

**American Institute of  
Electrical Engineers**



**MIDWEST  
GENERAL  
MEETING**

**Program**

**CHICAGO, ILLINOIS**

**NOVEMBER 3-7**

**1947**

**Meeting Headquarters  
CONGRESS HOTEL**

## GENERAL INFORMATION

**The Program** inaugurates the first of the Midwest General Meetings to be held annually each fall. Sessions in the fields of power, industry, communication and science which have been carefully coordinated with inspection trips in each of these fields assure a busy week. The lighting session will serve as an introduction to the 2nd International Lighting Exposition and Conference in session at the Hotel Stevens during the same week.

**Please register promptly** on arrival at the meeting Sunday afternoon in the Walnut room; November 3rd to 7th in the Francis I room. A registration fee of \$2.00 will be charged all nonmembers, except Enrolled Students and the immediate families of members. Please obtain tickets early for all inspection trips and the Dinner-Smoker to help facilitate arrangements.

**Information** on all features may be obtained at the Registration Desk. Efforts will be made to deliver telegrams and messages promptly. Any mail received for members will be held at the Registration Desk until called for. Letters undelivered at the close of the meeting will be forwarded to the latest mailing address. Please make a regular practice of observing the bulletin boards.

**Technical Sessions and Discussions** are governed by the "Conduct of Technical Sessions" at the discretion of the presiding officer. In so far as possible the order in the program will be followed in each session. Usually 10 minutes will be allowed for the presentation of each paper and 5 minutes for each discussion. To receive consideration for publication discussions must be left with the chairman or sent to C. S. Rich, AIEE, 33 West 39th Street, New York 18, N. Y., before November 14. The original, typewritten, double spaced copy, complete with original illustrations and two carbon copies with photostats or blueprints, should be submitted.

Authors and discussers should make their presentations as effective as possible. Remember the audience. Speak distinctly so as to be heard in the rear of the room. Stress the salient features of the paper which are new or novel, and illustrate the advantages of your methods. When using slides, please turn toward the audience before speaking and raise your voice. Extemporaneous delivery is preferable to reading unless done slowly and emphasis is put in the proper places.

**Advance Copies of Technical Papers** may be purchased by members at the registration desk or at Institute headquarters at prices indicated. Nonmember prices 100% more than listed or by mail 100% more than mail price less 5¢ on each paper. Only numbered papers are available. 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 as AIEE proceedings and in the TRANSACTIONS.

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**SCHEDULE OF EVENTS**

Committee Meetings ..... page 16  
Entertainment and Ladies' Events ..... page 11  
Inspection Trips ..... pages 11-13

**Monday, November 3**

9:00 a.m. Registration.  
10:30 a.m. Opening General Meeting.  
2:00 p.m. Symposium on Tidd 500-Kv Test Lines—Part I.  
2:00 p.m. Industrial Power Systems.

**Tuesday, November 4**

9:00 a.m. Joint NEC-AIEE Session.  
9:30 a.m. Symposium on Tidd 500-Kv Test Lines—Part II.  
9:30 a.m. Care and Maintenance of Storage Batteries.  
1:30 p.m. Trip to Fisk Station.  
1:30 p.m. Trip to Western Electric Company.  
1:30 p.m. Ladies' Trip to Art Institute.  
1:30 p.m. General Session.  
2:30 p.m. Lighting Session.  
2:30 p.m. Industrial Control.

**Wednesday, November 5**

9:30 a.m. Power Generation.  
9:30 a.m. Conference on Resistance Welding.  
12:15 p.m. Trip to Museum of Science and Industry.  
1:00 p.m. Trip to South Works of the Carnegie-Illinois Steel Company.  
2:00 p.m. Transmission, Transformers, and Grounding.  
2:00 p.m. Conference on Energy Sources.  
7:00 p.m. Visit to Marshall Field Store.

**Thursday, November 6**

10:00 a.m. General Session.  
12:00 m. Ladies' Luncheon and Bridge at Saddle and Cycle Club.  
1:00 p.m. Trip to Electromotive Division of General Motors.  
2:00 p.m. Trip to Armour Research Foundation.  
2:00 p.m. Electronic Relay Applications.  
2:00 p.m. Communication.  
6:00 p.m. Social Hour.  
7:00 p.m. Dinner-Smoker and Entertainment.

**Friday, November 7**

9:30 a.m. Communication.  
9:30 a.m. Rotating Machinery.  
9:30 a.m. Basic Sciences.

# -PROGRAM-

## Monday, November 3

### 9:00 a.m.—Registration

Francis I Room

### 10:30 a.m.—Opening General Meeting

Gold Room

J. E. HOBSON, Presiding

Address: "Ceiling Unlimited." Blake D. Hull, President, AIEE.

### 2:00 p.m.—Symposium on Tidd 500-Kv Test Lines—Part I

Gold Room

C. F. WAGNER, Presiding

47-241. Transmission of Electric Power at Extra-High Voltages. Philip Sporn, American Gas & Elec. Serv. Corp.; A. C. Monteith, Westinghouse Elec. Corp. 20 cents (by mail 25 cents).

47-242. Corona Considerations on High-Voltage Lines and Design Features of Tidd 500-Kv Test Lines. C. F. Wagner, Westinghouse Elec. Corp.; Anthony Wagner, American Bridge Co.; E. L. Peterson, I. W. Gross, American Gas & Electric Serv. Corp. 20 cents (by mail 25 cents).

47-243. Insulators and Line Hardware for Tidd 500-Kv Test Lines. I. W. Gross, American Gas & Elec. Serv. Corp.; R. L. McCoy, Locke Insulator Corp.; J. M. Sheadel, Ohio Brass Co. 30 cents (by mail 35 cents).

47-244. Line Conductors—Tidd 500-Kv Test Lines. E. L. Peterson, American Gas & Elec. Service Corp.; D. M. Simmons, General Cable Corp.; L. F. Hickernell, Anaconda Wire & Cable Co.; M. E. Noyes, Aluminum Co. of America. 25 cents (by mail 30 cents).

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

Casino Room

D. L. BEEMAN, Presiding

47-249. First Interim Report on Interior Wiring Design for ACO.† Commercial Buildings. Subcommittee on Interior Wiring Design for Commercial Buildings, B. F. Thomas, Jr., Chairman. 35 cents (by mail 40 cents).

CP.\* Short-Circuit Calculations for Low-Voltage Industrial Distribution Systems. L. E. Fisher, Bull Dog Elec. Prod. Co.

CP.\* Power Supply for Air Conditioning Equipment in Commercial Buildings. M. N. Halberg, D. L. Beeman, General Elec. Co.

CP.\* Electrical Hazards in Industry. R. E. Stroppel, Tool Steel Gear and Pinion Co.

## Tuesday, November 4

### 9:00 a.m.—Joint NEC-AIEE Session (Edgewater Beach Hotel) C. H. WILLIS, Presiding

Note: The AIEE badge will admit registrants to this session only at the NEC meeting.

CP.\* The Convectron, M. A. Babb, Bendix Corp.

CP.\* A New Line of Thyratrons. A. W. Coolidge, General Elec. Co.

CP.\* The Glass-Enclosed Reed Relay. W. B. Ellwood, Bell Tel. Labs., Inc.

CP.\* Capillary-Fed Mercury-Contact Relay. J. T. L. Brown, C. E. Pollard, Bell Tel. Labs., Inc.

### 9:30 a.m.—Symposium on Tidd 500-Kv Test Lines Part II

Gold Room

C. F. WAGNER, Presiding

47-245. Transformers and Lightning Arresters—Tidd 500-Kv Test Line. F. A. Lane, American Gas & Elec. Serv. Corp.; J. K. Hodnette, P. L. Bellaschi, E. Beck, Westinghouse Elec. Corp. 15 cents (by mail 20 cents).

47-246. Switchgear Equipment for Tidd High-Voltage Test Line. F. A. Lane, American Gas & Elec. Serv. Corp.; B. W. Wyman, General Elec. Co. 15 cents (by mail 20 cents).

47-247. Instrumentation and Measurement—Tidd 500-Kv Test Lines. R. L. Tremaine, Westinghouse Elec. Corp.; G. D. Lippert, American Gas & Elec. Serv. Corp. 20 cents (by mail 30 cents).

### 9:30 a.m.—Care and Maintenance of Storage Batteries

Casino Room

H. C. RIGGS, Presiding

CP.\* The Care and Maintenance of Storage Batteries on Railroads. R. I. Fort, Illinois Central R.R.

CP.\* The Care and Maintenance of Storage Batteries in a Steel Plant. V. E. Schlossberg, Inland Steel Co.

47-239. The Application of Storage Batteries to the Control of Switchgear. E. A. Hoxie, Elec. Storage Battery Co. 30 cents (by mail 35 cents).

### 1:30 p.m.—Trip to Fisk Station

### 1:30 p.m.—Trip to Western Electric Company

### 1:30 p.m.—Ladies' Trip to Art Institute

### 1:30 p.m.—General Session

Gold Room

L. W. CHUBB, Presiding

Address: "The Future Prospects of Atomic Energy." Dr. Enrico Fermi, Institute of Nuclear Studies, University of Chicago.

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**2:30 p.m.—Lighting Session**

Casino Room

**HARRIS REINHARDT, Presiding**

Address: "Invitation to attend I.L.E. Conferences and Exhibits at the Hotel Stevens, November 3-7." E. C. Huerkamp, Chairman, 2nd International Lighting Exposition.

Address: "Role of I.E.S. and I.L.E. in Lighting Industry." R. W. Staud, President, Illuminating Engineering Society, and Vice-Chairman, 2nd International Lighting Exposition.

Review of Production and Application of Light and Associated Radiations.

- CP.\* 1. Visible Radiations. R. G. Slauer, Manager, Applications Lab., Sylvania Elec. Prod. Inc.
- CP.\* 2. Infrared Radiations. E. A. Lindsay, General Elec. Co.
- CP.\* 3. Ultraviolet Radiations, C. F. Jensen, Westinghouse Lamp Div.

**2:30 p.m.—Industrial Control**

Gold Room

**JOHN D. LEITCH, Presiding**

- 47-251. A Control System for Wind-Tunnel Drives. A. H. Heidenreich, National Advisory Comm. for Aeronautics. 20 cents (by mail 25 cents).
- CP.\* Modern Rotogravure Control-Systems. G. W. Heumann, General Elec. Co.
- CP.\* Some Present-Day Practices in Mine Hoist Control. J. W. Cook, G. W. Heumann, General Elec. Co.
- CP.\* An Electronic Regulator for Electrolytic Processes. W. F. Gerdes, General Elec. Co.

**Wednesday, November 5**

**9:30 a.m.—Power Generation**

Gold Room

**A. H. FRAMPTON, Presiding**

- 47-250. Progress in Power Generation, 1940-46. Power Generation Committee. (Presentation by title.) 35 cents (by mail 40 cents).
- 47-248. Generating Reserve Capacity Determined by the Probability Method. Giuseppe Calabrese, Consolidated Edison Co. of N. Y., Inc. 35 cents (by mail 40 cents).
- 47-252. Calculating Probability of Generating Capacity Outages. W. J. Lyman, Duquesne Light Co. 25 cents (by mail 30 cents).
- 47-253. Outage Expectancy As a Basis for Generator Reserve. H. P. Seelye, The Detroit Edison Co. 15 cents (by mail 20 cents).
- 47-254. Probability Methods Applied to Generating Capacity Problems of a Combined Hydro and Steam System. E. S. Loane, C. W. Watchorn, Pa. Water & Pr. Co. 25 cents (by mail 30 cents).

**9:30 a.m.—Conference on Resistance Welding**

Casino Room

**E. H. VEDDER, Presiding**

- CP.\* Timing Circuits in Resistance Welding Control, B. Sussman, General Elec. Co.
- CP.\* Functionalized Resistance Welding Control—Safety Features. C. B. Stadum, Westinghouse Elec. Corp.
- CP.\* Three-Phase Balanced Load Resistance Welding Machines. D. Sciaky, Sciaky Bros., Inc.
- CP.\* Various Resistance Welding Systems and Their Effect on the Power Supply. C. E. Smith, Taylor-Winfield Corp.

**12:15 p.m.—Trip to Museum of Science and Industry (Ladies included—luncheon at the Museum)**

Luncheon and transportation charge \$3.50.

**1:00 p.m.—Trip to South Works of the Carnegie-Illinois Steel Company**

**2:00 p.m.—Transmission, Transformers, and Grounding**

Gold Room

**G. B. DODDS and H. B. KEATH, Presiding**

- 47-238. Switching High-Voltage Transmission Lines, P. B. Johnson, J. R. Wilson, General Elec. Co. 30 cents (by mail 35 cents).
- 47-239. The Application of Storage Batteries to the Control of Switchgear. E. A. Hoxie, Elec. Storage Battery Co. 30 cents (by mail 35 cents).
- 47-240. Gaseous Insulation for High-Voltage Apparatus. G. Camilli, J. J. Chapman, General Elec. Co. 20 cents (by mail 25 cents).
- 47-255. Transient Voltage Rise in Transformers Due to Interruption of Exciting Current. A. Srinivasan, Allis-Chalmers Mfg. Co.; F. J. Vogel, Illinois Institute of Technology. 15 cents (by mail 20 cents).
- 47-237. Present-Day Grounding Practices on Power Systems. AIEE Subject Committee on Present-Day Grounding Practices, the late R. D. Evans, Chairman. 35 cents (by mail 40 cents).

**2:00 p.m.—Conference on Energy Sources**

Casino Room

**W. A. LEWIS, Presiding**

The second of a series of conferences on methods of producing electric power will be sponsored by the Committee on Basic Sciences. The first conference was held during the 1947 AIEE Winter Meeting in New York and three conference papers were presented which described emission phenomena, piezoelectric phenomena and electrostatic phenomena. At the second conference three more sources of energy will be discussed, namely, electrochemical, magnetostrictive, and thermoelectric, by outstanding experts in their respective fields. The purpose of these conferences is to present to electrical engineers a review of the fundamental principles underlying the various methods of generating electric power by authorities on these subjects. Nuclear fission will not be included in this series of conferences.

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- CP.\* Electrochemical Phenomena. Dr. George W. Vinal, National Bur. of Standards.
- CP.\* Magnetostrictive Generators. J. A. Osborne, Naval Research Lab.
- CP.\* Thermoelectric Generators. Grenville B. Ellis, Squier Signal Lab.
- 7:00 p.m.—Visit to Marshal Field Store. Meet at north entrance at Randolph Street at 7.00 p.m.

## Thursday, November 6

- 10:00 a.m.—General Session  
Gold Room  
F. H. LANE, Presiding  
Address: "Problems of the Steel Industry." Wilfred Sykes, President, Inland Steel Company.
- 12:00 m.—Ladies' Luncheon and Bridge at Saddle and Cycle Club
- 1:00 p.m.—Trip to Electromotive Division of General Motors
- 2:00 p.m.—Trip to Armour Research Foundation
- 2:00 p.m.—Electronic Relay Applications  
Gold Room  
W. R. BROWNLEE, Presiding

This conference, sponsored by the Relay Committee, will be of an exploratory nature, in response to a demand occasioned by the increasing use of electronics in the electric power industry. A thorough review of the pros and cons of the use of electronics in protective relays is planned. Such a discussion should explain the reluctance of many relay engineers to use electronic protective relays, but more important, should point the way to extended use of such devices, especially where they might provide a facility not hitherto available.

Preceding a general discussion, two conference papers will be presented. The first will deal with the more favorable aspects of electronic relays. The second will reflect the ideas of the committee's working group assigned to this subject. The paper will discuss electronic relaying more generally and will include the less favorable aspects.

- CP.\* Advantages of Electronic Equipment for Protective Relaying. R. I. Ward, Commonwealth Edison Co.
- CP.\* The Practical Aspects of Electronic Protective Relaying. J. H. Kinghorn, American Gas & Elec. Serv. Corp.
- 2:00 p.m.—Communication  
Florentine Room  
J. L. CALLAHAN, Presiding
- 47-256. General Mobile Telephone System. H. I. Romnes, American Tel. & Tel. Co.; R. R. O'Connor, Illinois Bell Tel. Co. 20 cents (by mail 25 cents).
- CP.\* VHF Radio on New York Central Tugs. G. M. Brown, New York Central System.
- CP.\* Standardization of Transient Response of Television Transmitters and Receivers. R. D. Kell, RCA Laboratories.
- CP.\* Television R. F. Signal Generator. Joseph Fisher, Philco.

- 6:00 p.m.—Social Hour  
Gold Room
- 7:00 p.m.—Dinner-Smoker and Entertainment  
Casino Room  
Tickets \$7.50 each.

## Friday, November 7

- 9:30 a.m.—Communication  
Florentine Room  
R. E. SMITH, Presiding
- 47-257. The Application of Western Union Multiplex to Navy Radio. Ray Hoover, Western Union Tel. Co. 20 cents (by mail 25 cents).
- CP.\* A Time Division Multiplex System for Radio Telegraph Service. C. W. Lattimer, RCA Communications.
- 47-258. Frequency Division Techniques for a Coaxial Cable Network. R. E. Crane, J. T. Dixon, G. H. Huber, Bell Tel. Labs, Inc. 30 cents (by mail 35 cents).
- CP.\* The New York-Boston Radio Relay Experiment—A Progress Report.
- 9:30 a.m.—Rotating Machinery  
Gold Room  
C. E. KILBOURNE, Presiding
- 47-259. Suddenly Applied Loads on a Variable-Ratio Frequency Changer. G. K. Carter, Univ. of Virginia; F. J. Maginniss, F. S. Rothe, General Elec. Co. 25 cents (by mail 30 cents).
- 47-260. Tensorial Analysis and Equivalent Circuit of a Variable-Ratio Frequency Changer. Gabriel Kron, General Elec. Co. 20 cents (by mail 25 cents).
- 47-261. Resynchronizing of Generators. C. Concordia, M. Temoshok, General Elec. Co. 25 cents (by mail 30 cents).
- 47-262. Two-Stage Rototrol for Low-Energy Regulating Systems. A. W. Kimball, Westinghouse Elec. Corp. 20 cents (by mail 25 cents).
- 47-263. The Circle Diagram of the Polyphase Brush Shifting Commutator Motor (Schrage Type). P. W. Franklin, Continental Elec. Co. 20 cents (by mail 25 cents).
- 9:30 a.m.—Basic Sciences  
Casino Room  
J. D. TEBO, Presiding
- CP.\* A Brief History of Studies in Solar Radiation. J. T. Wilson, Allis-Chalmers Mfg. Co.
- 47-264. Ignitor Characteristic and Circuit Calculations. D. E. Marshall, Westinghouse Elec. Corp. 20 cents (by mail 25 cents).
- 47-265. Determination of Corona Starting Voltages for Non-uniform Fields in Air. J. G. Hutton, General Elec. Co. 30 cents (by mail 35 cents).

47-266. Diffusion of Electric Current into Rods, Tubes, and Flat Surfaces. K. W. Miller, Armour Research Foundation. 25 cents (by mail 30 cents).

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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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### MEMORANDA

## MEETING FEATURES

**THE DINNER-SMOKER** will be held at 7:00 p.m., Thursday, November 6, in the Casino Room of the Congress Hotel. A social hour will precede the dinner, starting at 6:00 p.m. A floor show will follow the dinner. Both the social hour and the dinner will be for men only. Please make reservations early and purchase tickets at the Entertainment Desk to facilitate arrangements. Tickets \$7.50 each.

**LADIES' EVENTS:** On Tuesday afternoon, November 4, there will be an informal lecture tour of the Art Institute, followed by tea in the Institute Club Rooms. The Art Institute houses one of the finest art collections in the United States, including the most complete collection of modern French paintings. Guests will meet at the Congress Hotel at 1:30 p.m. Admission will be by complimentary ticket.

On Wednesday, November 5, the ladies are invited to accompany the men at the Museum of Science and Industry luncheon, which will be followed by a tour of the Museum.

On Thursday afternoon, November 6, there will be a luncheon and bridge party for the ladies at the Saddle and Cycle Club on Chicago's north shore. Buses will leave the Congress Hotel at 12:00 o'clock noon. Reservations are limited to 150. Here again admission is by complimentary ticket. There will be door prizes given at this function. Both the Tuesday and Thursday afternoon parties for the ladies will be financed by contributions from friends of the Institute, to whom formal acknowledgment will be made later.

### INSPECTION TRIPS

**HISTORIC FISK STATION** of the Commonwealth Edison Company is the oldest, dating from 1903, and the second largest, 311,000 kw, in Chicago. At Fisk the progress of steam generating station design during this period is exemplified. Operating side by side are vertical 12,000-kw, 9-kv, 25-cycle turbogenerators in service since 1909, and a modern 147,000-kw, 12-kv, 60-cycle, single-shaft, tandem compound turbogenerator.

Three eras of switchhouse design are represented, including a portion of the original 25-cycle switchhouse, a vertically isolated phase, 60-cycle switchhouse erected in 1925, and a modern horizontally isolated phase switchhouse using metal enclosed switchgear. Two outdoor 69-kv isolated-phase switchyards typify different styles of design.

Buses leave Congress Hotel at 1:30 p.m., Tuesday, November 4. Transportation charge \$1.75.

**THE WESTERN ELECTRIC COMPANY'S** Archer Avenue Plant is a supply unit of the Bell System, where new Bell Telephones can be seen in the making.

Here powerful presses mold plastic powder into the gleaming shapes familiar to every American, the shapes of the base, the handle, the receiver and transmitter caps of the so-called "combined set." Here the raw materials are machined into hundreds of piece parts, from which deft fingers form subassemblies and final assemblies. Here nearly three miles of conveyors "keep the job moving from the initial molding process to final inspection and test, and on to the merchandise department for packing and shipment."

Every phase of the telephone making job is carefully co-ordinated with every other, so that the entire manufacturing process is reduced to a steady consecutive flow—a flow which continues beyond the factory gates, through Western Electric's distributing houses to the telephone companies, and finally to some home or office which the new telephone will link to the nationwide Bell System network.

Buses leave Congress Hotel at 1:30 p.m., Tuesday, November 4. Transportation charge \$1.75. Proof of citizenship is necessary.

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INSPECTION TRIPS—continued

**CARNEGIE-ILLINOIS STEEL CORPORATION:** This U. S. Steel subsidiary plant, the second largest in the world, has an annual steel producing capacity of 4,525,000 net tons, employs 14,000 persons, and covers nearly a square mile of ground. The visitor will see handling of iron ore, coke and limestone; iron produced in blast furnaces; steel made in open hearths; various commercial shapes rolled in various mills; and electric power produced in gas engines.

Buses leave Congress Hotel at 1:00 p.m., Wednesday, November 5. Transportation charge \$1.75.

**THE MUSEUM OF SCIENCE AND INDUSTRY,** located in Chicago's Jackson Park at 57th Street and Lake Michigan, is one of the nation's most unique museums. Housed in the old Fine Arts Building of the World's Fair Columbian Exposition and considered to be an architectural masterpiece in the classic style, the museum is a dynamic symbol of man's ingenuity in applying the discoveries of science to industrial productions.

Eight acres of working exhibits draw over a million visitors annually. A working coal mine, a miniature railroad depicting the entire system of one of the nation's largest railroads, a full-size modern farm, a historical collection of old automobiles ranging from 1905 to the early 30's, a graphic arts section, a forestry exhibit where live termites are at work—these and many other scientific and industrial subjects make a trip through this museum an experience long to be remembered.

Buses leave Congress Hotel at 12:15 p.m., Wednesday, November 5. Ladies invited—luncheon and transportation charge \$3.50.

**THE MARSHALL FIELD STORE** has long been known throughout the world for its progressiveness and leadership in the field of merchandise. Of particular interest to the electrical industry, is this company's progressiveness in the acceptance, adaptation and intensive application of electric services of all kinds to the problems of merchandising. Some examples of leadership in this field are:

For over a decade this company has been engaged in the complete modernization of all its power facilities by conversion from direct current to alternating current, modernizing and rebuilding escalators, elevators and other building facilities for greater consumer convenience and operational efficiency.

Present plans include air conditioning of all of the major merchandising sections and will require the installation of approximately 6,000 tons of cooling equipment. At the present time this project is approximately one-third completed.

In the field of lighting, Marshall Field and Company Engineers have long been active in the development of special equipment, designs and techniques, adapting lighting specifically to the merchandising needs of the various sections of the store. Many of these applications are novel and unique in character and, as such, are of special interest to members of the electric industry.

The special tour between 7:00 and 9:00 p.m. will illustrate many of these features. Specially trained guides will be on hand to discuss them and to answer questions. A maximum of 150 persons can be accommodated on this tour. Admission will be by registration ticket which must be secured at meeting headquarters.

Guests will meet at Marshall Field Store, North entrance, at Randolph Street at 7:00 p.m., Wednesday, November 5. No charge.

**ARMOUR RESEARCH FOUNDATION** of Illinois Institute of Technology, a not for profit organization, was founded in 1936 to render a confidential and experimental service to Industry, the Government and the general public.

The Foundation consists of three major Divisions: the International Division with headquarters in Mexico City; the Magnetic Recording Division with offices in downtown Chicago; and the Research Division and Administrative offices on Chicago's south side.

The Research Division, which will be open for inspection, is staffed with over 300 people, has seven major Research Departments and one Service Department devoting full time to research. The departments are housed in various offices throughout six buildings; and have completed over 7,000 research projects with some 1,900 companies, Government agencies, and trade and professional associations under the Armour Plan for Industrial Research.

Buses leave Congress Hotel at 2:00 p.m., Thursday, November 6. Transportation charge \$1.75.

**THE ELECTRO-MOTIVE DIVISION OF GENERAL MOTORS** plant at LaGrange, Illinois, where more than 4,000,000 horsepower of Diesel locomotives have been built, covers 54 acres. It is the birthplace of modern passenger and freight Diesels.

No other locomotive plant in the world has so much modern and specialized machinery and equipment. Many types of manufacturing equipment—the tools used on these valuable machines—and the advanced manufacturing methods have no counterpart elsewhere in the industry.

Four road locomotives are built each working day. With 70,000 parts to a locomotive, this means each working day 280,000 parts are manufactured and assembled for passenger or freight locomotives. In addition, the daily schedule also calls for one switching locomotive.

Buses leave Congress Hotel at 1:00 p.m., Thursday, November 6. Transportation charge \$1.75.



MEMORANDA

MIDWEST GENERAL MEETING

COMMITTEES

General

|               |                                       |              |
|---------------|---------------------------------------|--------------|
|               | F. H. Lane, <i>Chairman</i>           |              |
|               | Dwight L. Smith, <i>Vice-Chairman</i> |              |
|               | F. V. Smith, <i>Secretary</i>         |              |
|               | N. C. Percy, <i>Treasurer</i>         |              |
| D. L. Bement  | L. R. Janes                           | R. I. Parker |
| O. W. Eshbach | P. B. Juhnke                          | H. K. Smith  |
| J. E. Hobson  | T. G. LeClair                         | Earle Wild   |
|               | J. R. North                           |              |
|               | R. R. O'Connor                        |              |

Hotel

|                 |                               |                  |
|-----------------|-------------------------------|------------------|
|                 | J. E. Hobson, <i>Chairman</i> |                  |
| W. M. Ballenger |                               | R. W. Jones      |
| W. A. Clinnin   |                               | L. B. LeVesconte |
| A. N. Eliassen  |                               | L. W. Matsch     |
| C. A. Emery     |                               |                  |

Papers and Meetings

|                   |                              |               |
|-------------------|------------------------------|---------------|
|                   | A. J. Krupy, <i>Chairman</i> |               |
| K. V. Glentzer    |                              | E. G. Norell  |
| E. R. Hendrickson |                              | J. J. Samson  |
| T. O. Millard     |                              | G. B. Smedley |
| H. E. Nason       |                              |               |

Inspection Trips

|                 |                              |                  |
|-----------------|------------------------------|------------------|
|                 | L. R. Janes, <i>Chairman</i> |                  |
| E. A. Armstrong |                              | H. R. Heckendorn |
| H. A. Croll     |                              | E. A. Imhoff     |
| H. J. Decker    |                              | M. J. Maiers     |
| Sam Ein         |                              | M. V. Maxwell    |
| H. F. Fruth     |                              | T. O. Millard    |

Dinner and Entertainment

|                   |                              |                |
|-------------------|------------------------------|----------------|
|                   | H. K. Smith, <i>Chairman</i> |                |
| C. P. Christensen |                              | John Romano    |
| F. A. Cox         |                              | Willard Taylor |
| H. A. Cornelius   |                              | F. D. Troxel   |
| M. R. Gowing      |                              | J. C. Woods    |

Finance

P. B. Juhnke, *Chairman*

Registration

|                |                                 |              |
|----------------|---------------------------------|--------------|
|                | R. R. O'Connor, <i>Chairman</i> |              |
| W. J. Behrens  |                                 | J. E. Kearns |
| W. F. Bergmann |                                 | W. A. Knight |
| G. E. Buchanan |                                 | H. E. Nason  |
| S. L. Chapin   |                                 | W. E. Nelson |
| D. K. Chinlund |                                 | J. P. Tegel  |
| V. E. James    |                                 |              |

Publicity

|               |                               |                |
|---------------|-------------------------------|----------------|
|               | R. I. Parker, <i>Chairman</i> |                |
| P. B. Garrett |                               | T. C. Sullivan |

Ladies

|                    |                                  |                      |
|--------------------|----------------------------------|----------------------|
|                    | Mrs. F. H. Lane, <i>Chairman</i> |                      |
| Mrs. D. L. Bement  |                                  | Mrs. R. R. O'Connor  |
| Mrs. O. W. Eshbach |                                  | Mrs. R. I. Parker    |
| Mrs. J. E. Hobson  |                                  | Mrs. N. C. Percy     |
| Mrs. L. R. Janes   |                                  | Mrs. Dwight L. Smith |
| Mrs. P. B. Juhnke  |                                  | Mrs. F. V. Smith     |
| Mrs. T. G. LeClair |                                  | Mrs. H. K. Smith     |
|                    | Mrs. Earle Wild                  |                      |

**COMMITTEE MEETINGS**

**Monday, November 3**

2:30 p.m.—Basic Sciences ..... Pine Room

**Tuesday, November 4**

6:30 a.m.—Industry Coordinating Committee (Breakfast) .. Parlor B

9:00 a.m.—AEIC Working Group on Circuit Breakers  
Parliament Room

9:30 a.m.—Nucleonics ..... Pine Room

12:30 p.m.—Power Generation—Luncheon Meeting ..... Parlor B

2:30 p.m.—Power Coordinating Committee ..... Pine Room

2:30 p.m.—Planning and Coordination ..... Parlor A

2:30 p.m.—Capacitor Subcommittee (Transmission &  
Distribution Com.) ..... French Room

3:00 p.m.—Fifth District Executive Committee .. Parliament Room

3:00 p.m.—Distribution Subcommittee (Trans. & Dist.  
Committee) ..... Parlor B

3:00 p.m.—Project Committee on Sensitive Ground  
Protection ..... Florentine Room

7:30 p.m.—Electronics ..... East Room—Edgewater Beach Hotel

**Wednesday, November 5**

9:30 a.m.—Board of Directors ..... Parlor A

9:30 a.m.—Battery Charging Subcommittee ..... French Room

9:30 a.m.—Transmission and Distribution Committee ... Pine Room

9:30 a.m.—Subcommittee on Energy Sources (Basic Sciences)  
Parliament Room

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

2:00 p.m.—System Engineering Committee ..... French Room

3:00 p.m.—Electric Welding Committee ..... Pine Room

8:00 p.m.—Technical Program Committee ..... Pine Room

**Thursday, November 6**

9:00 a.m.—AEIC Committee on Switching and Switchgear  
Parliament Room

1:00 p.m.—Subcommittee on Test Codes (Industrial Control)  
French Room

2:00 p.m.—Registration of Engineers ..... Parliament Room

3:00 p.m.—Industrial Control ..... Pine Room

**Friday, November 7**

9:30 a.m.—Transformer Committee ..... Pine Room

12:30 p.m.—Chicago Section Executive Committee—  
Luncheon Meeting ..... Parlors A and B