



# GREAT LAKES DISTRICT MEETING

April 16 - 18, 1956

Fort Wayne,  
Indiana

Headquarters:  
Hotel Van Orman



Fort Wayne, Indiana

Neuman Studio

## ENGINEERING FUTURES UNLIMITED

The AIEE Great Lakes District Meeting for 1956 will be held April 16 - 18 at the Van Orman Hotel in Fort Wayne, Indiana. Fort Wayne is the third largest city in Indiana, with a population in excess of 133,000, and is known for its many diversified industries. An outstanding technical program based upon the future developments in electrical engineering has been arranged. This three-day meeting is complete with a full social program featuring luncheons, buffets and a dinner-dance. The theme of this meeting, Engineering Futures Unlimited, is vividly supported by the planned inspection trips.

### OPENING GENERAL SESSION

The principal speaker, AIEE Past-President Titus G. Le Clair, will deliver his address at the opening session, Monday, April 16th, at 10:00 A.M. in the Ballroom of the Van Orman Hotel. The Honorable R. M. Meyer, Mayor of Fort Wayne, will welcome the membership with C. M. Summers presiding.

### HOTEL RESERVATIONS

All the arrangements have been made for members and guests at the Van Orman Hotel. Your request for room reservations should be mailed to R. W. Fackler, Chairman, Hotel

Reservation Committee, Indiana & Michigan Electric Company, 2101 Spy Run, Fort Wayne, Indiana. It is suggested that all reservations be made prior to April 1, 1956, with plans to arrive on Sunday afternoon, or evening, April 15th. Hotel prices are as follows at the Van Orman.

Single	— \$ 5.50 - \$ 8.00
Double	— \$ 7.00 - \$10.00
Twin	— \$ 9.50 - \$13.00
Suites	— \$19.00 - \$22.00

Similar prices exist at the other Fort Wayne hotels.

### REGISTRATION

The registration desks will be located in the lobby of the hotel. The facilities for registering will be available Sunday, April 15th, from 6:00 to 9:00 P.M., Monday and Tuesday, April 16th and 17th, 8:00 A.M. to 2:00 P.M.

Please return the advance registration card, if possible, as this will enable the Registration Committee to prepare programs and tickets in advance and, in addition, help facilitate the registration procedure. All fees will be collected upon arrival at the registration desks; therefore, do not enclose remittances with the advance registration.

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# AIEE GREAT LAKES DISTRICT MEETING — PROGRAM — Fort Wayne, Indiana, April 16-18, 1956

## ADVANCE COPIES OF PAPERS

Members may obtain preprints of Numbered Papers at the uniform price of 40¢ each (80¢ each to nonmembers), by sending enclosed order form and remittance to the AIEE Order Department, 33 West 39th Street, New York 18, N. Y. Mail orders (particularly from out-of-town members) are advisable, inasmuch as an adequate supply of each paper at the meeting cannot be assured. Coupon books in \$10 denominations are available for those who wish to avoid remittance by check or otherwise. The Transaction Papers will also be published in the bimonthly publications.

NOTE: Unnumbered District papers (DP.\*) may be available at or after the meeting, if copies are provided by the author. They are not intended for publication in the Transactions and are not presently scheduled for reproduction in any form by the Institute.

## Monday, April 16

### 9:00 A.M.—Registration

### 10:00 A.M.—General Session

Ballroom

### 2:00 P.M.—Magnet Wire and Insulation Materials—I

Oak Room

Presiding: R. W. HALL, Phelps-Dodge Copper Products Corp.

- X DP.\* 531 Modern Test Procedures and Equipment for Magnet Wire. Richard Dermer and John Whitney, Indiana Technical College; and Thomas Capin, Phelps-Dodge Copper Products Corp.
- X DP.\* 563 Inorganic Pigment Method for Stack Loss Determination. F. A. Sattler and F. F. Trunzo, Westinghouse Electric Corp.
- X DP.\* 536 Combination Dacron and Glass for Magnet Wire. R. W. Hall and R. N. McKnight, Phelps-Dodge Copper Products Corp.
- X DP.\* 577 Magnet Wire Varnish Compatibility. W. W. Wareham, General Electric Co.

### 2:00 P.M.—Professional Development

Ballroom

Presiding: C. M. SUMMERS, General Electric Co.

- X DP.\* 556 Industry Views the Electrical Engineering Curriculum. G. E. Moore, Westinghouse Electric Corp.
- X DP.\* 540 Twice as Much for Your Engineering Manpower Dollar. A. R. Hellwarth, Detroit Edison Co.
- X DP.\* 573 Who Should be Admitted to the Engineering Colleges. A. H. Spalding, Purdue University.
- DP.\* The Development of the Role of Engineering Science in Engineering Education. T. J. Higgins, University of Wisconsin.

### 2:00 P.M.—Power—I

Chatterbox

Presiding: W. R. HARRIS, Westinghouse Electric Corp.

- X DP.\* 567 The Westinghouse Nuclear Testing Reactor. M. A. Schultz, Westinghouse Electric Corp.
- X DP.\* 565 Engineering the Future Power Transformer. L. W. Schoenig, Allis-Chalmers Manufacturing Company.
- X DP.\* 538 Engineering Features of the Super-Fluorescent Street Lighting Installation in Indianapolis. J. H. Hardy and J. H. Smale, Indianapolis Power and Light Co.
- 56-510. Grounding Grids for High Voltage Stations—III. E. T. B. Gross, Illinois Institute of Technology and R. S. Hollitch, Armour Research Foundation.

## Tuesday, April 17

### 9:00 A.M.—Electronics—I Design and Research

Ballroom

Presiding: C. R. JOHNSON, Farnsworth Electronics Co.

- X DP.\* 544 New Uses of Ceramics in the Electronic Tube Industry. H. Huffcut, Westinghouse Electric Corp.
- X DP.\* 552 Glass in Electronics. W. H. McKnight, Corning Glass Works.
- X DP.\* 533 Basic Concepts. P. T. Farnsworth, Farnsworth Electronics Co.

### 9:00 A.M.—Rotating Machinery—I Measurement

Oak Room

Presiding: J. H. KARR, Robbins and Myers, Inc.

- 56-511. Some Aspects of Surge Comparison Testing of Fractional Horsepower Motors. R. A. Strain, Emerson Electric Manufacturing Co.
- DP56-512. A Speed-Torque Curve Tracer for Motors. Alex Paalu, A. O. Smith Corp.
- DP.\* Mechanical Aspects of a Dynamic Speed-Torque Curve Tester. L. Makous, A. O. Smith Corp.
- DP56-513. A Dynamic Speed-Torque Curve Tracer for Motor Testing and Design. K. J. Waldschmidt and H. P. Boettcher, A. O. Smith Corp.

### 9:00 A.M.—Power—II

Leisure Electric Home

Presiding: D. P. DUMONT, Indiana and Michigan Electric Co.

- DP.\* Generation and Transmission of Electric Power—A Forecast. H. P. St. Clair, American Gas and Electric Service Corp.
- X DP.\* 527 Load Characteristics and Their Effect on Distribution System Design. H. E. Campbell, General Electric Co.
- DP.\* Effect of Electric Resistance Home Heating Customer Demands on the Distribution System. V. J. Warnock, Indiana and Michigan Electric Co.
- X DP.\* 541 12Kv—And Then What? H. L. Hess, Public Service Co. of Indiana.

### 2:00 P.M.—Electronics—II Transistors

Ballroom

Presiding: R. D. SINISH, Farnsworth Electronics Co.

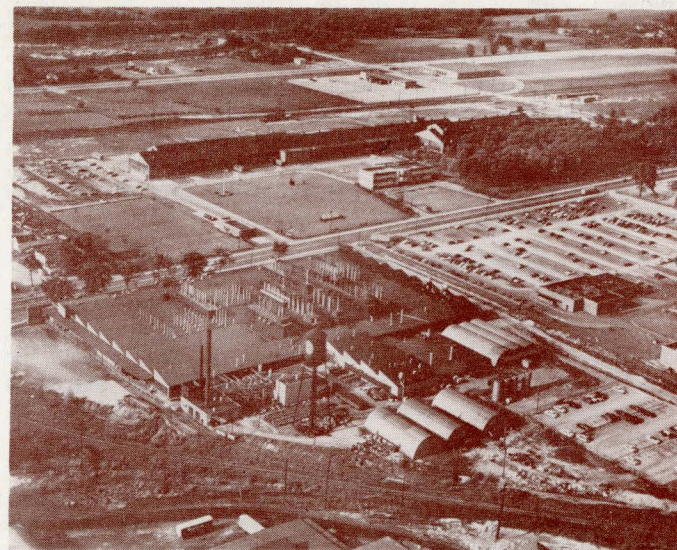
- X DP.\* 526 Transistor Operational Amplifier. G. B. Bush, Johns Hopkins University.
- X DP.\* 525 Transistorized Linear Sweep Generators and Precision Amplitude Comparator. L. C. Merrill, Farnsworth Electronics Co.
- X DP.\* 572 A Transistorized Strain Gage Amplifier. J. H. Smith, Texas Instruments, Inc.
- X DP.\* 561 High Frequency Transistor Amplifier. W. D. Penn, Texas Instruments, Inc.

### 2:00 P.M.—Transformers and Stationary Equipment—I

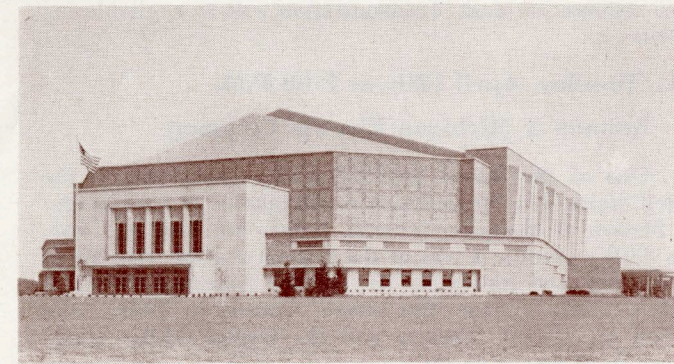
Chatterbox

Presiding: E. J. THOMAS, General Electric Co.

- DP.\* Low Noise Level Switching Techniques. Alexander Finlay, Battelle Memorial Institute.
- X DP.\* 539 Temperature Distribution in Electrical Coils. H. B. Harms, General Electric Co.
- X DP.\* 576 Application of Digital Computer to Design of Small Transformers. Glenn Walters, General Electric Co.



The Phelps-Dodge Plant, Fort Wayne, Indiana



Fort Wayne Memorial Colosseum AA Photographers

- X DP.\* 569 Static Switching of Control Circuits. J. Sheets and W. Alvarez, General Electric Co.

### 2:00 P.M.—Rotating Machinery—II Design

Oak Room

Presiding: M. L. SCHMIDT, General Electric Co.

- 56-514. Calculation of Eddy Current Paths in Drag Cup Induction Motor Rotors. R. L. Fillmore, Minneapolis-Honeywell Co.
- X DP.\* 547 Winding with Controlled Tension. H. L. Kelley, Louis-Allis Corp.
- DP56-515. Performance Calculations for Part-Winding Starting of Three-Phase Motors. P. L. Alger, General Electric Co.
- DP56-516. Performance Calculation of a Single Phase Induction Motor with Quadrature Auxiliary Winding Connected Across Part of the Main Winding. F. W. Suhr, General Electric Co.
- 56-517. Switching Transients in Single Phase Induction Motors. P. V. Rao, Indiana Institute of Science.
- X DP.\* 524 Measurement of Torque Pulsations During Start of Alternating Current Motors. M. L. Miller and F. H. Wright, General Electric Co.

### 2:00 P.M.—Magnet Wire and Insulation Materials—II

Leisure Electric Home

Presiding: H. L. SAUMS, Anaconda Wire and Cable Co.

- X DP.\* 577 Thermal Aging Studies on Insulation Systems for Electrical Machines. G. L. Moses, Westinghouse Electric Corp.
- X DP.\* 570 Infra-Red Studies of Thermal Aging on Organic High Temperature Films. A. L. Smith and J. F. Dexter, Dow-Corning Corporation.
- X DP.\* 571 Epoxide Resin Coatings for Magnet Wire. E. L. Smith, Phelps-Dodge Copper Products Corp.
- X DP.\* 560 Compatibility Tests of Enamelled Wires in Closed Systems. W. W. Pendleton, E. H. Olson, and H. I. Saums, Anaconda Wire and Cable Co.
- X DP.\* 535 D-C Field Coil Testing. T. J. Gair and C. W. Wallace, Jr., General Electric Co.

## Wednesday, April 18

### 9:00 A.M.—Electronics—III Testing and Applications

Leisure Electric Home

Presiding: R. E. COLLIER, Farnsworth Electronics Co.

- X DP.\* 523 Special Test Equipment. Donald Ackworth, Farnsworth Electronics Co.
- DP.\* Vibration Isolation Technique. Kirt Spradlin, Farnsworth Electronics Co.
- DP56-518. Rectilinearity of Electron Beam Focusing Fields from Transverse Component Determinations. P. P. Cioffi, Bell Telephone Laboratories.
- X DP.\* 529 Iatron Storage Tube Characteristics. Dean Davis, Farnsworth Electronics Co.

### 9:00 A.M.—Rotating Machinery—III Application

Oak Room

Presiding: E. C. BARNES, Reliance Electric and Engineering Co.

- X DP.\* 532 New NEMA Frames for Polyphase Induction Motors. R. J. Dineen, Allis-Chalmers Manufacturing Co.

- DP.\* Planned Discussion on NEMA D-C Re-rating Program. J. F. Davis, General Electric Co.

- X DP.\* 548 New NEMA Industrial D-C Motor. A. W. Kimball, Westinghouse Electric Corp.

- 56-519. Characteristics and Design of 4600 c.p.s. Alternator. J. D. McCrumm, Swarthmore College and Franklin Institute Laboratories for Research and Development.

- X DP.\* 558 Thermal Protection and Control. J. Ottmar, Spencer Thermostat Div., Metals and Controls Corp.

### 9:00 A.M.—Power—III

Chatterbox

Presiding: C. R. LAY, Indiana and Michigan Electric Co.

- X DP.\* 568 A Comparison of 69 KV Transmission Line Construction. Walter Schulz, Public Service Co. of Indiana.
- X DP.\* 566 History and Development of the Post Insulator. Ralph Jenner, Lapp Insulator Co.
- 56-520. Mathematical Prediction of Radio and Corona Characteristics on Smooth Bundled Conductors Using Smooth Tubes. C. J. Miller, Ohio Brass Co.

- DP.\* Hot Stick Maintenance of 330 KV. H. T. Molden, Indiana and Michigan Electric Co.

### 9:00 A.M.—Transformers and Stationary Equipment—II

Ballroom

Presiding: ORDEAN KILTIE, Ballastran Corp.

- DP56-521. Use of Aluminum in Dry-Type Transformers. B. C. Biega, General Electric Co.
- X DP.\* 580 AIEE Test Code for Specialty Transformers. A. V. Hughes, Kuhlman Electric Co.
- X DP.\* 537 Dip Coating for Small Dry-Type Transformers. R. L. Hamilton, General Electric Co.

### 2:00 P.M.—Rotating Machinery—IV Application

Oak Room

Presiding: W. J. MORRILL, Morrill Motors

- DP56-522. Analysis of the Application of a Torque Motor in a System Where Fast Acceleration and Positioning are Required. D. B. Levins, Holtzer-Cabot Div., National Pneumatic Co.
- X DP.\* 564 The Design of Motors for Submersible Operation in Deep Wells. E. J. Schaefer, Franklin Electric Co.
- X DP.\* 579 A Design Engineer's View of Shaded Pole Motor Applications. J. C. Willsey, General Electric Co.
- X DP.\* 529 Design Factors and Problems of Motors for Electric Appliances. L. C. Packer, Westinghouse Electric Corp.
- X DP.\* 581 Design Progress in General Purpose Fractional Horsepower Motors. H. L. Wise, General Electric Co.

### 2:00 P.M.—Power—IV

Chatterbox

Presiding: G. F. SWITZER, Indianapolis Power & Light Co.

- X DP.\* 525 A New Increased Capacity High-Speed Three-Phase Oil Circuit Recloser. R. W. Bethke, Line Material Co.
- X DP.\* 543 Economics of 13 KV for Highly Developed 4 KV Urban Areas. R. P. Huber, Indianapolis Power and Light Co.
- X DP.\* 549 Economic Comparison of Secondary Voltages for Residential Areas. H. E. Lokay, Westinghouse Electric Corp.
- X DP.\* 528 Load Switching's Future—Unlimited. John Conrad, S & C Electric Co.

### 2:00 P.M.—Transformers and Stationary Equipment—III

Ballroom

Presiding: A. V. HUGHES, Kuhlman Electric Co.

- X DP.\* 520 Magnetic Amplifier Dimming Circuits for Fluorescent Lamps. H. W. Lord, General Electric Co.
- X DP.\* 524 Servo-Positioning for a Non-Glare Headlight System. Harold Behm, Battelle Memorial Institute.
- X DP.\* 545 Fluorescent Lamp Ballast Noise. R. A. Huwe, General Electric Co.
- X DP.\* 562 Noise Evaluation of Luminous Tube Transformers. L. C. Rademaker, General Electric Co.



## BUFFET DINNER

A buffet style dinner will be held Monday evening, April 16th, from 7:30 to 9:30 P.M. which will be preceded by an informal get together cocktail hour. Plans for seating will be so arranged as to enable friends to sit together at the same table. Tickets will be available at \$3.00 each at the registration desk.

## DINNER-DANCE

The outstanding social event, a dinner-dance, will be held Tuesday, April 17th, 7:00 P.M. to 12:00 Midnight. There will be a social hour preceding the dinner which will be from 6:30 to 7:30 P.M. The dinner hour will last from 7:30 to 9:00 P.M., whereupon there will be dancing from 9:00 P.M. to Midnight in the Grand Ballroom at the Van Orman Hotel. Everett Tinkle and his Orchestra will provide the musical entertainment. Tickets will be available at the registration desk at \$3.00 each.

## LUNCHEONS

Luncheons will be held at 12:15 P.M. each day in the main ballroom. Tickets will be available at \$2.25 each. The ladies are cordially invited.

## LADIES EVENTS

The ladies who attend the district meeting as guests will have a diversified and interesting program during the convention. All activities will originate each morning in the French Room. A daily coffee hour will offer an opportunity to make plans for the day. Among the scheduled events on Monday is a sightseeing and shopping tour followed by an informal reception. Tuesday will be highlighted by an inspection trip to WKJG-TV. and a style show tea at Fort Wayne's largest department store, W & D. Tickets for this style show will be \$1.60 each. On Wednesday an informal coffee and doughnut reception is planned. Ladies are also invited to all of the evening social functions.



Hotel Van Orman

Neuman Studio

## INSPECTION TRIPS

Four inspection trips are planned to show the latest progress in many engineering fields. Tickets will be furnished at the registration desk. Transportation will be available for all tours.

### 1. Tuesday, April 17th, at 2:00 P.M.

#### Indiana & Michigan Electric Company

One of the fastest growing utility companies in the United States. The inspection trip will take us to their Sorenson Station at Roanoke, Indiana, which was built in 1955. This 330Kv station is one of the highest voltage stations in the country and represents part of the American Gas and Electric 330Kv system. The station features a 330Kv compressed air circuit breaker, and the largest 330Kv transformer in existence so far.

In addition, the tour will also include a visit to the McKinley Station. This station boasts of the latest type of equipment among which are two 50,000KVA synchronous generators.

### 2. Tuesday, April 17th, 9:00 A.M. and 2:00 P.M.

#### Phelps-Dodge Copper Products Corporation Inca Manufacturing Division and Indiana Rod and Wire Division

This trip covers the manufacture of magnet wire from raw copper billets to enameled hair-fine magnet wire. This trip will comprise of a tour through both the Inca Manufacturing Division and the Indiana Rod and Wire Division.

### 3. Monday, April 16th, 2:00 P.M. and Wednesday, April 18th, 9:00 A.M.

#### General Electric Sound Laboratory

This sound laboratory was built in 1955 and is reputed to be the best industrial sound laboratory in the country. By using the latest known techniques and materials, they have succeeded in reducing the noise ambient from zero to 10 D. B. The sound laboratory is capable of testing equipment ranging from oven timers to 10,000 pound transformers.

### 4. Wednesday, April 18th, 9:00 A.M.

#### International Harvester Company—Motor Truck Division

One of the largest heavy duty motor truck assembly plants in existence. The tour will enable one to witness the complete assembly of a heavy duty truck by witnessing the operation of the latest heavy duty equipment and automation practices.

**The Members of the Great Lakes District Meeting Committee are:** J. Carroccio—General Chairman; C. J. Herman and G. E. Walter—Co-Chairmen, Technical Program; H. C. Kaeding—Publicity; R. W. Fackler—Registration and Reservation; W. A. Garvey—Social; D. B. Searls—Inspection Trips and Transportation; A. W. Howard—Finance; H. Wise—Arrangements; Mrs. W. J. Merrill—Ladies; J. H. Capps—Students; R. D. Jones, E. J. Schafer, W. W. Warner, S. Winje—Advisory.

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