



EMPIRE DISTRICT MEETING

April 29, 30, May 1, 1959

Syracuse, New York

Headquarters
Hotel Syracuse

Schedule of Events

April 29—WEDNESDAY

Registration—8:30 A.M.-5:00 P.M.
Ladies' Coffee Hour—9:00 A.M.
General Session—9:15 A.M.
Technical Sessions—10:15 A.M.
General Luncheon—12:30 P.M.
Ladies' Luncheon at Persian Terrace—
1:00 P. M.
Inspection Trips—1:30 P.M.
Technical Sessions—2:30 P.M.
Ladies' Dinner at University Club—
6:30 P.M.
Smoker—7:00 P.M.

April 30—THURSDAY

Registration—8:30 A.M.-5:00 P.M.
Ladies' Coffee Hour—9:00 A.M.
Technical Sessions—9:15 A.M.
Inspection Trips—9:30 A.M.
Ladies' Tour of Onondaga Pottery—
10:00 A.M.
Ladies' Luncheon at Drumlins Golf
Club—12:30 P.M.
Inspection Trips—1:30 P.M.
Technical Sessions—2:00 P.M.
Student Prize Paper Competition
2:30 P.M.
Social Hour—Cocktails—6:30 P.M.
Dinner Dance—7:30 P.M.

May 1—FRIDAY

Registration—8:30 A.M.-12:00 Noon
Inspection Trips—9:00 A. M.
Ladies' Coffee Hour—9:00 A.M.
Technical Sessions—9:15 A.M.



City of Syracuse, N. Y.

NEW HORIZONS IN POWER AND INDUSTRY

The AIEE Empire District Meeting will be held at Hotel Syracuse, Syracuse, New York, on Wednesday, Thursday and Friday, April 29, 30 and May 1, 1959.

Dynamic progress of the electrical engineering profession in its continuing search for "New Horizons in Power and Industry" will be the theme of this meeting.

The technical program, pertinent to electric utilities, industry, communications and electronics will include papers on extra-high voltage transmission, nuclear power, automation, computers, communications, electronics, basic science, and engineering education.

An outstanding series of inspection trips will complement the technical sessions. These tours offer registrants the unique opportunity to inspect latest developments in actual installations of computers, data-collection and data processing systems, electronic and communication equipment and steam power plant facilities. A complete program of social activities for both delegates and their ladies has been arranged.

Featured speakers at the three-day meeting include: L. F. Hicker-nell, President, AIEE, who will address the General Session and E. J. Machold, President, Niagara Mohawk Power Corporation, who will speak at the General Luncheon. Both speakers will discuss the role their organizations are accepting to meet the challenge of the future.

Syracuse, the geographic center of Upstate New York, has wide, diversified industry. It is also the home of Syracuse University and LeMoyne College. Easily accessible by railroad and major airlines, it has five exits along the scenic New York State Thruway.

REGISTRATION: Your advance registration card should be filled out and returned promptly. This will save you time in completing registration details upon arrival at the hotel and will permit us to make necessary arrangements for all inspection trips. **The Registration Desk, located in the 10th Floor Lobby, will be open on Wednesday and Thursday from 8:30 a.m. to 5:00 p.m. and on Friday from 8:30 a.m. to 12:00 noon.** Registration fees are \$3.00

for members and \$5.00 for non-members. No fees will be required of student members or families of members.

HOTEL RESERVATIONS: It is suggested that your room reservations at the Hotel Syracuse be made promptly. Contact the Reservations Manager, Hotel Syracuse, mentioning AIEE, and advise him of the date and approximate time of your arrival and the date of your departure. The rates are as follows:

Single Rooms	\$ 7.00	\$ 8.00	\$ 9.00	\$10.00	\$11.00
Double Rooms		11.00	12.00	13.00	14.00
Twin Bedded Rooms	12.25	12.75	13.75	14.50	15.50
Parlor Suites: (Parlor, Bedroom and Bath)	22.00 to 43.00				
Additional Bed (3rd Person)	2.50				
All Rooms have bath.					

GENERAL SESSION: The General Session will convene in the Grand Ballroom, East at **9:15 a.m., Wednesday April 29.** The meeting will include a welcoming address by the Honorable A. A. Henninger, Mayor, City of Syracuse. AIEE President, L. F. Hicker-nell, will speak on the work of AIEE in this age of progress.

GENERAL LUNCHEON: The General Luncheon will be held at **12:30 on Wednesday** in the Grand Ballroom, West. Mr. Earle J. Machold, President of one of the country's largest Electric Utilities systems, the Niagara Mohawk Power Corp., will speak on "The Utility Industry's Responsibilities in Our New Horizons." Tickets for the luncheon are available at the Registration Desk. Price of the luncheon ticket is \$3.00.

SMOKER: A Smoker will be held in the Grand Ballroom on **Wednesday** with informal social hour at 6:00 p.m. and dinner at 7:00 p.m. Excellent entertainment featuring nationally known George Bailey will be provided courtesy of companies who serve the electrical industry of the Empire District. Tickets will be available at the Registration Desk. Price of the Smoker ticket is \$5.00.

Continued on page 4

EMPIRE DISTRICT MEETING — PROGRAM — Syracuse, New York, April 29, 30, May 1, 1959

ADVANCE COPIES OF PAPERS

Members may obtain preprints of numbered papers at the uniform price of 40c each (80c 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 Transactions 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.

Note: The TRANSACTIONS Papers will be printed in the bimonthly publications as follows:

- I COMMUNICATIONS AND ELECTRONICS.
- II APPLICATIONS AND INDUSTRY.
- III POWER APPARATUS AND SYSTEMS.

Wednesday, April 29

9:15 a.m.—General Session

Grand Ballroom, East
 Presiding: P. KARTLUKE, General Chairman, District Meeting
 Speakers: J. W. Munnis, Chairman, Syracuse Section, AIEE;
 Honorable A. A. Henninger, Mayor, City of Syracuse;
 L. C. Holmes, Vice President, Empire District No. 1, AIEE;
 L. F. Hickernell, President, AIEE.

10:15 a.m.—Substations

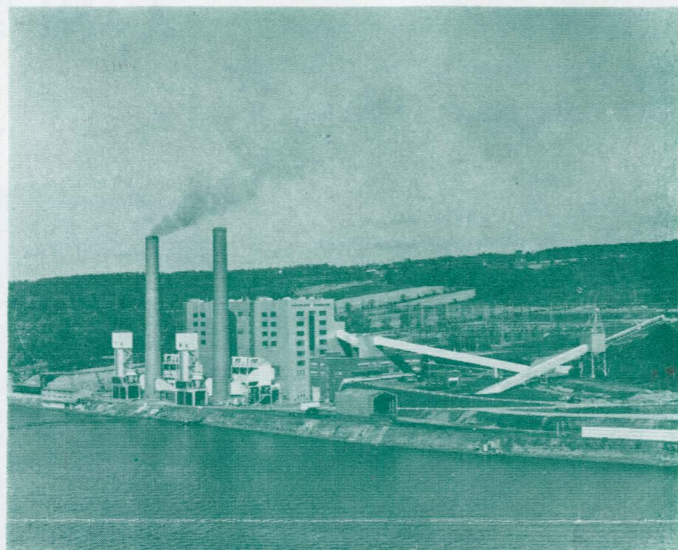
Parlors A & B
 Presiding: L. F. McGOWAN, New York State Electric & Gas Corp.
 58-1288. Preparation of Aluminum Conductors for Stable Electrical Connections. M. R. Monashkin, Burndy Corp.
 CP58-1287. Evaluation of Two Basic Shapes of Conductor Grooves for Aluminum Power Connectors. W. Frank and M. R. Monashkin, Burndy Corp.
 DP.* Cast Aluminum Alloy for Power Connectors. M. Brenner, Penn Union Electric Corp.

10:15 a.m.—Systems Engineering

Foyer
 Presiding: L. K. KIRCHMAYER, General Electric Co.
 58-1189. Some Applications of a New Approach to Loss Minimization in Electrical Utility Systems. T. W. Sze, J. R. Garnett, and J. F. Calvert, University of Pittsburgh.
 DP.* Niagara Mohawk System Power Control Center Features, Including Economic Dispatch Computer. W. D. Wilder, Niagara Mohawk Power Corp.



Niagara Mohawk Power Corp. Economic Dispatch Computer



Milliken Station, New York State Electric and Gas Corp.

CP58-1282. New Load Dispatching Center for the Philadelphia Electric Co. System. W. H. Johnson, Philadelphia Electric Co.

10:15 a.m.—Industrial Power Systems

Parlor E
 Presiding: T. O. ZITTEL, Bethlehem Steel Co.
 58-1188. High Capacity Current Limiting Fuses Today. E. M. Fitzgerald and V. N. Stewart, General Electric Co.
 CP58-1250. A Power System Designed for Reliability and Emergency Operation. R. Loewe, Argonne National Laboratory.
 CP59-244. Education and Maintenance in the Operation of Industrial Power Systems. W. A. Weddendorf, Mutual Boiler & Machinery Insurance Co.

12:30 p.m.—General Luncheon

Grand Ballroom, West
 Presiding: J. W. MUNNIS, Chairman Syracuse Section, AIEE
 Speaker: E. J. Machold, President, Niagara Mohawk Power Corp.

2:30 p.m.—Distribution

Foyer
 Presiding: W. B. Kenyon, Rochester Gas & Electric Corp.
 DP.* Distribution Secondary Conductor Economics. A. S. Anderson and V. A. Thiemann, Ebasco Services.
 58-1184. Report of a Survey on the Connection of Shunt Capacitor Banks. AIEE Capacitor Subcommittee of T & D Committee. B. H. Schultz, Chairman, Line Material Industries.
 58-1295. Rural Distribution Planning. E. H. Breckenfelder and C. M. Stanley, Stanley Engineering Co.

2:30 p.m.—Nuclear Power Plants

Parlors A & B
 Presiding: M. H. PRATT, Niagara Mohawk Power Corp.
 DP.* Some Current Economic Aspects of Nuclear Power Development. I. G. McChesney, Rochester Gas & Electric Corp.
 DP.* Progress Toward Economical Nuclear Power with Boiling Water Reactors. A. G. Mellor and J. B. McClure, General Electric Co.
 DP.* Evaluation of the Initial Performance of the Shippingport Radioactive Waste Disposal Plant. J. R. LaPointe, W. J. Hahn and E. D. Harvard, Westinghouse Electric Corp.
 DP.* A Digital Startup Control for Air Cooled Nuclear Reactors. S. Lehr and V. P. Mathis, General Electric Co.

2:30 p.m.—Communications

Parlor E
 Presiding: E. J. Snow, General Electric Co.
 DP.* Radio Communication with Orthogonal Time Functions. H. F. Harmuth, General Electric Co.
 58-1296. Supervisory Control for Air Force Missile Test Center. C. L. Cadwell, Westinghouse Electric Corp.
 DP.* Preparation, Transmission & Distribution of Information in an Automatic Data Communication System Utilizing Telephone Facilities. J. L. Wheeler, Stromberg Carlson Co.

Thursday, April 30

9:15 a.m.—District Executive Committee Meeting

Parlor E
 Presiding: L. C. HOLMES, Vice President, Empire District No. 1

9:15 a.m.—Education

Parlors A & B
 Presiding: Prof. W. R. LePAGE, Syracuse University
 Panel Discussion—Trends in Engineering Education
 Prof. G. W. Reed, Clarkson College of Technology
 Prof. L. B. Winsor, Rensselaer Polytechnic Institute
 Prof. W. H. Erickson, Cornell University.
 Prof. H. W. Bibber, Union College

9:15 a.m.—Niagara Power Project

Grand Ballroom, East
 Presiding: E. V. STALCUP, Power Authority of the State of New York
 DP.* Electrical Features of the Niagara Power Project. John S. Saloma, Chas. T. Main, Inc.
 59-566. Design of High Voltage Transmission System of Power Authority of the State of New York. R. E. Moran, Chas. T. Main Inc. and Uhl, Hall and Rich.
 DP.* Pumped Storage—A New Power Source. T. F. Armbruster, Allis Chalmers Manufacturing Co.

9:15 a.m.—Lightning Protection and Switching Surges

Grand Ballroom, West
 Presiding: O. K. BROWN, Niagara Mohawk Power Corp.
 58-1226. Application of Arresters for Complete Lightning Protection of Substations. J. M. Clayton & R. W. Powell, Westinghouse Electric Corp.
 58-1170. Lightning Protective Requirements of Generators Connected to the System Through Wye-Grounded-Delta Transformers. J. K. Dillard and A. R. Hileman, Westinghouse Electric Corp.
 58-1160. Surge Transfer through Three-Phase Transformers. A. R. Hileman, Westinghouse Electric Corp.
 58-1178. Magnification of Switching Surges. A. J. Schultz, I. B. Johnson & N. R. Schultz, General Electric Co.

9:15 a.m.—Electronic Circuits & Components

Foyer
 Presiding: A. P. STERN, General Electric Co.
 DP.* A Transistorized Code Selector. R. C. Clark, General Electric Co.
 59-563. Analysis and Design of Transistor Linear Delay Circuit. R. P. Nanavati, Syracuse University. Re-presented for discussion.
 DP.* Tubes & Transistors in Machine Control. H. P. Grossimon, Concord Controls, Inc.
 DP.* Electronics in Automatic Control of Process Fluids. P. H. Drinker, The Foxboro Co.

12:30 p.m.—Luncheon for District Executive Committee

Persian Terrace

2:00 p.m.—Basic Sciences

Grand Ballroom, West
 Presiding: M. G. MALTI, Cornell University
 DP. 59-567. Dynamic Circuit Theory. H. K. Messerle, University of Sydney.
 DP.* Representation of Phase-Shifting Transformers on A.C. Network Calculators. L. B. Spencer, Cornell University.
 59-564. Symmetrical Component Network Connections for the Solution of Phase-Interchange Faults. W. H. Ferguson, Westinghouse Electric Corp.
 DP.* An Equation for Induction Motor Slip. V. B. Honsinger, Allis Chalmers Manufacturing Co.

2:00 p.m.—Extra High Voltage Transmission

Grand Ballroom, East
 Presiding: L. B. JOHNSON, General Electric Co.
 DP.* Research and Trends in Extra-High-Voltage Transmission. J. G. Anderson, General Electric Co.
 DP.* The Effect of Higher Transmission Voltages on System Planning. G. D. Breuer, General Electric Co.
 DP.* Theory of Double Bridge Inverter for High Voltage—D.C. Transmission. S. Linke, Cornell University.
 DP.* Planning Extra-High-Voltage Cable Testing Procedures at Cornell. J. L. Rosson, Cornell University.
 DP.* Present Status of the Extra-High-Voltage Cable Test at Cornell. G. P. Adams, Niagara Mohawk Power Corp.

2:00 p.m.—Automation

Foyer
 Presiding: H. L. LINDSTROM, Westinghouse Electric Corp.
 DP.* Computer-Controller Practices in Industry. W. Mikelson, General Electric Co.
 DP.* The True Role of Numerical Control. W. E. Brainard, Kearney & Trecker Corp.
 CP58-1230. A Method of Automatic Control of Car Retarders. H. C. Kendall & J. H. Auer, Jr., General Railway Signal Co.
 DP.* On the Optimal Control of Chemical and Petroleum Processes. Dr. E. Shapiro, International Business Machines Corp.
 DP.* A New Approach to Analog Computer Scaling. A. S. Jackson, Cornell University.

2:30 p.m.—Student Prize Paper Competition

Parlors A & B
 Presiding: Prof. E. V. KOSSO, Syracuse University

Friday, May 1

9:15 a.m.—Transformers

Persian Terrace
 Presiding: G. K. KALLENBACH, Niagara Mohawk Power Corp.
 58-1169. Are Stabilizing Windings Necessary in All Wye-Connected Transformers? B. A. Cogbill, General Electric Co.
 DP.* Choosing a Power Transformer. L. W. Schoenig, Allis Chalmers Manufacturing Co.
 DP.* Planning Substations to Avoid Noise Complaints. S. R. Lindgren, Allis Chalmers Manufacturing Co.

9:15 a.m.—Industrial Control

Parlor F
 Presiding: C. H. OLNEY, Eastman Kodak Co.
 DP.* The Application of Reactor Control to Material Handling Equipment. H. A. Zollinger, Westinghouse Electric Corp.
 CP59-84. Adjustable Speed Control of A.C. Motors. L. R. Foote, General Electric Co.
 DP.* Industrial Applications of CYPAC. G. Samios, Westinghouse Electric Corp.
 DP.* Static Constant & Adjustable Voltage Power Supplies for D.C. Shunt Motors. E. H. Vedder and J. M. Cochran, Westinghouse Electric Corp.

9:15 a.m.—Communications

East Room
 Presiding: R. C. CRAWSHAW, New York Telephone Co.
 DP.* Fundamental Planning for a Controlled Switching Point in the Nationwide Telephone Dialing Network. F. A. Moore, New York Telephone Co.
 DP.* Trunking Facilities for a Controlled Switching Point in the Nationwide Dialing Network. B. A. Connolly, New York Telephone Co.
 DP.* Switching Facilities for a Controlled Switching Point in the Nationwide Telephone Dialing Network. S. L. Calderwood, New York Telephone Co.
 DP.* Routing a Call through Finished Controlled Switching Point in the Nationwide Dialing Network. W. M. Otto, New York Telephone Co.



General Electric Co., Electronics Park

CONTINUED FROM PAGE ONE

DINNER DANCE: Highlighting the social activities will be the Dinner Dance to be held in the Main Ballroom on **Thursday** evening, April 30, from **7:30 p.m.** to 12:00 midnight. There will be dancing during and after dinner to an outstanding dance orchestra. Dinner will be served at tables of eight. Dress is optional. Tickets will be available at the Registration Desk. Price of the Dinner Dance ticket is \$12.00 per couple, \$7.00 for single persons.

A **social hour** starting at **6:30 p.m.** will precede the dinner dance. Cocktails will be served to all registered members courtesy of the companies who serve the electrical industry of the Empire District.

LADIES' PROGRAM: The ladies' headquarters will be in ladies' Hospitality Room, Main Lobby Parlor, which will be open Wednesday and Thursday from 9:00 a.m. to 5:00 p.m. Registration for ladies' activities should be made in the Hospitality Room. The following ladies' activities have been arranged:

Wednesday—9:00 a.m. Rolls and coffee in Hospitality Room. 1:00 p.m. **Informal Luncheon** at Persian Terrace, Hotel Syracuse. Afternoon free for shopping. 6:30 p.m. **Dinner** at University Club (transportation provided) followed by Play Review by Mary Aldrich Jones. Favors will be provided.

Thursday—9:00 a.m. Rolls and coffee in Hospitality Room. 10:00 a.m. **Tour** of Onondaga Pottery makers of Syracuse China (transportation provided). Souvenirs will be furnished. 12:30 p.m. **Luncheon** at Drumlins Golf Club (transportation provided) followed by Card Party with table prizes. Thursday evening, delegates and their wives will attend the **Social Hour** and **Dinner Dance** in the Grand Ballroom.

STUDENT ACTIVITIES: The Student Prize Paper Competition will be held on Thursday afternoon at 2:30 p.m. Winners and runners-up of previously held student branch competitions will participate. The winner will be awarded an expense paid trip to the Summer and Pacific General Meeting to be held in Seattle, Washington. Student members are also invited to attend all social events at reduced rates.

INSPECTION TRIPS:

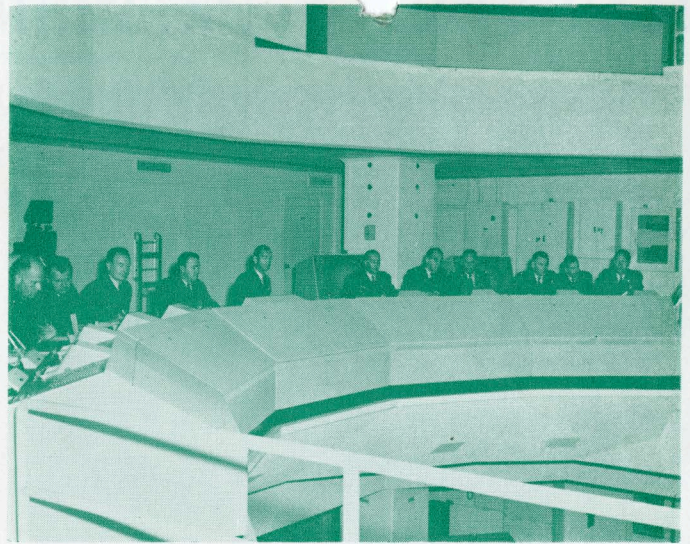
WSYR-TV Studios, Wednesday, April 29, 1:30 p.m. This station, recently completed at a cost of over \$2,000,000, represents the last word in TV broadcasting studios. The largest upstate link of the National Broadcasting Company. It is powered at 100,000 watts visual, and 50,000 watts audio. The new station has three studios, each equipped with the latest in lighting controls, cameras and facilities for live shows as well as connections to chain programs. This station also has three radio studios and complete facilities for video tape recording. Busses will leave the Hotel at 1:30 p.m. Tickets are \$.50.

Sage (Semi-Automatic Ground Environment), Wednesday, April 29, and Thursday, April 30, 1:30 p.m. This installation in Syracuse is one of the control centers for our air defense system of the Eastern Seaboard. This control center is connected to all radar observation centers in the United States, Canada and Alaska, the Civil Aeronautics Administration, Military Flight Centers, Navy Picket Ships, Airborne Early Warning Aircraft, Texas Towers and Air Weather Service Stations. In all, thirteen major sources of information feed into this system. Under the jurisdiction of the 26th Air Division at Syracuse, it is a major link in the Air Defense System for areas such as Boston, New York, Buffalo, Pittsburgh, Philadelphia, Baltimore and Washington, in 14 states on the Eastern Seaboard. This area comprises 250,000 square miles and contains 45 million people. Advanced registration, by means of advance registration cards is required for this trip. Attendance is limited and preference will be given to earliest registrants and to out-of-town members. Buses will leave hotel at 2:00 p.m. on Wednesday and Thursday. Tickets are \$1.00.

Sylvania Electric Products, Inc., Thursday, April 30, 9:30 a.m. This plant is one of the first installations of computers for use in a data processing center. By the use of computers, this company processes at its Camillus Center payrolls for 45 plants scattered from Maine to California, amounting to 23,000 paychecks per week, accounts payable, accounts receivable and sales records. This system requires over 21,000 miles of leased telephone circuits.

Advanced registration for this trip is recommended since attendance is limited. Preference will be given to out-of-town members. Bus will leave the hotel at 9:30 a.m. Tickets are \$1.00.

Niagara Mohawk System Power Control Center, Including Economic Dispatch Computer, Thursday, April 30, 1:30 p.m. Niagara Mohawk's new System Power Control Center represents the



SAGE, Syracuse, N. Y.

most modern facilities available for scheduling and dispatching electric power. It is the focal point for all utilities in the Northeastern Interconnection which comprises systems totalling some 20,000,000 KW of installed generating capacity. Features of this control center will be described during the Systems Engineering Session on Wednesday morning. A completely new application of telephone equipment permits direct-dialing from Syracuse to other interconnected utilities. System-wide telemetering provides dispatchers with power flow information from all major generating stations and interconnection points on the Niagara Mohawk system. The recently installed multi-area Economic Dispatch Computer, the first and only computer of its kind, will calculate generation schedules for all plants on the combined Niagara Mohawk and New York State Electric and Gas Corporation systems and will determine cost of power for transactions with neighboring utilities.

Trips will be made in groups of 15, starting at 1:30 p.m. Transportation will be available. Tickets are \$.50.

Milliken Station, New York State Electric & Gas Corp., Friday, May 1, 9:00 a.m. This is the newest steam plant of the New York State Electric & Gas Corp. It is located on Cayuga Lake about 17 miles north of Ithaca on the east side of the lake. This station has a generating capacity in two units of 310,000 KW and is a substantial part of the system generating capacity. The plant operates on a steam pressure of 1850 psi at 1000° F. This station is unique in that the generators are among the first to use forced hydrogen cooling of the windings through hollow conductors. The station is equipped with an automatic monitoring system. This performance data logging system is designed to digitally log and/or tape more than 80 items of performance data per hour in such form as to permit automatic conversion to punch card format for detailed performance analysis.

Transportation will be arranged to leave the Hotel at 9:00 a.m. Price of tickets will depend upon attendance and transportation methods selected.

COMMITTEES:

Members of the Empire District No. 1 Meeting Committee are: General Chairman, Paul Kartluge; Technical Program, A. F. Paskevich; Publicity, E. A. Gruppe; Hotel Arrangements, D. J. Williams; Registration, C. E. H. vonSothen; Printing and Tickets, W. J. Helden; Trips and Transportation, J. B. Sullivan; Student Activities, E. V. Kosso; General Luncheon and Dinner Dance, C. N. Palmer; Smoker, J. W. Becker; Ladies Program, Mrs. H. C. Lindberg; Secretary, W. A. Bangs; Treasurer, R. W. Vollmer, Syracuse Section Chairman, J. W. Munnis; Finance, B. T. Cole; District #1 Vice President, L. C. Holmes.

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