

American Institute of Electrical Engineers



JANUARY

25-29

1932

WINTER CONVENTION

Engineering Societies Building

33 West 39th Street

New York



The New George Washington Bridge

WINTER CONVENTION ANNOUNCEMENT

ENGINEERING DEVELOPMENTS in many specialized fields of the electrical art will be discussed during the A.I.E.E. Winter Convention, which will be held with headquarters in the Engineering Societies Building, New York, January 25-29, 1932. An excellent schedule of events combining technical interests with business, entertainment, and social features has been arranged by the 1932 Winter Convention Committee.

Technical Sessions

The technical sessions scheduled have been selected with a view toward best meeting the needs of the greatest proportion of the membership and a program of broad scope and current interests has been evolved.

Four of the sessions comprise important symposiums on: (1) distribution circuit lightning protection, (2) power station auxiliary drives, (3) system stability, and (4) time and time services. These symposiums have been developed through the close cooperation of operating companies, electrical manufacturers, and technical committee activities. They represent current practises and present valuable data.

Those chiefly interested in theory should find the sessions on instruments and measurements, electrochemistry and electrometallurgy, general circuit theory and research to be of particular interest. Other sessions on protective devices, electrical machinery, electric welding, transportation and communication combine theory with practical design and performance.

Many of the papers will present some of the latest developments in the electrical engineering field and the program leaves little to be desired from a standpoint of technical interest.

John Fritz and Edison Medals

On the evening of Wednesday, January 27, both the John Fritz and Edison Medals will be presented in the Engineering Auditorium.

The Edison Medal will be presented to Doctor Edwin W. Rice, Jr., for his contributions to the development of electrical systems and apparatus and his encouragement of scientific research in industry.

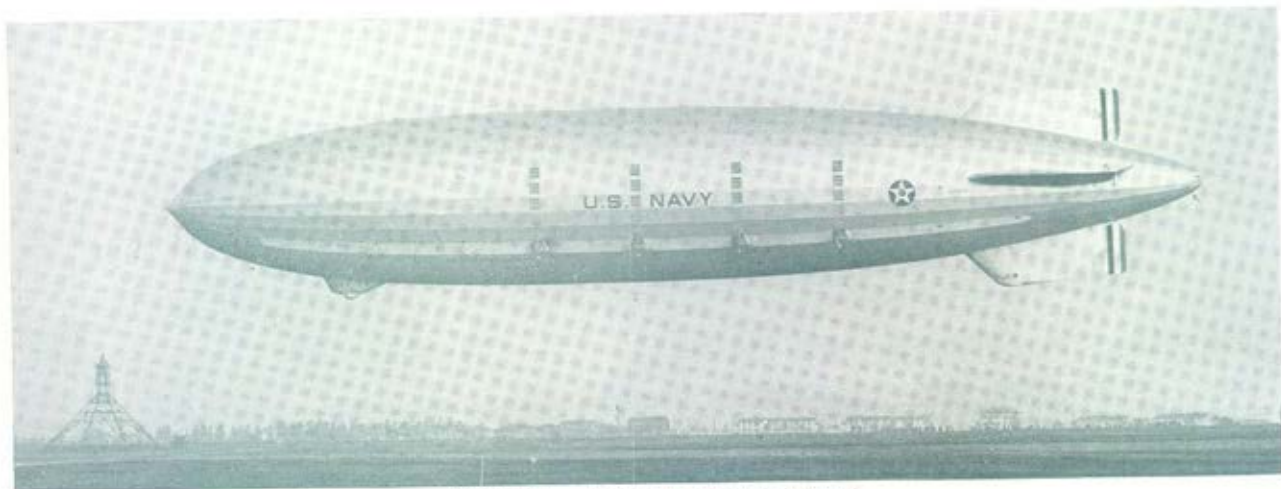
The John Fritz Medal will be presented to Doctor Michael I. Pupin for his accomplishments as a leading scientist, engineer, and author, and as inventor of the tuning of oscillating circuits and the loading of telephone circuits by inductance coils.

The recipients' responses and speeches by several other eminent Institute members should make this occasion a most memorable one.

Details of the award of the John Fritz Medal were published in *ELECTRICAL ENGINEERING*, November, 1931, p. 911. Details of the award of the Edison Medal will be published in the January issue.

Smoker

On the evening of Tuesday, January 26, a buffet supper served by Louis Sherry and smoker will be held in



"U.S.S. Akron" Taking off from Lakehurst

the Engineering Societies Building. The dinner will be followed by attractive entertainment features. Tickets will be \$3.00 per person.

Dinner-Dance

On the evening of Thursday, January 28, the Dinner-Dance will be held in the Grand Ballroom of the Hotel Astor. This formal occasion affords much pleasure to those in attendance and is looked forward to from year to year. Reservations may be made in advance for tables seating eight or ten people. Tickets will be \$6. per person.

Ladies Entertainment

In addition to some of the other features mentioned, the Ladies Entertainment Committee, under the chairmanship of Mrs. E. B. Meyer, has made arrangements for a special program, which will prove very attractive.

Reduced Railroad Rates

Under the certificate plan reduced railroad rates will be available to members and guests who attend the convention; only half fare need be paid on a return trip over the same route, provided a total of at least 100 certificates are deposited at the registration desk. Rates apply to all who attend the convention and to dependent members of their families. Each member or guest should obtain a certificate when purchasing his one-way ticket to New York, explaining to the ticket agent that he wishes the certificate authorized by the passenger associations for the winter convention of the A.I.E.E.

On arriving at the convention the certificate should be deposited at the registration desk. There it will be held for validation by a railroad representative and if 100 or more certificates are validated, these certificates will be returned to the owners. By presenting the validated certificate when purchasing a return ticket, only half fare will be charged. Local ticket agents should be consulted as this plan applies only within certain dates, depending upon the territory. *Everyone whose one-way fare is more than 66 cents should get a certificate whether or not he intends to use it. By neglecting to do so others may be deprived of considerable saving.*

Register in Advance

To avoid congestion at the registration desk and permit the committee in charge to have badges ready upon arrival each member should fill in and mail the enclosed *Advance Registration Card*.

Columbia University Engineers' Dinner

On Wednesday, January 27, 6:30 p.m., graduates of Columbia University will dine at the Columbia Univer-

Schedule of Events

(Capital letters A, B, etc., denote technical sessions.)

Monday, January 25

- 10:00 a.m. Registration
- 2:00 p.m. Opening of Convention
 - A—Protective Devices
 - B—Instruments and Measurements

Tuesday, January 26

- 10:00 a.m. C—Symposium on Distribution Circuit Lightning Protection
 - D—General Circuit Theory
- 2:00 p.m. E—Symposium on Power Station Auxiliary Drive
- 6:00 p.m. Buffet Supper and Smoker

Wednesday, January 27

- 10:00 a.m. F—Symposium on System Stability
 - G—Research
- 1:15 p.m. Inspection Trips
- 2:00 p.m. Board of Directors Meeting
- 8:30 p.m. Edison Medal and John Fritz Medal Presentations

Thursday, January 28

- 10:00 a.m. H—Electrical Machinery
 - I—Electrochemistry and Electrometallurgy
- 2:00 p.m. J—Electrical Machinery
 - K—Transportation
- 7:30 p.m. Dinner Dance

Friday, January 29

- 10:00 a.m. L—Symposium on Time and Time Services
- 2:00 p.m. M—Communication
 - N—Electric Welding

sity Club, 4 West 43rd Street, in an informal get-together dinner, which will finish in time to enable them to attend the regular evening session. Price \$1.50. Address A. D. Hinckley, Columbia University.

Committees

The 1932 winter convention committee is constituted as follows: E. B. Meyer, *chairman*; O. H. Caldwell, H. P. Charlesworth, H. C. Dean, W. H. Harrison, C. R. Jones, G. L. Knight, C. E. Stephens and R. H. Tapscott.

Chairmen of the subcommittees are: C. E. Stephens, convention executive committee, with C. R. Jones as vice-chairman; G. W. E. Draper, smoker; E. J. Johnson, dinner dance; W. R. Smith, inspection trips; and Mrs. E. B. Meyer, ladies' entertainment.

F. L. HUTCHINSON
National Secretary

Inspection Trips

The Inspection Trips Committee invites the attention of all of those who will be in attendance at the Convention to the fact that its members will be pleased to assist in the making of necessary arrangements for the visiting of neighboring plants or other points of special interest, and asks that the members make their desires in this connection known to the Committee as soon as possible after arrival.

Wednesday afternoon, January 27, will be devoted to several official trips for which arrangements are being made.

The Inspection Trip Committee will need to have definite information with regard to the number that will wish to be accommodated. Therefore, a card is enclosed which should be filled in and mailed promptly with the advance registration card.

Tickets will be issued for all major trips. Members are urged to visit the Inspection Trip Desk upon arrival at headquarters and thus enable the committee to assist in the making of plans for trips that will be interesting and pleasurable.

Special Trips—Wednesday, January 27

No. 1. U. S. S. "Akron"

At the U. S. Naval Air Station at Lakehurst, N. J., approximately 55 miles from New York, is stationed the new Navy dirigible, the "Akron," recently completed by the Goodyear-Zeppelin Corp. and christened on August 8, 1931, by Mrs. Herbert Hoover.

Through the courtesy of the commanding officer, arrangements have been made to visit the air station, and see the "Akron," the "Los Angeles," and the hangars.

The "Akron," first of two great dirigibles ordered by the United States Navy is nearly twice the size of the Graf Zeppelin, three times the size of the Los Angeles, and carries 6,500,000 cu. ft. of helium gas. It is a privilege and should prove a real treat to our members to have this opportunity to see this great leviathan of the air.

This trip will be made by train and the round-trip fare will not exceed \$2.00.

No. 2. Scenic Trip up Hudson River

The completion and opening to traffic of the George Washington Bridge, which spans the Hudson River between 178th St., New York, and Fort Lee, New Jersey, provides the opportunity for a trip through a section of country that is fast becoming famous for its scenic beauty. Further up the river at Bear Mountain is another famous span which forms an important connecting link between the highways on either side. From it, the scenic approach highway on the east side of the river, and the highway on the top of the Palisades of New Jersey on the west side, wonderful panoramic views of the highlands of the Hudson, the river itself, and the surrounding country can be had (see back cover). A ride over the highways in this vicinity provides one of the most magnificent motor trips to be found in the United States, and your Committee is providing plans for such a trip which can be enjoyed at very moderate cost. For this purpose the Committee contemplates engaging DeLuxe busses which will, on Wednesday afternoon,

Hotel Reservations

Reservations for hotel accommodations should be made by writing directly to the hotel of your preference.

HOTEL RATES

HOTEL	Without		With	
	Single Room	Private Bath Double Room	Single Room	Private Bath Double Room
Ambassador	.....	.....	\$6.00	\$8.00
51st St. & Park Ave.	.....	.....	\$10.00	\$12.00
Astor	\$2.50	\$4.00	\$3.00	\$4.50
44th St. & Broadway	\$3.00	.....	\$8.00	\$9.00
Biltmore	\$3.00	\$5.00	\$6.00	\$8.00
43rd St. & Madison Ave.	.....	.....	\$9.00	\$12.00
Bristol	\$1.75	\$2.50	\$2.50	\$4.00
129 W. 48th St.	\$2.00	\$3.00	.....	.....
Collingwood	\$1.50	\$2.00	\$2.50	\$3.75
45 W. 35th St.	.....	.....	\$3.50	\$5.00
Commodore	\$3.50	\$4.50	\$4.00	\$5.00
42nd St. & Lexington Ave.	\$5.00	\$7.00	\$6.00	\$10.00
Dauphin	.....	.....	\$3.00	\$3.50
67th St. & Broadway	.....	.....	.....	.....
Edison	.....	.....	\$2.50	\$4.00
47th St. near Broadway	.....	.....	\$5.00	\$8.00
Governor Clinton	\$3.00	\$4.00	\$3.50	\$5.50
31st St. & 7th Ave.	\$6.00	\$8.00	\$6.00	\$8.00
Great Northern	.....	.....	\$3.00	\$4.00
118 W. 57th St.	.....	.....	.....	.....
Knickerbocker	\$2.00	\$3.50	\$2.50	\$4.00
45th St. near Broadway	.....	.....	.....	.....
Latham	\$2.00	\$3.00	\$2.50	\$3.50
28th St. & 5th Ave.	.....	.....	.....	\$4.50
McAlpin	\$2.50	\$4.00	\$3.50	\$5.00
34th St. & Broadway	\$3.00	\$4.50	\$8.00	\$10.00
Murray Hill	\$2.00	\$4.00	\$3.00	\$4.50
40th St. & Park Ave.	\$4.00	\$6.00	\$6.00	\$8.00
Pennsylvania	\$4.00	\$6.00	\$4.00	\$6.00
32nd St. & 7th Ave.	\$5.00	\$7.00	\$8.00	\$12.00
Plaza	.....	.....	\$6.00	\$8.00
59th St. & 5th Ave.	.....	.....	\$8.00	\$10.00
Prince George	.....	.....	\$2.50	\$4.00
28th St. & 5th Ave.	.....	.....	.....	\$5.00
Savoy-Plaza	.....	.....	\$7.00	\$9.00
59th St. & 5th Ave.	.....	.....	.....	.....
Shelton	.....	.....	\$3.00	\$4.00
49th St. & Lexington Ave.	.....	.....	.....	.....
St. George	\$2.50	.....	\$3.50	\$5.00
Clark St., Brooklyn	\$3.50	.....	\$5.50	\$10.00
Taft	\$2.00	\$3.00	\$3.00	\$5.00
50th St. & 7th Ave.	.....	.....	.....	.....
Vanderbilt	.....	.....	\$3.00	\$6.00
34th St. & Park Ave.	.....	.....	\$5.00	\$10.00
Victoria	.....	.....	\$2.50	\$4.00
51st St. & 7th Ave.	.....	.....	\$5.00	\$10.00
Wellington	\$2.00	\$3.00	\$2.50	\$3.50
56th St. & 7th Ave.	.....	.....	\$3.50	\$4.50
Woodward	\$2.00	.....	\$2.50	\$3.00
55th St. & Broadway	.....	.....	.....	.....

January 27, start from the Engineering Societies Building, cross the new George Washington Bridge, travel north up the Hudson River on the top of the Palisades to the Bear Mountain Bridge, cross the Bear Mountain Bridge and return to the starting point via the Scenic Approach Highway and other New York State Highways of interest and beauty.

No. 3. New Jersey Industrial Area

For those who would enjoy a bus trip through the industrial area of New Jersey, with brief stops at points of specific interest, a trip is in contemplation and will be described more fully in the Convention literature.

Other Points of Interest

Opportunity will be afforded to those who wish to visit the installations of the neighboring utilities, railroad electrifications completed or in progress, or industrial or

(Continued on last page)

TECHNICAL SESSIONS

Monday—2:00 p.m.

A—Protective Devices

A New High Speed Distance Relay with Composite Impedance—Reactance Characteristic

S. L. GOLDSBOROUGH AND W. A. LEWIS
Westinghouse Elec. & Mfg. Co.

The Theory of Oil Blast Circuit Breakers

D. C. PRINCE
General Electric Co.

The Practical Application of the Oil Blast Principle of Circuit Interruption

R. M. SPURCK
General Electric Co.

Recent Developments in Arc Rupturing Devices

R. C. VAN SICKLE AND W. M. LEEDS
Westinghouse Elec. & Mfg. Co.

Extinction of A-C. Arcs in Turbulent Gases

T. E. BROWNE, JR.
Westinghouse Elec. & Mfg. Co.

B—Instruments and Measurements

High Voltage Bridge for Measurements of Cable with Grounded Sheaths

C. L. DAWES AND A. F. DANIEL
Harvard University

A High Sensitivity Power Factor Bridge

W. B. KOUWENHOVEN AND ALFREDO BANOS, JR.
The Johns Hopkins University

*Capacitance and Power Factor Measurement by the Capacitance Bridge

R. P. SISKIND
Harvard University

†Aging and Elastic Hysteresis in Instrument Springs

R. W. CARSON AND P. MACGAHAN
Westinghouse Elec. & Mfg. Co.

†An Automatic Oscillograph

C. M. HATHAWAY and
R. C. BUELL
General Electric Co.

The Photoelectric Recorder

C. W. LAPIERRE
General Electric Co.

Tuesday—10:00 a.m.

C—Symposium on Distribution Circuit Lightning Protection

Interconnection of Primary Lightning Arrester Ground and the Grounded Neutral of the Secondary Main

C. FRANCIS HARDING AND G. S. SPRAGUE
Purdue University

Lightning Protection for Distributor Transformers

K. B. McEACHRON
General Electric Co.

L. SAXON
Utility Management Corp.

Lightning Protection for Distribution Transformers

A. M. OPSAHL
Westinghouse Electric & Mfg. Co.

A. S. BROOKES AND R. N. SOUTHGATE
Public Service Electric & Gas Co.

Studies in Lightning Protection on 4,000-Volt Circuits—III

D. W. ROPER
Commonwealth Edison Co.

Lightning Protection for Distribution Transformers

T. H. HAINES AND C. A. CORNEY
The Edison Electric Illuminating Company of Boston

Distribution System Lightning Studies by Philadelphia Electric Company

H. A. DAMBLY, H. N. EKVALL, AND H. S. PHELPS
Philadelphia Electric Co.

D—General Circuit Theory

Equivalent Circuits—I

F. M. STARR
General Electric Co.

Transient Oscillations of Mutually Coupled Windings

L. V. BEWLEY
General Electric Co.

The Geometrical Circuits of Electrical Networks

R. M. FOSTER
American Telephone and Telegraph Co.

Vector Theory of Synchronous Machines

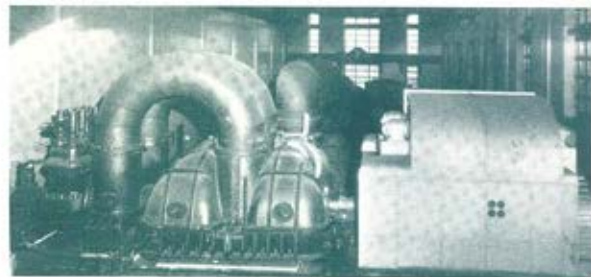
IVAN H. SUMMERS (Posthumous)
General Electric Co.

Tuesday—2:00 p.m.

E—Symposium on Auxiliary Drive for Steam Power Stations

Foreword—Auxiliary Drive for Steam Power Stations

F. H. HOLLISTER
Sargent and Lundy, Inc.



160,000-kw. Turbine Generators—Hudson Avenue Station

TECHNICAL SESSIONS—Continued

Steam Driven Auxiliaries for Power Plants

W. POOLE DRYER
Stone and Webster, Inc.

Electrically Driven Auxiliaries for Steam Power Stations

L. W. SMITH
Sargent and Lundy, Inc.

Wednesday—10:00 a.m.

F—Symposium on Stability

1. Standard Decrement Curves

W. C. HAHN
General Electric Co.
C. F. WAGNER
Westinghouse Electric & Mfg. Co.

2. Calculation of Short-Circuits on Power Systems

C. F. WAGNER
Westinghouse Electric & Mfg. Co.
S. H. WRIGHT
Buffalo Niagara and Eastern Power Corp.

3. Decrement Curves for Specific Systems

W. C. HAHN
General Electric Co.

*Proposed Definitions of Terms Used in Power System Studies—Report of Subject Committee on Definitions

H. K. SELS, Chairman
Public Service Electric & Gas Co.

Generalized Stability Solution for Metropolitan Type Systems

S. B. GRISCOM, W. A. LEWIS, AND W. R. ELLIS
Westinghouse Electric & Mfg. Co.

Electrical Stability of Conowingo Hydroelectric Station

R. A. HENTZ AND J. W. JONES
Philadelphia Electric Co.

G—Research

Electrical Precipitation

A. W. SIMON AND L. C. KRON
Tennessee Coal, Iron, and Railroad Co.

Radio Interference from Insulator Corona

F. O. McMILLAN
Oregon State College

The Predetermination of the A-C. Behavior of Dielectrics

J. B. WHITEHEAD AND A. BANOS, JR.
Johns Hopkins University

The Breakdown of Glass with Alternating Potentials

N. D. KENNEY
Massachusetts Institute of Technology
A. M. LUERY
New Jersey Bell Telephone Co.
J. D. MORIATY
Bell Telephone Laboratories, Inc.

Relationships among the Magnetic Properties of Magnet Steels and Permanent Magnets

K. L. SCOTT
Western Electric Co.

Thursday—10:00 a.m.

H—Electrical Machinery

An Induction Motor With Paralleled Rotor and Stator

A. G. CONRAD AND R. G. WARNER
Yale University

Some Considerations in the Design of Damper Windings for Synchronous Motors

C. C. SHUTT
Westinghouse Elec. & Mfg. Co.

*Surge-Proof Transformers

H. V. PUTMAN
Westinghouse Elec. & Mfg. Co.

*Effect of Transient Voltages on Power Transformer Design—IV

K. K. PALUEFF AND J. H. HAGENGUTH
General Electric Co.

I—Electrochemistry and Electrometallurgy

Power Losses in Electrolytic Condensers

F. W. GODSEY, JR.
Development Engineer, New Haven, Conn.

Film Characteristics of Electrolytic Condensers

F. W. GODSEY, JR.
Development Engineer, New Haven, Conn.

*Cobalt Magnet Steel

P. H. BRACE
Westinghouse Elec. & Mfg. Co.

Thursday—2:00 p.m.

J—Electrical Machinery

Commutation Considered as a Switching Phenomenon

R. E. HELLMUND AND L. R. LUDWIG
Westinghouse Elec. & Mfg. Co.

Equalizing Currents in the Armature of a D-C. Machine

R. M. BAKER
Westinghouse Elec. & Mfg. Co.

Calculation of the No-Load Damper Winding Loss in Synchronous Machines

E. I. POLLARD
Westinghouse Elec. & Mfg. Co.

Sine Wave Generators

L. P. SHILDNECK
General Electric Co.

TECHNICAL SESSIONS—Continued

K—Transportation

Engineering Features of Three-Power Locomotives

F. H. BREHOB AND F. H. CRATON
General Electric Co.

Motors for 3,000-Volt D-C. Multiple Unit Cars

J. C. AYDELOTT
General Electric Co.

The Temperature Rise of Ventilated Railway Motor Armatures

D. A. LIGHTBAND
Westinghouse Elec. & Mfg. Co.

High Capacity Rectifier Efficiency Improved by Sectionalization

A. L. ATHERTON
Westinghouse Elec. & Mfg. Co.

Preparing Substations for Electric Operation

L. B. CURTIS
Pennsylvania Railroad Company

Friday—10:00 a.m.

L—Symposium on Time and Time Services

†Astronomical Aspects of Time

E. W. BROWN
Yale University

Modern Developments in High Precision Clocks

A. L. LOOMIS
Loomis Laboratories
W. A. MARRISON
Bell Telephone Laboratories, Inc.

The Time Service of the U. S. Naval Observatory

J. F. HELLWEG
U. S. Naval Observatory

Time Services of the Telegraph Companies

G. W. JANSON
Western Union Telegraph Co.

Synchronous Electric Time Service

H. E. WARREN
Warren Telechron Co.

Friday—2:00 p.m.

M—Communication

†A New Key West-Havana Carrier Telephone Cable

H. A. APPEL
American Tel. & Tel. Co.
W. S. GORTON AND R. W. CHESNUT
Bell Telephone Laboratories, Inc.

†The Development of a Hand Set for Telephone Stations

W. C. JONES
Bell Telephone Laboratories, Inc.
A. H. INGLIS
American Tel. & Tel. Co.

†An Automatic Concentration Unit for Printing Telegraph Circuits

G. S. VERNAM
International Communications Laboratories, Inc.

†Direct Printing over Long Non-Loaded Submarine Telegraph Cables

M. H. WOODWARD AND A. F. CONNERY
International Communications Laboratories, Inc.

†Carrier Application to a Telegraph Plant

R. E. SMITH AND L. A. KELLEY
International Communications Laboratories, Inc.

†Direct Solution of Coupled Tuned Circuits

L. A. KELLEY
International Communications Laboratories, Inc.

Read Subsequent Issues of
ELECTRICAL ENGINEERING
for an account of this
Convention

N—Electric Welding

Forces of Electric Origin in the Iron Arc

F. CREEDEY, R. O. LERCH, P. W. SEAL AND
E. P. SORDON
Lehigh University

An Improved A-C. Arc Welder

A. M. CANDY
Westinghouse Elec. & Mfg. Co.

Recent Developments in the Design of Arc Welding Generators

K. L. HANSEN
K. L. Hansen Engineering Co., Inc.

†These papers are under consideration for presentation at the winter convention, but up to the date of going to press, December 19, they have not been officially placed upon the program.

†These papers will not be published in advance form by the Institute but copies may be made available by the respective authors.



The Three-Power Locomotive

other enterprises which command the interest of the members and their guests. Inspection privilege to visit the following places of interest has been accorded:

The Delaware, Lackawanna and Western Railroad Electrification.
Roseland Switching Station of the Public Service Electric and Gas Company
160,000 Kw. Tandem Compound Units of the Brooklyn Edison Company, and
Research Laboratory
East River Generating Station of New York Edison Company
New Eighth Avenue Subway Substations
Vertical Distribution in Empire State Building
Electrical Testing Laboratories
Electric Research Products, Inc.
Lighting Institute of New York Electrical Society

New Three Power Locomotives of New York Central Road used for switching on their West Side lines in New York City.
Studio of Jenkins Television Corporation, where actual broadcasting of television dramatic sketches and their reproduction, as received on local receiver, may be witnessed.
Lawrenceville Short Wave Radio Station, and also Control Room at 24 Walker Street, for Ship to Shore and Transatlantic Service
Time Service Bureaus of New York Telephone Company, and Western Union Telegraph Company
Tele-Typewriter Exchange Service of American Telephone and Telegraph Company at 24 Walker Street.
New York Museum of Science and Industry, where may be seen the new permanent exhibits relating to Power and Electrical Science and Technology. These exhibits should prove of great interest to our members and their guests.
New Lighting of the Statue of Liberty.
Network Protector Exhibit and time control of street lighting circuits.

Views Along the Hudson River

SPECIAL TRIP NO. 2



*Traveling North on the New Jersey side Toward
Bear Mountain Bridge*



*Looking Back from the "Scenic Approach Highway,"
New York side*



The Majestic Cliffs of the Palisades



The Palisades Viewed from the New York side