AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

WINTER CONVENTION JANUARY 25 TO 29, 1937 PROGRAM

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ENGINEERING SOCIETIES BUILDING 33 West 39th Street NEW YORK

American Institute of Electrical Engineers



Winter Convention

Program

January 25-29 1937

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GENERAL INFORMATION

A PROGRAM with a variety of timely technical papers, technical conferences, and important committee meetings and trips, yet not without social functions—the smoker, dinner-dance, Edison Medal presentation and lecture—has been arranged by your committees. For a complete schedule of events and index to details see page 2.

Please register promptly on arrival at the convention. A registration fee of \$2 will be charged all non-members, except Enrolled Students and the immediate families of members.

Get tickets at once for the smoker, the dinnerdance and dance-buffet supper, or both, and inspection trips, as the number which can be accommodated is limited. For the trips, tickets should be secured by 4 o'clock on the previous day.

Information on all features of the convention may be obtained at the registration desk. The Institute rooms and offices on the tenth floor of the Engineering Societies Building are open to members.

Efforts will be made to deliver telegrams and messages promptly. Any mail for members received during the convention will be held at registration desk until called for; letters undelivered at the close of the meeting will be forwarded to latest mailing address.

Technical Sessions and Discussions are governed by the "Conduct of Technical Sessions" at the discretion of the chairman presiding. The Institute will appreciate your courtesy and cooperation in strictly abiding by the decisions of the chairman in all matters.

Preference will be given to those who have explained in advance their intention to discuss papers. Usually 5 minutes are allowed to each discusser for the discussion of a single paper or of several papers on the same general subject. Names and affiliations should be clearly announced from the platform. Discussions should be typewritten, double spaced (original and two carbon copies), and left with the chairman. Otherwise they should be sent to C. S. Rich, A.I.E.E., 33 West 39th Street, New York, N. Y., before February 11.

MONDAY

10:00 a.m.—Registration

2:00 p.m.—Opening of Convention

(In Auditorium)

Welcome to Members and Guests
C. R. BEARDSLEY, Chairman, Winter Convention Committee

Presentation of Alfred Noble Prize to Abe Tilles

Address by President A. M. MacCutcheon

The Technical Program

H. S. OSBORNE, Chairman, Technical Program Committee

2:30 p.m.—Communication

(In Auditorium)

H. M. TURNER, Presiding

Calorimetric Measurement of Dielectric Losses in Solids. H. H. Race and S. C. Leonard, General Electric Co. Dec., p. 1347

Currents and Potentials along Leaky Ground-Return Conductors, E. D. Sunde, Bell Telephone Laboratories, Inc. Dec., p. 1338

Inductive Co-ordination of Common-Neutral Power
Distribution Systems and Telephone Circuits,
J. O'R. Coleman, Edison Electric Institute, and
R. F. Davis, American Telephone & Telegraph
Co. Jan., p. 17

2:30 p.m.—Selected Subjects

(Room One, Fifth Floor)
O. B. BLACKWELL, Presiding

Electronic Transient Visualizers, H. J. Reich, University of Illinois Dec., p. 1314

Studies of Stability of Cable Insulation, Herman Halperin and C. E. Betzer, Commonwealth Edison Co. Oct., p. 1074

Proposed Transformer Standards, J. E. Clem, Chairman, 1934-36 Transformer Subcommittee.

Jan., p. 32

A New Electrostatic Precipitator, G. W. Penney, Westinghouse Electric & Mfg. Co. . Jan., p. 159

Technical Papers

In general technical papers will be presented in abstract, 10 minutes being allowed for the presentation of each paper, unless otherwise arranged with the presiding officer. Reference is given with each paper to the issue and page of ELECTRICAL ENGINEERING publication.

(Also see note on Technical Sessions and Discussions, page 3.)

TUESDAY

10:00	r.m.—Pow	er Transm	ission
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(In Auditorium)

C. T. SINCLAIR, Presiding

W. W. Lewis and C. M. Foust, General Electric Co Jan., p. 101
Lightning Investigation on a 220-Kv. System—II, Edgar Bell, Pennsylvania Power & Light Co. Dec., p. 1306
Lightning Protection for Transmission Lines, A. W. Gothberg and A. S. Brookes, Public Service Electric & Gas Co Jan., p. 13
Electrical Characteristics of Suspension Insulator Discs, C. L. Dawes and Reuben Reiter, Harvard University Jan., p. 59
First Report of Power System Stability, Subcom- mittee on Interconnection and Stability Factors,

10:00 a.m.—Tensor Analysis

R. D. Evans, Chairman. .

(Room One, Fifth Floor)
E. E. DREESE, Presiding

The Tensor—A New Engineering Tool, A. Boyajian, General Electric Co. . . . Aug., p. 856

Tensor Algebra in Transformer Circuits, L. V. Bewley, General Electric Co. Nov., p. 1214

Tensor Analysis of Multielectrode Tube Circuits, Gabriel Kron, General Electric Co. Nov., p. 1220

Dyadic Algebra Applied to 3-Phase Circuits, A.
Pen-Tung Sah, National Tsing Hua University.
Aug., p. 876

Complex Vectors in 3-Phase Circuits, A. Pen-Tung Sah, National Tsing Hua University. Dec., p. 1356

2:00 p.m.—Tensor Analysis (continued)

(Room One, Fifth Floor) E E. DREESE, Presiding

(Continued on page 6)

2:00 p.m.—Power Distribution

C. T. SINCLAIR, Presiding

A Review of Secondary Distribution, W. P. Holben, Duquesne Light Co. Jan., p. 114

Pole Flexibility as a Factor in Line Design, H. P. Seelye and Myron Zucker, The Detroit Edison Co.
Jan., p. 91

Trends in Distribution Over-Current Protection, G. F. Lincks and P. E. Benner, General Electric Co.

Jan., p. 138

Automatic Boosters on Distribution Circuits, L. M. Olmsted, Duquesne Light Co. . Oct., p. 1083

6:30 p.m.—Smoker

(See Details page 10)

WEDNESDAY

10:00 a.m.—Induction Machinery

(In Auditorium)

J. L. HAMILTON, Presiding

Induction Motor Resistance Ring Width, P. H. Trickey, Diehl Manufacturing Co.

Feb., p. 144

E. O. Lunn, Peterson & Cowan Elevator Co., Ltd. April, p. 387

Induction Motors on Unbalanced Voltages, H. R. Reed and R. J. W. Koopman, Michigan College of Mining & Technology. . . . Nov., p. 1206

Capacitor Motors with Windings not in Quadrature, Å. F. Puchstein, Robbins & Myers, Inc., and T. C. Lloyd, Antioch College. Nov. 1935, p. 1235

An Analysis of the Shaded Pole Motor, P. H. Trickey, Diehl Manufacturing Co. . Sept., p. 1007

10:00 a.m.—Protective Devices

(Room One, Fifth Floor)
J. P. McKEARIN, Presiding

The Control Gap for Lightning Protection, Ralph Higgins and H. L. Rorden, Ohio Insulator Co. Sept., p. 1029

A New Thermal Fuse for Network Protectors, L. A. Nettleton, Brooklyn Edison Co., Inc.

Oct., p. 1096

Ultra-High Speed Reclosing of High Tension Transmission Lines, Philip Sporn, American Gas & Electric Co., and D. C. Prince, General Electric Co. Jan., p. 81

American Institute of Electrical Engineers

		Restorer,					
Nodd	er, Pacifi	c Electric	Míg.	Corp.	Jan.,	p.	180

A Single Element Polyphase Directional Relay, A. J. McConnell, General Electric Co.

Jan., p. 77

2:00 p.m.—Synchronous Machinery

J. L. HAMILTON, Presiding

Negative-Sequence Reactance of Synchronous Machines, W. A. Thomas, Antioch College Dec., p. 1378

Contributions to Synchronous Machine Theory,

A. S. Langsdorf, Washington University

Jan., p. 41

Operational Solution of A-C Machines, A. R. Miller and W. S. Weil, Lehigh University Nov., p. 1191

Two-Reaction Theory of Synchronous Machines, S. B. Crary, General Electric Co. . Jan., p. 27

Synchronous Machine with Solid Cylindrical Rotor, C. Concordia and H. Poritsky, General Electric Co. Jan., p. 49

2:00 p.m.—Electronics

(Room One, Fifth Floor)
H. M. TURNER, Presiding

Heater Cathode Insulation Performance, Hans Klemperer, Westinghouse Electric & Mfg. Co. Sept., p. 981

Amplification Loci of Resistance-Capacitance Coupled Amplifiers, A. C. Seletzky, Case School of Applied Science Dec., p. 1364

An Electronic Voltage Regulator for D-C Generators, F. H. Gulliksen, Westinghouse Electric & Mfg. Co. Aug., p. 873

New Developments in Ignitron Welding Control, J. W. Dawson, Westinghouse Electric & Mfg. Co. Dec., p. 1371

Sealed-Off Ignitrons for Welding Control, David Packard and J. H. Hutchings, General Electric Co. Jan., p. 37

8:15 p.m.—Edison Medal Presentation

(In Auditorium)
To DR. ALEX DOW

Lecture: "Power and People." Dr. John C. Parker (See Details page 10)

THURSDAY

10:00 a.m.—Electrical Machinery (In Auditorium) J. L. HAMILTON, Presiding
Self-Regulated Compounded Rectifiers, W. M. Goodhue and R. B. Power, Harvard University Nov., p. 1200
Abrasion—A Factor in Electrical Brush Wear, V. P. Hessler, Iowa State College Jan., p. 8
Arc Characteristics Applying to Flashing on Commutators, R. E. Hellmund, Westinghouse Electric & Mfg. Co Jan., p. 107
Contact Drop and Wear of Sliding Contacts, R. M. Baker and G. W. Hewitt, Westinghouse Electric & Mfg. Co. Jan., p. 123
10:00 a.m.—Electrophysics
(Room One, Fifth Floor) R. C. MASON, Presiding
A-C Characteristics of Dielectrics — II, Alfredo Banos, Jr., The Johns Hopkins University Dec., p. 1329
Dielectric Strength of Transformer Insulation, P. L. Bellaschi and W. L. Teague, Westinghouse Electric & Mfg. Co Jan., p. 164
Parallel Inverter with Inductive Load, C. F. Wagner, Westinghouse Electric & Mig. Co. Sept., p. 970
Calculation of Resistances to Ground, H. B. Dwight, Massachusetts Institute of Technology Dec., p. 1319
Expansion Theorems for Ladder Networks, M. G. Malti and S. E. Warschawski, Cornell University Jan., p. 153
2:00 p.m.—Instruments and Measurements (In Auditorium) H. C. KOENIG, Presiding
Impulse Voltages Chopped on Front, P. L. Bellaschi, Westinghouse Electric & Mfg. Co. Sept., p. 985
Impulse-Generator Voltage Charts for Selecting Circuit Constants, J. L. Thomason, General Electric Co Jan., p. 183
Short-Time Spark-Over of Gaps, J. H. Hagenguth,

American Institute of Electrical Engineers

Development of α Modern Watt-Hour Meter, I. F. Kinnard and H. E. Trekell, General Electric Co. Jan., p. 172

Watt-Hour Meter Bearings, I. F. Kinnard and J. H. Goss, General Electric Co. Jan., p. 129

2:00 p.m.—Electric Welding

(Room One, Fifth Floor)
H. M. HOBART, Presiding

The Registance Wolding Circuit C I

The Resistance Welding Circuit, C. L. Pfeiffer, Western Electric Co. Aug., p. 868

Demonstration Lecture:

Some Fundamental Phenomena of the Electric Arc, Dr. C. G. Suits, General Electric Co.

Address: Reminiscences of Professor Elihu Thomson's Fundamental Invention of Electric Welding, Hermann Lemp, Ingersoll Rand Co.

7:00 p.m.—Dinner-Dance Buffet Supper

(See Details page 10)

Friday, January 29

Inspection Trips

(See Details pages 11-13)

TECHNICAL CONFERENCES*

 Wednesday, January
 27
 Room

 Assignments
 10:00 A.M.—Committee on Education
 1101

 2:00 P.M.—Network Analysis and Synthesis
 603

 2:00 P.M.—Noise Conference
 604

Thursday, January 28

2:00 P.M.—The Performance Standards, Synchronous Machinery, Induction Machinery, and D.C. Machinery Test Codes

*These conferences are intended for specialists to meet and discuss subjects informally without publication of the papers or discussions. Anyone should feel free to attend and take part.

Convention Features

THE SMOKER

Tuesday, 26th 6.30 p.m.

This year the smoker will be held at the Hotel Commodore, Lexington Ave. and 42nd Street. Both the Grand Ballroom and the West Ballroom have been engaged. A full-sized stage with a satisfactory view for all, a good dinner, and an excellent variety of entertainment insure a pleasant evening. Tickets \$3.50 per person, including tax—tables seat 10—all seats reserved.

EDISON MEDAL PRESENTA- Wednesday, 27th TION and LECTURE 8.15 p.m.

The Edison Medal will be presented to Dr. Alex Dow in the Engineering Auditorium on the evening of Wednesday, January 27th, at 8.15 p.m. Well-known engineers will tell of the achievements of the medalist, the history of the Edison Medal, and there will be a response by the medalist, Dr. Dow, who is president of The Detroit Edison Company.

At the conclusion of these ceremonies a lecture "Power and People" will be given by Dr. John C. Parker, vice-president, Consolidated Edison Company of New York, Inc.

DINNER-DANCE— BUFFET SUPPER

Thursday, 28th

The annual dinner-dance and buffet supper will be held at the Hotel Astor, Broadway between 44th and 45th Streets. The Astor has been entirely redecorated and refurnished, making the surroundings more luxurious than ever. Dinner will be served at seven o'clock followed by dancing from nine until two—music by George Ellner's orchestra. From midnight until two a buffet supper will be served.

Tickets per person: For Dinner-Dance \$5.00; for the Dance-Buffet Supper \$3.00; for the Dinner-Dance-Buffet Supper \$6.50. Tables will be set for 8 or 10 places. Please purchase tickets early and indicate names of guests and desired seating arrangements.

Inspection Trips

The committee has arranged the following list of inspection trips to be held during the convention. Full information on all trips will be furnished at the Inspection Trips Desk. The committee will also be glad to aid in arranging any special trips for members.

In addition, a post-convention cruise to Bermuda has been arranged for those who would enjoy a few days in a mild climate during midwinter. The "Monarch of Bermuda" will sail from New York on January 30. Members and guests who wish to join the group taking this cruise should make detailed arrangements with Leon V. Arnold, 36 Washington Square West, New York, N. Y., who will have a desk in the lobby during the convention.

Trips on Monday, January 25

No. 1 Edison Wonder House-Brooklyn

Inspection party will leave Headquarters at 2:00 P.M. in charge of a guide. Register by 12:00 ncon and obtain ticket (no charge),

No. 2. Sponsored Broadcast, General Electric Co., "Hour of Charm" N.B.C. Studios

Inspection party will meet in National Broadcasting Company's Studios, R.C.A. Building, 50th Street and 6th Avenue, at 3:45 P.M. Note: The doors to the studio will be closed promptly at 3:50 P.M. Register by 12 noon and obtain ticket (no charge).

Trips on Tuesday, January 26

No. 3. Mercury Turbine—Public Service Electric & Gas Co., Kearny Generating Station

Inspection party will leave headquarters by bus at 9:30 A.M. Register by 9:00 A.M. and obtain ticket (no charge).

No. 4. Special Lighting and Air Conditioning Installation—S. H. Kress & Co.

Inspection party will leave Headquarters at 10:00 A.M. Register by 9:00 A.M. and obtain ticket (no charge).

No. 5. RCA Manufacturing Co., Inc.—Harrison

This trip is limited to members only. Inspection party will assemble at Headquarters and leave promptly at 1:00 P.M. in charge of a guide. Register by 12:00 noon and obtain ticket (no charge).

No. 6. Electric Welding—The M. W. Kellogg Co., Jersey City

Inspection party will leave Headquarters by bus at 1:15 P.M. Register by 4:00 P.M. Monday and obtain ticket (75 cents).

Trips on Wednesday, January 27

No. 7. Ultra High Frequency Transmitter—Mackay Radio & Telegraph Co.

Inspection party will leave headquarters at 9:45 A.M. in charge of a guide. Register by 9:00 A.M. and obtain ticket (no charge).

No. 8. Weston Electrical Instrument Corporation

Inspection party will leave Headquarters at 1:00 P.M. in charge of a guide, Register by 12:00 noon and obtain ticket (no charge).

No. 9. Sloan Radio Frequency X-Ray Generator— Columbia Presbyterian Medical Center

Inspection party will meet at Medical Center, 167th Street and Broadway, at 2:30 P.M. Register by 10:00 A.M. and obtain ticket (no charge).

Trips on Thursday, January 28

No. 10. Power Control Board and Cable Testing Equipment—Independent Subway System N.Y.C.

Inspection party will meet at 126 West 53rd Street at 10:00 A.M. Register by 9:00 A.M. and obtain ticket (no charge).

No. 11. Westinghouse Lamp Works-Bloomfield

Inspection party will leave Headquarters in charge of a guide at 1:00 P.M. Register by 12 noon and obtain ticket (no charge).

No. 12. Brooklyn Navy Yard

Inspection party will assemble at Headquarters and leave at 1:30 P.M. in charge of a guide. Note: This trip is available only to citizens of the United States. Register by 12 noon and obtain ticket (no charge).

No. 13. The Associated Press

Inspection party will meet at Associated Press Headquarters, 383 Madison Avenue, New York City, at 2:00 P.M. Register by 12 noon and obtain ticket (no charge).

Trips on Friday, January 29

No. 14. Hastings-on-Hudson Mill—Anaconda Wire & Cable Co.

Inspection party will meet at Grand Central Terminal at 9:30 A.M. and leave by train for Hastings-on-Hudson at 9:40 A.M. Register by 4:00 P.M. Thursday and obtain ticket (no charge)

No. 15. New York Stock Exchange

Inspection party will meet at 20 Broad Street at 9:45 A.M. (Additional trips may be arranged for 11:45 A.M. and 1:45 P.M.). Register by 4:00 P.M. Thursday and obtain ticket (no charge).

No. 16. S.S. "Monarch of Bermuda"

Inspection party will assemble at Headquarters and leave at 1:45 P.M. by taxi in groups of 4 and 5, each group paying its own fare. Register by 10:00 A.M. and obtain ticket (no charge). Ladies are particularly invited.

American Institute of Electrical Engineers

No. 17. National Broadcasting Company Studios

A special ticket (30 cents) may be obtained at the Inspection Trips Desk good for a regular tour of the broadcasting studios, either in the morning or the afternoon. Another special ticket (30 cents) may be obtained at the Inspection Trips Desk for a tour to the Observation Roof of the RCA Building.

No. 18. Hall of Motion—Museum of Science and Industry

A special ticket (20 cents) may be obtained at the Inspection Trips Desk for a trip through the museum in the RCA Building during either the morning or the afternoon.

No. 19. Warner Bros. Moving Picture Studios

Inspection party will leave Headquarters in charge of a guide at 1:00 P.M. and 2:30 P.M. Register by 10:00 A.M. and obtain ticket (no charge).

LADIES PROGRAM

(Headquarters-Alcove-Tenth Floor)

Monday, 25th

9:00 a.m.-4:00 p.m.—Registration

Tuesday, 26th

- 1:30 p.m.—Tour by taxi to see Van Gogh Exhibition at the Museum of Modern Art, 11 W. 53rd Street. From there walk to Pedach Exhibition of Decorating Arts and Crafts, 30 Rockefeller Plaza, 10th floor, RCA Building.
- 4:00 p.m.—Tea—British Empire Exhibition Room
- 5:00 p.m.—Museum of Science and Industry— Rockefeller Center
- 6:00 p.m.—Dinner at the Alexander Restaurant, 8 East 49th Street
- 8:00 p.m.—Tour of Music Hall Back Stage—meet at 50th Street exit, RCA Building. Attend screen performance (85 cents)

Wednesday, 27th

- 1:00 p.m.—Luncheon and Bridge at the Engineering Woman's Club
- 8:15 p.m.—Edison Medal Presentation to Dr. Alex Dow. Lecture: "Power and People" by Dr. John C. Parker

Thursday, 28th

- 10:00 a.m.—Visit to the Edison Wonder House— Lunch in cafeteria
 - 7:00 p.m.—Dinner-Dance at the Hotel Astor

Friday, 29th

Morning—Visit New York Stock Exchange 1:45 p.m.—Visit S.S. "Monarch of Bermuda"

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COMMITTEE MEETINGS

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9:30	A.M.—Technical Program	Room 1001
	A.M.—Research	1101
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	P.M.—Broadening of Institute Activities	1001
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10:00	A.M.—Electrochemistry and Electrometallurgy	1101
10:00	A.M.—National Nominating Committee	1001
10:00	A.M.—Automatic Stations	903
2:00	P.M.—Board of Directors	1001
2:00	P.M.—Lightning Arrester Subcommittee	1105
2:00	P.M.—Group III, Subcom. on Conductors, Towers, and Wood Poles, Power Transmission and	
	Distribution	1101
4:30	P.M.—Authors of Protective Devices Session	903
	Wednesday, January 27	
9:30	A.M.—Sections	903
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12:15	P.M.—Student Branch Counselors Luncheon—	
	Town Hall Club	rd St.
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2:00	P.M.—Transformer Subcommittee of Electrical Ma- chinery Committee	1101
	Thursday, January 28	
9:30	A.M.—Relay Subcommittee of Protective Devices	
	Committee	1001
	A.M.—Subcommittee on Circuit Breakers	903
	P.M.—Protective Devices	1001
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