

Joint Meeting  
*of the*  
Middle Eastern District  
*of the*  
American Institute of Electrical Engineers  
*and*  
Association of Iron and Steel Electrical Engineers  
PITTSBURGH, MARCH 11-13, 1931

*William Penn Hotel*



*Pittsburgh, the "City of Bridges"*

## PROGRAM OUTLINE

### Wednesday, March 11

- 9:00 a.m. Registration
- 10:00 a.m. Address of Welcome—President Lee
- 10:15 a.m. Technical Session No. 1
- 2:00 p.m. Technical Session No. 2
- 8:15 p.m. Theater Party

### Thursday, March 12

- 9:30 a.m. Technical Session No. 3
- 12:30 p.m. Luncheon for Student Branch Counselors  
and Chairmen
- 2:00 p.m. Student Session No. 4
- 2:00 p.m. Inspection Trips
- 3:30 p.m. Board of Directors Meeting
- 6:45 p.m. Banquet and Dance

### Friday, March 13

- 9:30 a.m. Technical Session No. 5
- 12:30 p.m. Luncheon for Student Branch Counselors
- 12:30 p.m. Luncheon for Student Branch Chairmen
- 2:00 p.m. Technical Session No. 6

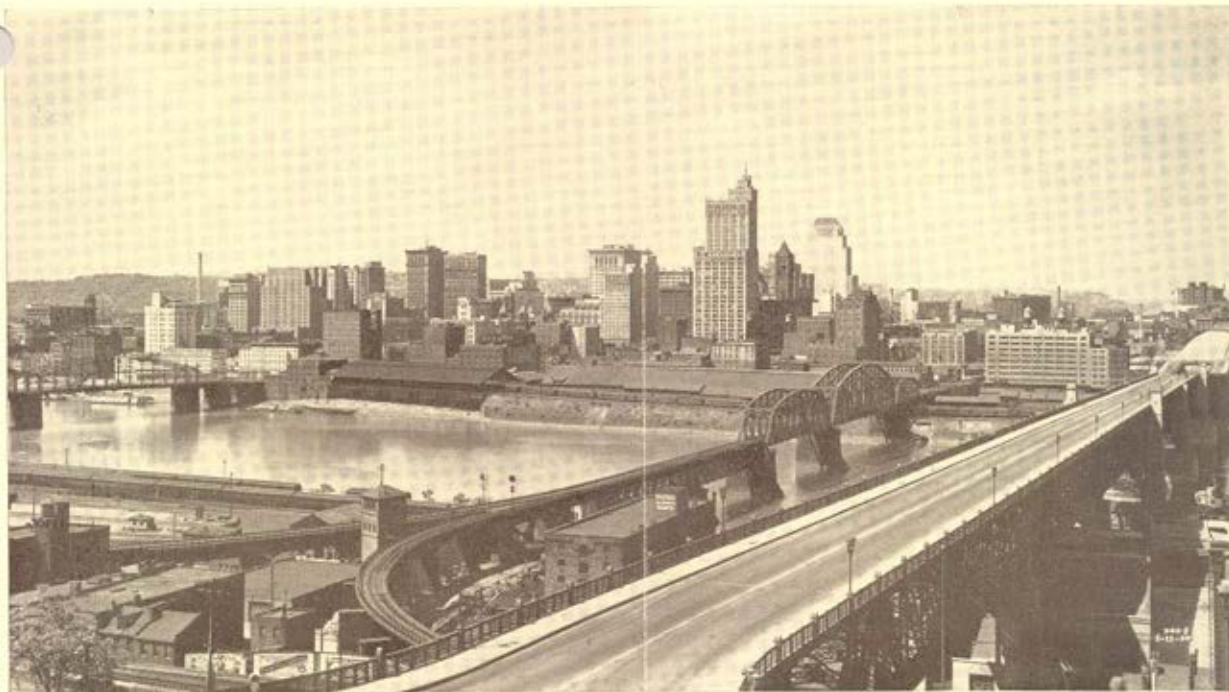
**Joint Meeting**  
*of*  
**Middle Eastern District, A. I. E. E.**  
*and*  
**Association of Iron and Steel Electrical Engineers**



THE seventh meeting of the Middle Eastern District, No. 2, of the A. I. E. E. will be held jointly with the Association of Iron and Steel Electrical Engineers in Pittsburgh, March 11-13, inclusive. Headquarters will be at the William Penn Hotel. An attractive program of five technical sessions, a student session, excellent entertainment, and interesting inspection trips has been arranged by the General Committee and is offered to those who will attend the meeting.

### Technical Sessions

Engineering papers on and related to such important subjects as networks, system grounding, industrial power applications and interconnection between utilities and industries will be presented in four of the technical sessions. A fifth session is comprised of two groups of selected subjects, one on the use of electricity in industry, the other on communication systems including a description of KDKA Broadcasting Station.



PITTSBURGH VIEWED FROM THE LIBERTY TUBES  
*(Photograph by Johnston & Johnston, Inc.)*



::

# PROGRAM

::

## Wednesday

9:00 a.m.—Registration

10:00 a.m.—Opening of Meeting

Remarks: E. C. Stone,  
*Vice-President*, Middle Eastern District, No. 2  
Address of Welcome: William S. Lee  
*President*, A. I. E. E.

10:15 a.m.—Session No. 1

### A-C Low-Voltage Networks

P. H. Chase, *Presiding*

✓ Burn-Off Characteristics of Low-Voltage Network Cables

G. SOUTHERLAND and D. S. MACCORKLE  
New York and Queens Electric Light and Power Co.

✓ Arcs in Low-Voltage A-C Networks

J. SLEPIAN and A. P. STROM  
Westinghouse Electric & Mfg. Co.

✓ Re-Ignition of Metallic A-C Arcs in Air

S. S. ATTWOOD and W. G. DOW  
University of Michigan  
W. KRAUSNICK  
Ohio Northern University

2:00 p.m.—Session No. 2

### A-C Low-Voltage Networks

P. H. Chase, *Presiding*

Vertical Networks in Metropolitan Office Buildings

A. H. KEHOE  
United Electric Light and Power Co.  
BASSETT JONES  
Consulting Engineer

✓ A Primary Network

R. M. STANLEY and C. T. SINCLAIR  
Byllesby Engineering and Management Corp.

✓ The Philadelphia A-C Network System

H. S. DAVIS and W. R. ROSS  
Philadelphia Electric Co.

Prepared Discussion

Arrangements will be made for interested engineers to present prepared discussions on the problems involved in network distribution.

8:15 p.m.—Theater Party

## Thursday

9:30 a.m.—Session No. 3

### System Grounding Problems

F. A. Allner, *Presiding*

Present Day Practice in Grounding of Transmission Systems

Second Report of Subject-Committee on Grounding  
C. A. POWEL, *Chairman*

Reactance of Transmission Lines with Ground Return

J. E. CLEM  
General Electric Co.

Fundamental Basis for Distance Relaying on Three-Phase Systems

W. A. LEWIS  
Westinghouse Electric & Mfg. Co.  
L. S. TIPPETT  
Walter and Eliza Hall Travelling Fellow of the University of Sydney

Power System Voltages and Currents Under Fault Conditions

R. D. EVANS and S. H. WRIGHT  
Westinghouse Electric & Mfg. Co.

Simultaneous Faults on Three-Phase Systems

EDITH CLARKE  
General Electric Co.

12:30 p.m.—Luncheon for Student Branch Counselors and Chairmen

2:00 p.m.—Session No. 4: Student Session

Professor Morland King, *Presiding*

2:00 p.m.—Inspection Trips

(For details see Paragraphs under Inspection Trips, pages 6 and 7.)

3:30 p.m.—Board of Directors Meeting

6:45 p.m.—Banquet and Dance

## Friday

9:30 a.m.—Session No. 5

### Industrial Power Applications

A. C. Cummins, *Presiding*

(1) Conversion and Distribution of General Purpose D-C Power in Large Industrial Plants

R. D. ABBISS  
Carnegie Steel Company  
D. C. WEST  
Westinghouse Electric & Mfg. Co.

(2) Symposium on Interconnection Between Utilities and Industries

Davison Coke and Iron Company and Duquesne Light Company Interconnection

G. E. DIGNAN, Davison Coal and Iron Co.  
R. L. KIRK, Duquesne Light Co.

Interconnection of Power Supply Between Public Utilities and Large Industrial Users

F. O. SCHNURE  
Bethlehem Steel Co.

Absorption of By-Product Power

A. HOEFLE  
Toledo Edison Co.  
W. T. WOODMANCY  
Interlake Iron Corp.

(All the papers in this Session will be preprinted by the A. I. & S. E. E.)

12:30 p.m.—Luncheon for Student Branch Counselors

12:30 p.m.—Luncheon for Student Branch Chairmen

# PROGRAM

## 2:00 p.m.—Session No. 6: Selected Subjects

G. A. Kositzky, *Presiding*

### The Use of Electricity in Large Annealing Furnaces

J. C. WOODSON  
Westinghouse Electric & Mfg. Co.

### A Modern Electrified Dairy Plant

A. J. DREUX  
Rieck-McJunkin Dairy Co.  
H. C. BRUNNER  
Westinghouse Electric & Mfg. Co.

### Power Equipment at New KDKA Station

R. L. DAVIS  
Westinghouse Electric & Mfg. Co.

### Power Supply for Telephone Systems

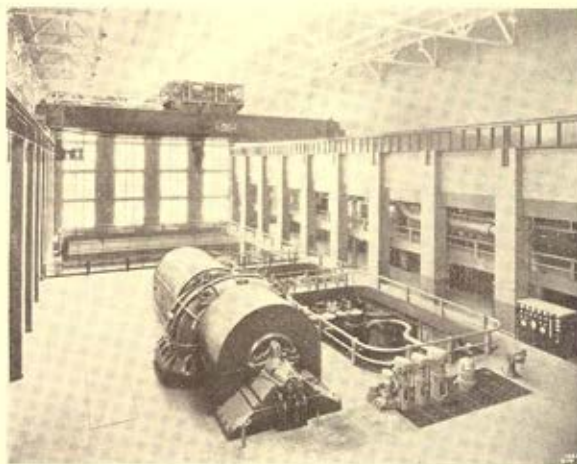
K. L. YOUNG  
American Telephone and Telegraph Co.  
R. L. LUNSFORD  
Bell Telephone Laboratories, Inc.

### Telegraph Power Plants

E. W. GRIFFITH  
Western Union Telegraph Co.

### Recent Developments in the Operation of Overseas Telephone Service

F. A. COWAN  
American Telephone and Telegraph Co.



*Turbine Room of the James H. Reed Power Station of the Duquesne Light Company*

## COMMITTEES

### District Meeting Committee

E. C. Stone, *Chairman*  
*Vice-President*, Middle Eastern District  
C. T. Sinclair, *Vice-Chairman*  
J. A. Cadwallader, *Secretary*

F. W. Braund D. H. Kelly  
H. E. Dyche H. C. Paiste  
F. C. Hanker W. R. Work

### General Committee

C. T. Sinclair, *Chairman*  
A. G. Butler F. C. Hanker  
J. A. Cadwallader R. L. Kirk  
Miss Karen Fladoes J. R. MacGregor  
W. B. Spellmire

### Sub-Committees

#### Meetings and Papers

F. C. Hanker, *Chairman*  
D. I. Bohn E. A. Hester  
G. T. Bruun K. L. Konnerth  
A. C. Cummins J. R. MacGregor  
H. E. Dyche R. J. S. Piggott  
H. S. Fitch C. A. Powell  
A. L. Harrington W. B. Shirk  
H. L. Wallau

#### Hotel Registration and Train Transportation

J. R. MacGregor, *Chairman*  
T. W. Alexander O. E. Fawcett  
G. W. Baumgarten B. M. Jones  
G. T. Bruun J. F. Kelly  
F. W. Cramer J. L. Yardley

### Entertainment and Banquet

W. B. Spellmire, *Chairman*  
John Andrews H. A. P. Langstaff  
H. W. Ewald E. W. Oesterreich  
F. E. Fairman E. S. Stickle  
G. A. Kaufman K. F. Treschow

### Inspection Trip

A. G. Butler, *Chairman*  
A. G. Homan E. W. Oesterreich  
G. B. McElheny T. E. Purcell  
D. F. Miner Lester Reardon  
D. A. Myer R. H. Roughen  
A. A. Stewart

### Ladies Entertainment

Miss Karen Fladoes, *Chairman*  
Mrs. H. Briggs, Jr. Mrs. F. C. Hanker  
Mrs. A. G. Butler Mrs. W. G. Jens  
Mrs. J. A. Cadwallader Mrs. R. L. Kirk  
Mrs. H. E. Dyche Mrs. J. R. MacGregor  
Mrs. M. R. Gardiner Mrs. C. T. Sinclair

### Publicity

R. L. Kirk, *Chairman*  
W. C. Bowen L. O. Grondahl  
Ray Dudley J. B. Hodtum  
R. F. Gooding W. W. Slocum  
W. W. Spratt

### Finance

J. A. Cadwallader, *Chairman*  
F. A. Connor M. B. Wyman

### Student Activities

Moreland King, *Chairman*



---

---

# ENTERTAINMENT AND INSPECTION TRIPS

---

## Entertainment

On Wednesday evening tickets for any of the Pittsburgh theaters may be obtained at the Registration Desk.

The Banquet and Dance will be held on Thursday evening in the main ballroom of the William Penn Hotel. Music will be rendered by Pittsburgh's leading orchestra; favors for the ladies and other special features will enhance the pleasure of the occasion. Reservations may be made in advance for tables seating ten persons; the tickets will be \$4.00 each.

## Ladies' Entertainment

In addition to the Theater Party and Banquet and Dance the Ladies Committee has arranged an interesting sight-seeing trip and tea on Wednesday afternoon, a luncheon and bridge on Thursday afternoon and an indoor golf tournament and luncheon Friday morning.

## Registration

Members and their guests should register in advance by filling out and mailing the enclosed advance registration card. This will permit the committee in charge to have the badges ready, thereby saving considerable time and confusion later at the Registration Desk.

## Inspection Trips

The following inspection trips, which include many recent developments of interest to the electrical engineering profession, have been planned for 2:00 p.m. on Thursday, March 12.

Where necessary, transportation will be provided, and information in regard to the place of meeting for the various groups will be available at the Inspection Trip Booth and will be posted on the bulletin boards. In order that adequate transportation facilities can be arranged for, it is desirable that those who wish to take trips should register at the Inspection Trip Booth as early as possible, preferably before 4:00 p.m. on Wednesday, March 11.

Trips which have been definitely scheduled for the afternoon of Thursday, March 12, are as follows:

### 1. The New KDKA Broadcasting Station at Saxonburg, Pa.

During the latter part of 1930 the Pioneer Broadcasting Station of the world, KDKA, was moved to its new location near Saxonburg, Pa., where both the Broadcast and the Short Wave Transmitting equipment is now located. Several unique innovations have been incorporated in this modern plant such as the Conrad Spary type antennae system which permits the controlling of the strength of either the ground or sky wave; and the use of the newly developed Super Power Tube type A.W. 220, several of these tubes being used for power outputs up to 400-kw.

All power equipment is in duplicate and is located in the basement of the plant building. Each plate supply consists of four mercury arc rectifier tubes which can be connected to give various voltages from 7.5-kv. to the normal rating of the main oscillator tubes which is 30-kv. The bias and filament supplies are obtained from motor-generator sets, while batteries are used to supply the speech amplifier bias. All power equipment is controlled from a switchboard in the main operating room.

### 2. The East Pittsburgh Works of the Westinghouse Electric and Manufacturing Company, Including the New High Power Laboratory

The East Pittsburgh Works of the Westinghouse Electric & Manufacturing Company, with a floor area of 120 acres, manufactures several lines of the company's products. Chief among these are generating equipment, motors and control, railway apparatus and switchgear.

Among the places of interest that will be visited is the recently expanded High Power Laboratory, where a demonstration of switch operation under heavy short circuit will be given. The completed plant is rated at 100,000-kv-a., 1,000,000-kv-a. short circuit power at any desired voltage between 13,200 and 230,000-volts.

### 3. Verona 4-kv. Primary Network of the Duquesne Light Company

The 4,000-volt primary network now being installed by the Duquesne Light Company in the Verona distribution area will serve a domestic and commercial load typical of districts of moderate load density.

This network, which is the first of its type in this country, will be supplied from three different 22-kv. lines through separate installations of 1,500-kv-a. capacity each. The equipment in each installation will consist of one 1,500-kv-a. transformer having a 22-kv. oil-filled disconnecting pothead as an integral part of it, one 4-kv. bank breaker cubicle, three 24-kv-a. regulators for bus regulation, and 4-kv. feeder breaker cubicles. One installation will be entirely of subway design and will be located below the street level. Another will

be housed in a small building and the third will be of the outdoor type. The design adopted provides for interconnecting the equipment with lead-covered cable, entirely eliminating exposed conductors.

The trip will afford an opportunity to inspect the subway vault and the building installation, both of which will be complete at that time.

#### 4. Low Tension A-C Network of the Duquesne Light Company

The Duquesne Light Company's low tension alternating current network, which serves the principal business district of Pittsburgh, is representative of the latest features of a-c network design, many of which were developed by this company. Among others, these include fireproof barrier walls between primary and secondary equipment, the location of practically all vaults outside the building line, the use of submersible type porcelain stud bushings for the transformer secondary leads and network protector connections, and the application of flame-proof varnished cambric cable for all secondary bus work within the vault.

The present installation consists of 140 vaults with a total installed capacity of 56,000 kv-a. The vaults range in size from seven 500 kv-a. units to one 300 kv-a. unit. The network is divided into six sections; four operating at a primary voltage of 11 kv., and two at 4 kv.

The trip will consist of an inspection of several representative vaults showing typical service installations in large buildings.

#### 5. The Springdale Power Plant and Coal Mine of the West Penn Power Company

The Springdale Power Station is situated on the Allegheny River about 20 miles above Pittsburgh. The installed capacity is 160,000 kv-a. with steam equipment consisting of both stoker and pulverized fuel boilers. Transmission from the station is accomplished at 132 kv. and at 25 kv.

This trip affords an excellent opportunity to visit a typical mouth-of-mine plant, as well as a mine having equipment 100 per cent electrified.

#### 6. The New James H. Reed Power Station of the Duquesne Light Company

The James H. Reed Power Station, the latest addition to the Duquesne Light Company's generating capacity, located on an island in the Ohio River about one and

one-half miles from Downtown Pittsburgh, was first placed in service during the summer of 1930. The present installation consists of one single-cylinder turbo-generator rated at 60,000 kw. and three stoker fired boilers each with a maximum capacity of 350,000 lbs. of steam per hour. The present building is adequate to house another 60,000-kw. unit and three more boilers, together with auxiliaries. The design contemplates an ultimate capacity of at least 240,000 kw.

Immediately adjacent to the Reed Plant is an isolated-phase 11-kv. switchhouse which serves both the James H. Reed Power Station and the Brunot Island Power Station, which is also located on the same island and which has an installed capacity of 116,500 kw.

#### 7. The Bell Telephone Building, Pittsburgh

A visit to the Bell Telephone Building will afford an opportunity to inspect a large telephone power plant, a large telegraph repeater station, a panel-type dial central office, a large manual central office, toll and long distance operating rooms, a large telephone repeater station and operators' restrooms, restaurants, kitchens, etc.

The Bell Telephone Building is located at 416 Seventh Avenue, less than two blocks from the William Penn Hotel.

#### 8. The Homestead Works of the Carnegie Steel Company

The Homestead Works include a new, modern, electrified, structural mill engaged in the manufacture and fabrication of structural steel and plates, and open hearth furnaces. This trip will offer an opportunity to inspect the electrical equipment in both of these installations.

In addition to the definitely scheduled trips described above, the Inspection Trip Committee will gladly arrange, at any time during the meeting, special trips to other points of interest in the Pittsburgh District, such as to the Lake Lynn Hydro Station and the Charleroi and Washington Substations of the West Penn Power Company. Information in regard to plants that may be of interest, as well as details with respect to the arrangements, can be had at the Inspection Trip Booth.





*Club Room of the Engineers' Society of Western Pennsylvania*

## Club Room Facilities

The Engineers' Society of Western Pennsylvania, located in the basement of the William Penn Hotel, has kindly offered the facilities of its club rooms to visiting engineers at the District meeting. These facilities include a very large and comfortable club room well equipped with magazines, card tables, and miscellaneous equipment. Delegates are urged to make full use of these facilities, which will be found very convenient.

## Hotel Reservations

Reservations for hotel accommodations, other than the Keystone Athletic Club, should be made by writing directly to the hotel. All hotels are in the downtown section of Pittsburgh, within a few blocks of Headquarters, the William Penn Hotel.

Hotel	Without Bath		With Bath	
	Single	Double	Single	Double
William Penn. ....			\$3.50-7.00	6.50-10.00
Fort Pitt. ....	\$2.00	3.50	3.00	5.00-7.00†
Pittsburgher. ....			3.00-3.50	5.00-6.00
Roosevelt. ....			3.00-5.00	4.00-7.00
*Keystone Athletic Club (including all club privileges)			3.00-5.00	

\*Make reservations through Mr. J. A. MacGregor, Bell Telephone Company, 416 Seventh Avenue, Pittsburgh, Pa.

†Group accommodations with bath, three per room—\$2.00 each.

*Issued by the*  
**American Institute of Electrical Engineers**  
 33 West 39th Street, New York, N. Y.