-C Testing of Generators in the Field. E. R. Davis and M. F. Leftwich, Duke Power Company. 15 cents by mail.
- 42-67. Four-Winding Transformers. T. C. McFarland, University of California. 20 cents by mail.
- 42-68. Correction for Saturation. T. C. McFarland, University of California. 15 cents by mail.
- 42-44. Current Loci for the Capacitor Motor. T. C. McFarland, University of California. 15 cents by mail.
- 42-25. Resistance Welding Transients. E. E. Kimberly, Ohio State University. 15 cents by mail.

### 9:30 a.m.—Conference on Arc Back in Mercury-Arc Rectifiers

Sponsored by the Joint Subcommittee on Electronics this conference will take the form of an informal round-table discussion. There will be no fixed program and the objective will be to encourage as many as possible to take part in order that a profitable interchange of experiences may be obtained.

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

- 42-15. Measurement of Maximum Demand. P. M. Lincoln, Therm-Electric Meters Co., Inc. 15 cents by mail.
- 42-5. The Acceleration Oscillogram Method of Motor Torque Measurement. C. R. Atkinson and E. G. Downie, General Electric Company. 15 cents by mail.
- 42-70. Design of Long-Scale Indicating Instruments. A. J. Corson, R. M. Rowell, and S. C. Hoare, General Electric Company. 25 cents by mail.
- 42-71. Improvement in Modern Meter Testing Technique. E. E. Lynch and M. A. Princi, General Electric Company. 20 cents by mail.

### 2:00 p.m.—Industrial Power Applications

- 42-21. The Fundamentals of Industrial Distribution Systems. D. L. Beeman and R. H. Kaufmann, General Electric Company. 25 cents by mail.
- 42-29. Electrical Drives for Wide Speed Ranges. G. A. Caldwell and W. H. Formhals, Westinghouse Electric and Manufacturing Company. 15 cents by mail.
- 42-19. A Static Voltage Regulator Insensitive to Load Power Factor. C. M. Summers and T. T. Short, General Electric Company. 15 cents by mail.
- 42-32. A New Voltage Regulating Relay Plus Line Drop Compensator. H. J. Carlin, Westinghouse Electric and Manufacturing Company. 15 cents by mail.

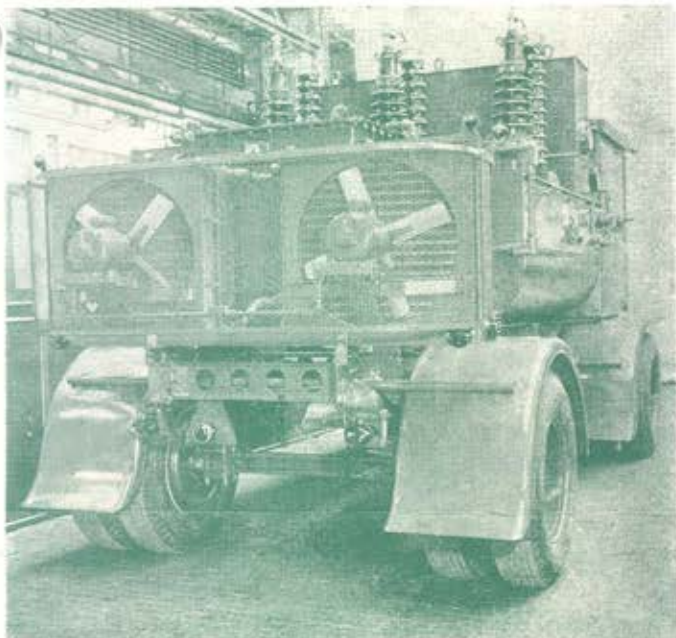
### 2:00 p.m.—Conference on Influence of Acceptance and Maintenance Testing on Successful Relay Design and Operation

This conference will be devoted particularly to the value of testing in bringing out the need for improvement in various types and forms of relays. The primary objective of acceptance and maintenance testing is the prevention or elimination of incorrect relay operation and the conference will deal with difficulties experienced with protective relays and the remedies which have been found successful. The limitations in application as found by relay test characteristics will also be discussed. Three discussion leaders will present their views on this interesting and important subject, after which the conference will be opened for general discussion. The chairman is L. F. Kennedy and the discussion leaders will be Messrs. M. W. Evans, Duquesne Light Company; J. P. Kisch, Public Service Electric and Gas Company; and A. W. Rauth, Consumers Power Company.

\* A.C.O.: Advance copies only available; not intended for publication in TRANSACTIONS.

\*\* Advance pamphlet copies not available.

# WINTER CONVENTION TECHNICAL PROGRAM



Rear View Showing Oil Coolers of a 2500-Kva Mobile Substation with Forced Oil Circulation through the Windings

Baker, Westinghouse Electric and Manufacturing Company. 20 cents by mail.

42-38. A Fast Circuit Breaker. D. I. Bohn, Aluminum Company of America, and Otto Jensen, I-T-E Circuit Breaker Company. 15 cents by mail.

42-9. Field Tests and Performance of a High-Speed 138-Kva Air-Blast Circuit Breaker. Philip Sporn, American Gas and Electric Service Corporation, and H. E. Strang, General Electric Company. 15 cents by mail.

42-26. High-Capacity Circuit-Breaker Testing Station. J. B. MacNeill and W. B. Batten, Westinghouse Electric and Manufacturing Company. 15 cents by mail.

## 9:30 a.m.—Auxiliary Traction

42-56. Acoustics and the Quiet Train Ride. William A. Jack, Johns-Manville Research Laboratories. 30 cents by mail.

42-51. Progress in Development of Trolley Coach Overhead, Reflected in Higher Service Standards. L. W. Birch, Ohio Brass Company. 20 cents by mail.

## 9:30 a.m.—Communication

42-6. Frequency-Modulated Carrier Telegraph System. F. B. Bramhall and J. E. Boughtwood, Western Union Telegraph Company. 15 cents by mail.

42-57. A New Instrument for Recording Transient Phenomena. S. J. Begun, The Brush Development Company. 15 cents by mail.

42-58. Recent Developments in Burying Telephone Cables. Donald Fisher and T. C. Smith, American Telephone and Telegraph Company. 15 cents by mail.

## 9:30 a.m.—Standards Session and Conference

42-59. "Hot-Spot" Winding Temperatures in Self-Cooled Oil-Insulated Transformers. F. J. Vogel and Paul Narbutovskih, Westinghouse Electric and Manufacturing Company. 15 cents by mail.

CP.† Application of Apparatus and Conductors under Various Ambient Temperature Conditions. R. E. Hellmund and P. H. McAuley, Westinghouse Electric and Manufacturing Company

No. 1A. Report on General Principles for Rating of Electrical Apparatus for Short Time, Intermittent or Varying Duty. P. L. Alger, Chairman, AIEE Standards Co-ordinating Committee No. 4.

C.P.† The Thermal Co-ordination of Low-Voltage A-C Circuits. B. W. Jones, General Electric Company  
Reports by Co-ordinating Committee Chairmen

## 2:00 p.m.—System Switching

42-24. High-Speed Single-Pole Reclosing. J. J. Trainor, Public Service Company of Indiana, Inc.; J. E. Hobson, Illinois Institute of Technology; and H. N. Muller, Jr., Westinghouse Electric and Manufacturing Company. 15 cents by mail.

42-35. Relays and Breakers for High-Speed Single-Pole Tripping and Reclosing. S. L. Goldsborough and A. W. Hill, Westinghouse Electric and Manufacturing Company. 15 cents by mail.

42-31. Analysis of the Application of High-Speed Reclosing Breakers to Transmission Systems. S. B. Crary, L. F. Kennedy, and C. A. Woodrow, General Electric Company. 30 cents by mail.

42-2. Relative Value of Different Types of Overcurrent Protection for Distribution Circuits. G. F. Lincks, General Electric Company. 15 cents by mail.

42-8. Performance of Ground Relayed Distribution Circuits during Faults to Ground. C. L. Gilkeson, Virginia Electric and Power Company, and P. A. Jeanne and J. C. Davenport, Jr., Bell Telephone Laboratories, Inc. 15 cents by mail.

## 2:00 p.m.—Educational Session and Conference

CP.† A Backward Look for a Forward Plan. F. C. Hockema, Purdue University

CP.† Refresher Programs at the Graduate Level in the Post-War Period. H. W. Bibber, Ohio State University

42-34. Evening Courses at Graduate Levels—A Challenge to Colleges of Engineering. Robin Beach, The Polytechnic Institute of Brooklyn. 15 cents by mail.

## 2:00 p.m.—Domestic and Commercial Applications Session and Conference

42-69. Utilization Voltages. H. P. Seelye, The Detroit Edison Company. 15 cents by mail.

Specially-invited speakers will discuss the various aspects of both domestic and commercial utilization of electricity.

† CP.: Conference paper; no advance copies are available; not intended for publication in TRANSACTIONS.

Wednesday, January 28

10:00 a.m.—General Session

Presentation of Alfred Noble Prize to Robert F. Hays, Jr.

Address by speaker to be announced

2:00 p.m.—Symposium on Distribution Systems in War Time

- 42-60. Electric Power Distribution Systems in War Time. Philip Sporn, American Gas and Electric Service Corporation. 15 cents by mail.
- 42-42. Power Supply to Distribution Substations in War Time. H. P. St. Clair, American Gas and Electric Service Corporation. 20 cents by mail.
- 42-61. Distribution Substations and War-Time Necessities. F. C. Poage and M. W. Reid, Ebasco Services, Inc. 15 cents by mail.
- 42-62. Underground Distribution Systems in War Time. L. R. Gaty, Philadelphia Electric Company. 20 cents by mail.
- 42-45. Overhead Distribution Systems in War Time. Harold Cole, The Detroit Edison Company. 15 cents by mail.

2:00 p.m.—Conference on "What Institute Sections and Members Can Do to Help in the Emergency Program"

2:00 p.m.—Basic Sciences

- 42-43. Saturated Synchronous Machines under Transient Conditions in the Pole Axis. Reinhold Rudenberg, Harvard University. 25 cents by mail.
- 42-27. Formulas for the Magnetic Field Strength Near a Cylindrical Coil. H. B. Dwight, Massachusetts Institute of Technology. 25 cents by mail.
- 42-33. The Electric Strength of Nitrogen and "Freon" under Pressure. H. H. Skilling, Stanford University, and W. C. Brenner, Westinghouse Electric and Manufacturing Company. 20 cents by mail.

Thursday, January 29

9:30 a.m.—Lightning

- 42-22. Impulse and Sixty-Cycle Characteristics of Driven Grounds—II. P. L. Bellaschi and R. E. Armington, Westinghouse Electric and Manufacturing Company, and A. E. Snowden, Carnegie Institute of Technology. 30 cents by mail.
- 42-14. Shielding of Substations. C. F. Wagner, G. D. McCann, and C. M. Lear, Westinghouse Electric and Manufacturing Company. 15 cents by mail.
- 42-16. Lightning Investigation at High Altitudes in Colorado. L. M. Robertson, Public Service Company of Colorado, and W. W. Lewis and C. M. Foust, General Electric Company. 25 cents by mail.
- 42-18. Lightning Investigation on 132-Kv Transmission System of the American Gas and Electric Company. I. W. Gross and G. D. Lippert, American Gas and Electric Service Corporation. 15 cents by mail.

42-37. The Influence of Towers and Conductor Sag on Transmission Line Shielding. R. W. Sorensen and R. C. McMaster, California Institute of Technology. 20 cents by mail.

42-74. Lightning Investigation on Wallenpaupack—Siegfried 220-Kv Line of Pennsylvania Power and Light Company. Edgar Bell and F. W. Packer, Pennsylvania Power and Light Company. 20 cents by mail.

9:30 a.m.—Symposium on Asynchronous Machinery

- 42-63. Variable Speed Drive for U. S. Army Air Corps Wind Tunnel at Wright Field. A. M. Dickey, Army Air Corps, and C. M. Laffoon and L. A. Kilgore, Westinghouse Electric and Manufacturing Company. 15 cents by mail.
- 42-64. A Study of the Modified Kramer or Asynchronous-Synchronous Cascade Variable Speed Drive. M. M. Liwschitz, The Polytechnic Institute of Brooklyn, and L. A. Kilgore, Westinghouse Electric and Manufacturing Company. 25 cents by mail.
- 42-65. Large Adjustable Speed Wind Tunnel Drive. C. C. Clymer, General Electric Company. 15 cents by mail.
- 42-4. The Doubly-Fed Machine. C. Concordia, S. B. Crary, and Gabriel Kron, General Electric Company. 15 cents by mail.
- 42-3. Equivalent Circuits for the Hunting of Electrical Machinery. Gabriel Kron, General Electric Company. 15 cents by mail.



A Continuing Multiple Stroke to the Empire State Building and a Continuing Stroke to 60 Wall Street Tower

# CONVENTION FEATURES, JANUARY 26-30, 1942

## Edison Medal Presentation

On Wednesday evening, January 28, the Edison Medal, highest honor of the A.I.E.E., will be presented in the Engineering Auditorium to Dr. John B. Whitehead, Director, School of Engineering, The Johns Hopkins University. The medal was awarded to Dr. Whitehead "for his contributions to the field of electrical engineering, his pioneering and development in the field of dielectric research, and his achievements in the advancement of engineering education."

## General Session

Arrangements are being made to provide a program of timely importance and sufficiently general to interest as many engineers as possible.

At this session the Alfred Noble Prize will be presented to Robert F. Hays, Jr. The prize was awarded for his paper entitled "Development of the Glow Switch," published in A.I.E.E. TRANSACTIONS, volume 60, 1941 (May section), page 223.

## Smoker

In view of the popularity of past smokers held at the Commodore Hotel the Smoker Committee again has chosen the Commodore with its excellent facilities for this year's event to be held on Tuesday evening, January 27. As usual, there will be a dinner followed by a good show. The seating will be at tables of ten with ample space to move around. Members are urged to send their reservations to the AIEE Smoker Committee, 33 West Thirty-ninth Street, New York, N. Y., at an early date. All tables will be reserved. Tickets will be \$3.75 per person. Make checks payable to "Special Account A.I.E.E." The higher cost of the dinner and the Federal tax are reflected in the slight increase in the price over former years.

## Dinner-Dance

On Thursday evening, January 29, the dinner-dance and buffet supper will be held at the Waldorf-Astoria Hotel, located on Park Avenue between 49th and 50th Streets. Dinner and dancing will be enjoyed on the beautiful Starlight Roof, where spacious terraces also provide excellent facilities for social gathering between dances. Jerry Sears and his orchestra, well-known World Broadcasting System musicians, will provide music for both dinner and dancing. As in other years encores will be limited in order to provide a large number of dances during the evening.

Arrangements have been made for a special rate on rooms for those who wish to stay over night or to dress at the hotel. For room reservations write or phone the hotel and mention the A.I.E.E. The program for the evening is as follows:

7:00 to 9:00 p.m.	Dinner
9:00 to 9:30 p.m.	President's Reception
9:30 to 2:00 a.m.	Dancing
Midnight to 2:00 a.m.	Buffet Supper

Tickets for the dinner-dance will be \$6.00 per person; for the dance and buffet supper \$3.75 per person; and for the buffet supper \$2.25 per person. The higher cost of the dinner and the Federal tax are reflected in the increase in price over former years. Seating reservations at the dinner will be for ten persons at a table but, where required, parties of eight or twelve persons can be accommodated. Send your requests to AIEE Dinner-Dance Committee, 33 West 39th Street, New York, N. Y., checks being made payable to "Special Account, AIEE." All such requests should include names of guests and desired seating arrangements. The committee requests that tickets be purchased as early as possible.

## Ladies' Entertainment

Special entertainment for the ladies will be arranged by the Ladies' Entertainment Committee, under the chairmanship of Mrs. G. S. Rose. On Tuesday, January 27, a luncheon and bridge will be held at the Hotel Pierre. For certain events there will be a nominal charge for all ladies participating in order to defray expenses. Please register at ladies' headquarters promptly on Monday, January 26.

## Inspection Trips

Because of war conditions no inspection trips to industrial plants and utilities will be arranged but plans are being made to visit other interesting places.



100-Kv Line of the Public Service Company of Colorado Near Argentine Pass (altitude 13,500 ft.), Where the Lightning Investigation at Higher Altitudes Was Conducted

## Eta Kappa Nu Award Dinner

The dinner honoring the Outstanding Young Electrical Engineers for 1941 will be held Monday evening, January 26, Cleo Brunetti (University of Minnesota, '32, Ph.D. '37.), Lehigh University and the National Bureau of Standards, is the winner of the 1941 Eta Kappa Nu Award. George F. Leydorf (University of Cincinnati, '31, M.S. '33) of the Crosley Corporation, Cincinnati, Ohio, and Simon Ramo (University of Utah, '33; Ph.D., California Institute of Technology, '36) of the General Electric Company, Schenectady, N. Y., are to receive honorable mention. This occasion offers members an opportunity of meeting many of the leading younger electrical engineers of the country. Reservations should be made through R. W. Pashby, Chairman, Dinner Committee, 11 Park Place, New York, N. Y. Tickets \$2.00.

## Columbia Engineers Dinner

The annual informal dinner for Columbia Electrical Engineers will be held Wednesday evening, January 28, at the Columbia University Club, 4 West 43rd Street. A social half hour will precede the dinner, which is scheduled for 6:30 p.m. Further details will be announced later.

## Hotel Reservations

Members are requested to make their hotel reservations by writing directly to the hotel of their preference. For convenience, the room rates of a few of the hotels will be listed in the January issue of ELECTRICAL ENGINEERING, p. 35.

## Register in Advance

Please fill in and return promptly the enclosed Mail Registration Card. Upon arrival at the convention do not fill out another card.—just ask for your badge. A registration fee of \$2 will be charged all nonmembers, except Enrolled Students and the immediate families of members.

H. H. HENLINE, *National Secretary*

## Winter Convention Committee

D. A. Quarles, *Chairman*

J. W. Barker	G. E. Dean	L. C. Miller	C. S. Purnell
T. F. Barton	E. E. Dorting	D. H. Moore	W. W. Truran
	J. F. Fairman	J. H. Pilkington	

## Chairmen of Subcommittees

S. B. Graham (Dinner-Dance)	J. E. McCormack (Smoker)
R. F. Brower (Inspection Trips)	
Mrs. G. S. Rose (Ladies Entertainment)	

Issued by

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