

**American Institute of
Electrical Engineers**



**FALL
GENERAL
MEETING**

Program

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entire meeting*

OKLAHOMA CITY, OKLAHOMA

OCTOBER 23-27

1950

Meeting Headquarters

SKIRVIN HOTEL

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	PRICE	
	M	N
S4 Advanced Methods of Mathematical Analysis as Applied to Electrical Engineering (1942)	\$.50	\$.50
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S29 Cumulative Indexes to AIEE Transactions, 1911-1921 and 1922-1938	2.00	3.00
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S23a Electron Tube Survey of Instrument Manufacturers and Laboratories (3/48)	1.00	2.00
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S21 Emergency Overloading of Insulated Power Cables (9/43)	.75	.75
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S30 Interior Wiring Design for Commercial Buildings (10/49)	.40	.80
S37 Lightning Reference Bibliography (4/50).....	.35	.70
S28 Mathematics for Engineers (7/49)15	.30
S10a Power Supply for Resistance Welding Machines—Part 1 and 2 (5/40)25	.25
S10b Power Supply for Resistance Welding Machines—Part 3 (4/41)25	.25
S11 Progress in the Art of Metering Electric Energy (12/41)	.25	.50
S20 Statistical Methods in Quality Control (2/48).....	.35	.70
S36 Symposium on Electrical Properties of Semiconductors and the Transistor (1/50)25	.50
S12 Telemetering, Supervisory Control, and Associated Circuits (9/48)	1.00	2.00
S22 Tidd 500-Kv Test Lines (1/48).....	.50	1.00
S5 Ultrashort Electromagnetic Waves (9/43).....	.50	.50
S13 Engineering Profession in Transition (1947).....	.50	1.00
S1 Manual on Collective Bargaining for Professional Employees (1947)	1.00	1.00

GENERAL INFORMATION

This meeting in Oklahoma City, Oklahoma is the fourth of the general meetings which are held annually each fall. This year we have five technical divisions of Institute activity, namely: Communications, General Applications, Industry, Power, and Science and Electronics, and, each is represented in the technical program.

The general session is scheduled for Tuesday morning, October 24, when we will be welcomed by the Honorable Roy J. Turner, Governor of the State of Oklahoma. Dr. H. G. Bennett, President of the Oklahoma A & M College, and our president, Mr. T. G. LeClair, will be the principal speakers at this meeting.

On the social side, there will be a stag smoker, a dinner-dance and special entertainment for the ladies.

REGISTRATION FEES REQUIRED. In accordance with the policy as set up by the Board of Directors, a registration fee of \$3.00 has been established for members and a fee of \$5.00 for nonmembers. This is to help make the meeting self-supporting and obviate the need for raising the annual dues. Enrolled students and the immediate families of members will not be required to pay any fee.

INFORMATION on all features may be obtained at the registration desk. Efforts will be made to deliver telegrams and messages promptly. Members who expect to receive mail are asked to inquire frequently at the mail and registration desk.

TECHNICAL SESSIONS AND DISCUSSIONS are covered by the "Conduct of Technical Sessions" at the discretion of the presiding officers. Usually 10 minutes will be allowed for the presentation of each paper and 5 minutes for each discussion. To receive consideration for publication, discussions in triplicate must be left with the chairman or sent to Edward C. Day, AIEE, 33 West 39th Street, New York 18, N. Y., before November 10, 1950. Discussions received later will be returned. The original typewritten double-spaced copy, together with original illustrations with photostats or blueprints should be submitted.

Authors and discussers should make their presentation as effective as possible. Remember your audience. Stress the salient features of the paper which are new or novel. 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 PAPERS may be purchased by members at the registration desk at the uniform price of \$.30 each (\$.60 to nonmembers). Only numbered papers are available. 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 \$9.00 denominations are available for those who wish to avoid remittance by check or otherwise. Mail orders should be addressed to the AIEE Order Department, 33 West 39th Street, New York 18, N. Y. Most of the papers will ultimately be published as AIEE Proceedings and in the TRANSACTIONS.

SCHEDULE OF EVENTS

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
<p>9:30 A.M. Conductor Vibration (<i>Convention Hall</i>)</p> <p>Conference on Energy Sources (<i>Venetian Room</i>)</p> <p>Moderate Haul Telephone and Television Systems (<i>Room D</i>)</p>	<p>10:00 A.M. General Session Speakers Roy J. Turner Oklahoma Governor Mr. H. R. Fritz Vice-President 7th District, AIEE Dr. H. C. Bennett, Pres. Okla. A. & M. College Mr. T. G. LeClair President, AIEE (<i>Convention Hall</i>)</p> <p>11:30 A.M. Ladies Tour and Brunch</p> <p>1:30 P.M. Inspection Trip Tinker Air Force Base</p>	<p>9:30 A.M. Insulated Conductors (<i>Convention Hall</i>)</p> <p>Conference on Effect of Low Voltage and Low Frequency on Power Plant Auxiliaries (<i>Venetian Room</i>)</p> <p>Large-Scale Computing Devices and Their Application to the Chemical and Petroleum Industry (<i>Room D</i>)</p> <p>10:30 A.M. Ladies Art Center Tour and Coffee (<i>Civic Center</i>)</p>	<p>9:30 A.M. Symposium on Supervisory Instruments (<i>Convention Hall</i>)</p> <p>Electronic System Engineering (<i>Venetian Room</i>)</p> <p>Conference on Cathodic Protection (<i>Room D</i>)</p> <p>12:00 Noon Ladies Buffet Lunch and Style Show (<i>Crystal Room</i>)</p>	<p>9:30 A.M. Relays (<i>Convention Hall</i>)</p> <p>Feedback Control Systems (<i>Venetian Room</i>)</p> <p>Oil Industry Applications (<i>Room D</i>)</p> <p>12:00 Noon Joint Luncheon with Oklahoma City Chamber of Commerce; Speaker—Mr. T. G. LeClair, President, AIEE (<i>Persian Room</i>)</p>

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
<p>2:00 P.M. 69 Kv Transmission Line Design Practices (<i>Convention Hall</i>)</p> <p>Basic Sciences (<i>Venetian Room</i>)</p> <p>Communication Switching Systems (<i>Room D</i>)</p> <p>2:30 P.M. Ladies Historical Tour (<i>Historical Bldg.</i>)</p> <p>4:30 P.M. Inspection Trip Oklahoma Publishing Company</p> <p>8:00 P.M. Inspection Trip WKT-TV Television Station</p>	<p>2:00 P.M. Transmission and Distribution (<i>Convention Hall</i>)</p> <p>Rotating Machinery (<i>Venetian Room</i>)</p> <p>Mining and Metal Industries (<i>Room D</i>)</p> <p>6:30 P.M. Smoker (<i>Convention Hall</i>)</p> <p>7:00 P.M. Ladies Dinner, Bridge & Canasta (<i>Beacon Club</i>)</p>	<p>2:00 P.M. Symposium on Totally Enclosed Motors (<i>Convention Hall</i>)</p> <p>Industrial Power Systems (<i>Venetian Room</i>)</p> <p>Computing Devices (<i>Room D</i>)</p> <p>Inspection Trip Oil Fields</p> <p>2:00 P.M. and 4:30 P.M. Inspection Trip Southwestern Bell Telephone Company</p> <p>7:00 P.M. Dinner-Dance (<i>Persian Room</i>)</p>	<p>2:00 P.M. Power Generation (<i>Convention Hall</i>)</p> <p>Switchgear (<i>Venetian Room</i>)</p> <p>Inspection Trip Oil Fields</p> <p>Inspection Trip Oklahoma Gas & Electric Power Plants</p> <p>4:30 P.M. Inspection Trip Oklahoma Publishing Company</p> <p>8:00 P.M. Ladies Bridge & Canasta—Men Invited (<i>Venetian Room</i>)</p> <p>Model Studies of Fluid Flow and Field Problems (<i>Convention Hall</i>)</p>	<p>2:00 P.M. Transformers (<i>Convention Hall</i>)</p> <p>Oil Industry Applications (<i>Room D</i>)</p> <p>Inspection Trip Oklahoma Gas & Electric Power Plants</p>

Monday, October 23

9:30 a.m.—Conductor Vibration

Convention Hall
A. E. DAVISON, Presiding

- 50-237. Vibration and Fatigue Life of Steel Strand. J. C. Little, D. G. MacMillan, J. V. Majercak, American Steel and Wire Co.
- 50-278. Use of Techniques from Electrical Analogues in the Study of Transmission Line Vibration. Jordan Lummis, Arthur Klopfenstein, Southern California Edison Co.
- CP.** BPA Experience with Conductor Vibration. M. B. Elton, A. A. Osipovich, M. G. Poland, Bonneville Power Administration.
- CP.** Vibration—Symposium. E. L. Kanouse, Dept. of Water and Power, The City of Los Angeles.
- CP.** Failures of Overhead Ground Wires Caused by Aeolian Vibration. P. G. Wallace, Texas Power and Light Co.
- CP.** Experience and Remedial Measures for Failures of Overhead Ground Wires Caused by Aeolian Vibration. R. F. Danner, Oklahoma Gas and Electric Co.
- CP.** Vibrations—Review of Experiences—1950. L. M. Robertson, Public Service Co. of Colorado.
- CP.** Dampers—Torsional—Experience in Canada during 10 Years. J. H. Waghorne, A. D. Hoff; T. J. Burgess, Hydro-Electric Power Comm. of Ontario.
- CP.** Aeolian Vibration Combines with Galloping to Speed up Failures in Conductors. A. E. Davison, Hydro Electric Power Comm. of Ontario.
- CP.** Report of Progress in Conductor Vibration Investigations. Joel Tompkins, Aluminum Co. of America.

9:30 a.m.—Conference on Energy Sources

Venetian Room
L. W. MATSCH, Presiding

- CP.** Ultrasonic Waves in Air. R. W. Armstrong, Evans Signal Laboratory.
- CP.** Aerodynamics of the Power Wind Tunnel. P. H. Thomas, Montclair, N. J.
- CP.** Limitations of Prime Movers. W. P. Green, Illinois Institute of Technology.

9:30 a.m.—Moderate Haul Telephone and Television Systems

Room D
L. G. ABRAHAM, Presiding

- 50-235. A Negative Impedance Repeater. J. L. Merrill, Jr., Bell Telephone Labs., Inc.
- 50-240. A Simplified 48 Channel Carrier Telephone System. L. G. Erickson, Lenkurt Electric Co.
- 50-241. An Improved Transmitted Carrier System for Telephone Lines of Short or Medium Length. G. H. Brodie, Kellogg Switchboard and Supply Co.
- 50-242. A Medium-Haul Carrier Telephone System. H. H. Smith, Federal Telephone and Radio Corp.
- 50-234. Local Wire Video Television Networks. C. N. Nebel, Bell Telephone Laboratories, Inc.

2:00 p.m.—69 Kv Transmission Line Design Practices

Convention Hall
A. E. DAVISON, Presiding

- 50-243. Light Steel Tower Line Designs. A. A. Osipovich, Bonneville Power Administration.
- CP.** Line Structures for 66,000 Volt, an Established Sub-transmission Voltage in New England. C. A. Booker, New England Power Service Co.
- CP.** 69 Kv Review of Experience Types Used—Accumulated Experience and Preferred Types with Reasons. J. E. O'Brien, Rural Electrification Adm.
- CP.** Sagging Conductors in Inclined Spans. H. H. Rodee, Aluminum Co. of America.
- CP.** Current Loadings for A.C.S.R. Conductors—1950. A. S. Runciman, Shawinigan Water and Power Co.
- CP.** Bolometers—Two Years Experience in Field Locating Hot Joints. J. Leslie, Hydro-Electric Power Comm. of Ontario.

2:00 p.m.—Basic Science

Venetian Room
L. W. MATSCH, Presiding

- 50-246. Transpositions and the Calculation of Inductance from Geometric Mean Distances. W. B. Boast, Iowa State College.
- CP.** A Set of General Electrical Formulas. V. P. Hessler, University of Illinois; D. D. Robb, Iowa State College.
- 50-245. Transients in Coupled L-C Circuits Analyzed in Terms of a Rolling-Ball Analog. P. C. Magnusson, Oregon State College.
- 50-244. Steady-State Waves on Transmission Lines. D. L. Waidelich, University of Missouri.

2:00 p.m.—Communication Switching Systems

Room D
R. C. DAVIS, Presiding

- 50-249. General Aspects of Community Dial Office Equipment. A. Burkett, Bell Telephone Laboratories, Inc.
50-247. The Leich Electric Dial Switchboard. H. G. Evers, ACO.* Leich Electric Co.
50-227. Simplified Subscriber Toll Dialing for Low Rate, Low Density Toll Circuits Between CDO'S. Eric Brooke, J. M. Blackhall, W. H. Blashfield, The North Electric Manufacturing Co.
50-248. Dial Central Office Buildings for Small Communities. F. D. Reese, E. C. Roys, Pennsylvania Telephone Corp.

Tuesday, October 24

10:00 a.m.—General Session

Convention Hall
W. B. STEPHENSON, Presiding

“Welcome to Oklahoma.” Honorable Roy J. Turner, Governor of Oklahoma.
Response. H. R. Fritz, Vice President, 7th District, AIEE.
Announcements. W. B. Stephenson, General Chairman, 1950 Fall General Meeting.
“The Obligation of World Leadership.” Dr. H. G. Bennett, President, Oklahoma A & M College.
“Are You an Engineer?” T. G. LeClair, President, AIEE.

2:00 p.m.—Transmission and Distribution

Convention Hall
L. M. ROBERTSON, Presiding

- 50-250. Some Aspects of Lightning Surges on Power Systems and Their Suppression. S. Kaneff, The University of Adelaide.
50-224. Practical Experiences with Resonant Grounding in a Large 34.5 Kv System. H. H. Brown, Wisconsin Michigan Power Co.; E. T. B. Gross, Illinois Institute of Technology.
CP.** Determination of Resistance to Ground of Grounding Grids. A. J. McCrocklin, Jr., C. W. Wendlandt, The University of Texas.
50-236. Effect of Three-Phase Motor Loads on Voltage Changes Produced by Single-Phase Loads. M. A. Faucett, M. Fisher, Jr., M. S. Helm, University of Illinois.
CP.** Supervisory Control for 13.8 Kv Tie Feeders. R. A. Williams, Arkansas Power and Light Co.; V. B. Wilfley, Westinghouse Electric Corp.

2:00 p.m.—Rotating Machinery

Venetian Room
W. R. Hough, Presiding

- 50-252. Synchronous Machine Damping Torque at Low Speeds. Charles Concordia, General Electric Co.
50-253. Symmetrical Short Circuits on Saturated Alternators. S. L. Mikhail, Cambridge, Mass.
50-254. An Experimental and Analytical Study of Turbine Generator Rotor Ventilation. C. J. Fechheimer, Milwaukee, Wisconsin.
50-232. A Method of Total Design as Applied to Polyphase Induction Motors. C. H. Crouse, Robbins and Myers, Inc.
50-255. The Goerges Phenomenon—Induction Motors with Unbalanced Rotor Impedances. H. L. Garbarino, General Electric Co.; Eric T. B. Gross, Illinois Institute of Technology.

2:00 p.m.—Mining and Metal Industries

Room D
A. B. CHAFETZ, Presiding

- CP.** Electrical Applications in Mining—Southeast Missouri Division—Saint Joseph Lead Company. Bert L. Beal, Jr., St. Joseph Lead Co.
CP.** Automatic Hoisting. H. A. London; R. D. Call, Westinghouse Electric Corp.; A. B. Chafetz, International Minerals and Chemical Corp.
CP.** Use of Electricity in Bauxite Mining. E. A. Brenn, Alcoa Mining Co.
50-230. Electrical Equipment for Heavy Media Separation Process. J. J. Bean, American Cyanamid Co.; K. A. Blind, Dings Magnetic Separator Co. Presentation by title only.

Wednesday, October 25

9:30 a.m.—Insulated Conductors

Convention Hall
HERMAN HALPERIN, Presiding

- 50-256. Critical Inside Dimensions for Power Cable Manholes. E. S. Halfmann, Philadelphia Electric Co.
50-257. Underground Conduit for Electric Power Systems—Fundamentals and Basic Design Considerations. E. G. Watkins, Consolidated Edison Company of New York, Inc.
50-258. Terminal Risers for Solid-Type Impregnated Paper Cables. W. A. Del Mar, Phelps Dodge Copper Products Corp.

9:30 a.m.—Conference on Effect of Low Voltage and Low Frequency on Power Plant Auxiliaries

Venetian Room

G. S. WHITLOW, Presiding

- CP.** Interruption of Service of the San Antonio Electrical System. H. C. Hughes, City Public Service Board, San Antonio, Texas.
- CP.** The Effect of Voltage and Frequency Reduction on Steam Plant Operation. T. W. Schroder, Iowa Power and Light Co.
- CP.** Design and Operation of Generating Station Auxiliaries for Power System Reliability. W. R. Brownlee, J. A. Elzi, Commonwealth Associates, Inc.
- CP.** Supply Systems for Havana and Woodrider Station Auxiliaries. E. R. Walton, Illinois Power Co.; S. L. Chapin, Sargent and Lundy.
- CP.** The effect of Frequency Reduction on Plant Capacity and on System Operations. H. A. Bauman, G. R. Hahn, C. N. Metcalf, Consolidated Edison Co. of New York, Inc.
- 50-280. Determination of Reserve Capacity by the Probability Theory. G. Calabrese, New York University. Presentation by title only.

9:30 a.m.—Large-Scale Computing Devices and Their Application to the Chemical and Petroleum Industry

Room D

J. T. CARLETON, Presiding

- CP.** Automatic Computing Machines and Devices. C. C. Hurd, International Business Machines Corp.
- CP.** The Use of IBM Punched Card Devices for Distillation Calculations. Arthur Rose, T. J. Williams, Pennsylvania State College.
- 50-259-ACO.* Application of Automatic Digital Computing Methods to the Prediction of Phase Behavior. T. J. Conolly, S. P. Frankel, B. H. Sage, California Institute of Technology.
- CP.** Applications of the Multicomponent Fractionation Electrical Analogue Computer. G. M. Brown, J. H. Ashley, J. J. Moder, G. W. Goelz, Northwestern University.
- CP.** Solution of Fluid Flow Problems on the Anacom. J. T. Carleton, Westinghouse Electric Corp.

2:00 p.m.—Symposium on Totally Enclosed Motors

Convention Hall

S. S. WOLFF, Presiding

- 50-229-ACO.* Trends in Auxiliary Motor Applications in Steam Electric Stations. H. L. Lowe, Ebasco Services, Inc.
- CP.** The Totally Enclosed Fan Cooled Enclosure as Applied to Squirrel Cage Induction Motors. D. H. Ware, General Electric Co.
- 50-260-ACO.* Copper Fin Totally-Enclosed Motors. L. A. Kilgore, J. F. Heidbreder, Westinghouse Electric Corp.
- 50-228-ACO.* Large Tube Type, Totally Enclosed Fan-Cooled Motors. R. C. Moore, Allis-Chalmers Mfg. Co.
- CP.** Large Motors for Power House Auxiliaries. Quentin Graham, Elliott Co.
- 50-226-ACO.* Totally-Enclosed Auxiliary Drive Motors for Generating Stations. J. G. Noest, Consolidated Edison Co. of New York, Inc.

2:00 p.m.—Industrial Power Systems

Venetian Room

J. S. GAULT, Presiding

- 50-261. Automatic Control of Metal Clad Switchgear Serving Oil Refinery Motors During Power System Disturbances. R. T. Horsfall, Dingle Clark Co.; K. N. Thompson, R. W. Mills, Standard Oil Company of Ohio; P. O. Bobo, Westinghouse Electric Corp.
- CP.** Electric Oil Pumping. W. C. Dreyer, F. K. Smith, Westinghouse Electric Corp.
- CP.** Industrial Power Networks. H. D. Hughes, Stanolind Oil and Gas Co.; W. H. Rollman, Westinghouse Electric Corp.
- CP.** Speaking of Electrical Distribution System Expansion. H. C. Swannell, J. E. Serrine Co.

2:00 p.m.—Computing Devices

Room D

CHARLES CONCORDIA, Presiding

- 50-262-ACO.* Design Objectives of the NRL Electronic Digital Computer. D. H. Gridley, B. L. Sarahan, Naval Research Laboratory.
- CP.** Problem Preparation for a Digital Computer. D. H. Gridley, B. L. Sarahan, J. S. Seward, Naval Research Laboratory.
- 50-215. Special Devices Aid Differential Analyzer Solution of Complex Problems. A. C. Cook, L. K. Kirchmayer, General Electric Co.; C. N. Weygandt, University of Pennsylvania.
- 50-263. An Electric Analogue Computer, Using the Photo Cell as a Non-Linear Element. E. C. Koenig, Allis-Chalmers Manufacturing Co.

Thursday, October 26

9:30 a.m.—Symposium on Supervisory Instruments

Convention Hall
J. A. BROOKS, Presiding

- 50-264- The Supervisory Instrument—Its Contribution to
ACO.* Centralized Control. T. T. Frankenberg, American
Gas and Electric Service Corp.
- 50-221- Instruments for Detection of Toxic and Explosive
ACO.* Gases. N. W. Hartz, Mine Safety Appliances Co.
- 50-265- Improving Surface Condenser Performance Through
ACO.* the Use of Supervisory Instruments. J. G. Dobson,
The Foxboro Co.
- 50-218- High Speed Supervision of Process Variables. W.
ACO.* E. Belcher, Jr., Minneapolis Honeywell Regulator
Co.
- 50-223. Centralized Control Board for Steam-Electric Gen-
erating Plants. H. L. Lowe, Ebasco Services, Inc.;
R. L. Hodgkins, General Electric Co.

9:30 a.m.—Electronic System Engineering

Venetian Room
H. L. FLOWERS, Presiding

- CP.** Some Engineering Aspects of the Mechanism of
Body Control. Robert Mayne, Goodyear Aircraft
Corp.
- 50-266. Information Theory Applied to System Design.
W. G. Tuller, Melpar, Inc.
- CP.** Airborne Anti-Submarine Systems. T. B. Schillo,
Glenn L. Martin Co.
- CP.** A Special Purpose Analog Computing System for
the Radar Triangulation Problem. R. E. Lang-
worthy, R. M. Byrne, Goodyear Aircraft Corp.
- 50-267. The Further Development of Fluid Mappers. A. D.
Moore, University of Michigan.

9:30 a.m.—Conference on Cathodic Protection

Room D
L. W. ROUSH and R. M. WAINWRIGHT, Presiding

- CP.** Various Cathodic Protection Applications Using
Graphite Anodes. J. P. Oliver, Union Carbide and
Carbon Corp.
- CP.** Sources of Power for Cathodic Protection. F. F.
Knapp, Montana-Dakota Utilities Co.
- CP.** Devices and Electrical Cable for Cathodic Protec-
tion Service. Walton P. Lewis, American Steel and
Wire Co.

- CP.** Application of Cathodic Protection to Underground
Telephone Cable. R. L. Rayner, Michigan Bell Tele-
phone Co.
- CP.** Cathodic Protection of Stainless Steel Buried in the
Ground. F. J. Mollerus, General Electric Co.
- CP.** The New Insulation Materials for Electric Cables.
S. J. Rosch, Anaconda Wire and Cable Co.
- 50-279- Cost Study of Generation of 80,000 Kw of D-C
ACO.* Power from Natural Gas. J. P. Smith, F. L. Kaestle,
General Electric Co.

2:00 p.m.—Power Generation

Convention Hall
B. G. A. SKROTZKI, Presiding

- 50-222. Induced Currents in High Capacity Bus Enclosures.
S. C. Killian, Delta-Star Electric Co.
- 50-268. Continuous Scavenging System for Hydrogen-
Cooled Generators. D. S. Snell, L. P. Grobel, Gen-
eral Electric Co.
- 50-269. Control of Gas Turbines for Power Generation.
D. C. Hoffmann, A. G. Mellor, N. E. Starkey, Gen-
eral Electric Co.
- 50-270. Thrust Bearing Problems and Their Solution on
Turbine-Generator Units and Auxiliaries of the
Consolidated Edison System. J. M. Driscoll, Con-
solidated Edison Co. of N. Y., Inc.; H. C. Otten,
The Yonkers Electric Light and Power Co.

2:00 p.m.—Switchgear

Venetian Room
H. V. NYE, Presiding

- 50-271. An Air Delayed Selective Overcurrent Tripping
Device for Low Voltage Air Circuit Breakers. B. G.
Tremblay, M. E. Horn, Westinghouse Electric Corp.
- 50-272. New Low Voltage Air Circuit Breaker with 50,000
Amperes Interrupting Capacity at 600 Volts A-C.
M. E. Horn, J. J. Mikos, Westinghouse Electric
Corp.
- 50-239. Ice Testing of Outdoor Disconnecting Switches to
Simulate Field Conditions. J. B. Owens, Westing-
house Electric Corp.

Friday, October 27

9:30 a.m.—Relays

Convention Hall
A. J. McCONNELL, Presiding

- 50-233. A Study of Directional Element Connections for
Phase Relays. W. K. Sonnemann, Westinghouse
Electric Corp.

American Institute of Electrical Engineers

50-238. An Improved Reclosing Relay. L. E. Goff, General Electric Co.

CP.** The Conference for Protective Relay Engineers, Texas A&M College. L. M. Haupt, Agricultural and Mechanical College of Texas.

CP.** Operating Experience with Ground Distance Relays. M. P. Osburn, P. L. Dandeno, Hydro Electric Power Comm. of Ontario.

9:30 a.m.—Feedback Control Systems

Venetian Room
O. H. SCHUCK, Presiding

50-231. Stability of Voltage Regulators. F. E. Bothwell, The University of Chicago.

50-274. Stability of Servomechanisms with Linearly Varying Elements. M. J. Kirby, Sperry Gyroscope Co.

CP.** System Frequency Response Derived from Transient Response. A. R. Teasdale, Jr., F. E. Brooks, Jr., J. P. German, The University of Texas.

CP.** Transient Analysis of Servo-mechanism. Andrew Vazsonyi, U. S. Naval Ordnance Test Station.

50-219. Integral Controller for Use in Carrier Type Servomechanisms. R. L. Cosgriff, Curtiss-Wright Corp.

9:30 a.m.—Oil Industry Applications

Room D
H. P. MATHIEU, Presiding

CP.** Application of Electric Motors in the Oil Pumping Industry. T. C. Lloyd, Robbins and Myers, Inc.

CP.** Design and Application of AC Motors for Crude Oil Production. G. A. Smith, Shell Oil Co.

CP.** How the Petroleum Industry Uses Electric Power. W. H. Stueve, Oklahoma Gas and Electric Co.

C.P.** Electrical Engineering in Exploration for Petroleum. K. E. Burg, Geophysical Service, Inc.

2:00 p.m.—Transformers

Convention Hall
J. E. CLEM, Presiding

50-220. Single-Phase Power Transformer Formed Cores. T. D. Gordy, G. G. Somerville, General Electric Co.

50-225. Transformer Noise and Its Confinement. Corbett McLean, Pacific Power and Light Co.

50-216. Economical Design of a Threephase Transformer. Ladislav Cigánek, Bratislava, Czechoslovakia.

50-275. Variations of Tank Pressure with Transformer Loading in Sealed Transformers. E. W. Tipton, Westinghouse Electric Corp.

Fall General Meeting

50-217. Control Circuit Transformers. J. M. Frank, A. J. Hauck, Hevi Duty Electric Co. Presentation by title only.

50-273. Contributing Factors in Determining the Ratings of Power Transformers for Use on the Systems of the Hydro-Electric Power Commission of Ontario. D. B. Fleming, J. S. Lotimer, The Hydro-Electric Power Commission of Ontario. Presentation by title only.

2:00 p.m.—Oil Industry Applications

Room D
L. B. BLALOCK, Presiding

CP.** Application of AC Motors to Oil Well Pumping. Max Halderson, Phillips, Bartlesville.

CP.** Selection of the Electric Motors for Oil Well Beam Pumping. J. N. Poore, General Electric Co.

CP.** Development and Operation of Reda Submergible Pumps. Joe Carle, Reda Pump Co.

CP.** Electric Oil Pumping. W. C. Dreyer, F. K. Smith, Westinghouse Electric Corp.

CP.** Application of Capacitors in Oil Field Production. W. B. Helms, Southwestern Public Service Co.; W. R. Horrigan, C. B. Anderson Co.

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.

MEETING FEATURES

STAG SMOKER: Tuesday Evening, October 24 at 6:30 p.m., the Stag Smoker will be held in the Convention Hall of the Skirvin Hotel.

This traditional event is being planned so that old friendships may be renewed and new friends may be acquired. A fine buffet dinner supplemented by good entertainment is being planned so that an enjoyable evening may be had by all.

DINNER-DANCE: Wednesday Evening, October 25 at 7:00 p.m., a Dinner-Dance will be held in the Persian Room of the Skirvin Tower Hotel. This event will be the highlight of the week's Entertainment.

The floor show entertainment will include a variety of numbers, one of which is a program of songs presented by the Oklahoma City University Chorus. This Chorus is in much demand in this area because of its outstanding program of songs from Broadway show hits like "Oklahoma." Another number of special interest will be dances presented by a square dance group in their colorful costumes.

Dancing will be from 8:30 p.m. until 12:00 p.m.

Dress is optional.

JOINT LUNCHEON WITH THE OKLAHOMA CITY CHAMBER OF COMMERCE: An interesting event is planned for Friday Noon, October 27. The AIEE Fall General Meeting is joining the Oklahoma City Chamber of Commerce for a joint luncheon at the Chamber's Friday Forum in the Skirvin Tower Hotel Persian Room. This event will feature an address by Mr. T. G. LeClair, President AIEE, who will speak on the topic of "What Engineers Do For Your Business."

LADIES PROGRAM: The Ladies Headquarters, Parlor 1012, in the Skirvin Hotel has been reserved for the ladies. At all times there will be hostesses present to extend a welcome. Here the ladies may have a game of cards, a place to get acquainted and seek information.

At 2:30 p.m., Monday, the ladies will board chartered busses for a trip to the Oklahoma Historical Building on the State Capitol grounds where an interesting program enriched by Oklahoma's colorful Indian History will be presented.

At 11:30 a.m., Tuesday, the chartered busses will again pick up the ladies for a tour of the Oklahoma City sights, stopping at the Oklahoma City Country Club for brunch, then continuing the tour of the remaining scheduled sights.

At 7:00 p.m., Tuesday, dinner, bridge, and canasta is planned and will be held at the Beacon Club atop the First National Building overlooking Oklahoma City.

At 10:30 a.m., Wednesday, an art center tour and coffee will be held at Civic Center. An outstanding art exhibit is expected to be at the Center during this tour.

Thursday Noon a buffet luncheon and style show is scheduled for the ladies in the Crystal Room of the Skirvin Hotel.

Thursday Evening at 8:00 p.m., the men will be guests of the ladies for bridge and canasta in the Venetian Room of the Skirvin Hotel.

On Friday no formal arrangements have been planned. The Ladies Headquarters, Parlor 1012, in the Skirvin Hotel will be open and attended by hostesses for the convenience of the ladies.

SPORTS: Arrangements have been made for the pleasure of the registered members and their guests to play golf. Transportation will be provided for when desired and must be arranged for at the Sports Registration Desk in advance. Tickets must be obtained at the Sports Registration Desk in advance by those who wish to play.

INSPECTION TRIPS: The following inspection trips have been scheduled during the 1950 Fall General Meeting. Admission will be by ticket only and it is extremely important that members and their guests obtain these tickets at the Inspection Trip Desk as soon as possible upon their arrival.

Trip 1. A tour of the Oklahoma City oil field and contiguous territory to show a rotary drilling rig in operation, natural gasoline plants, electric-powered oil pumping stations, several types of electrically pumped oil wells, and a general view of oil wells located on the State Capitol Building's grounds. The tour, which will cover 20 miles, will take about two hours. Wednesday and Thursday, October 25 & 26, 2:00 p.m.

Trip 2. A tour of the mechanical production plant of the Oklahoma Publishing Company (the Printers of the Daily Oklahoman and Times) showing electrically operated and controlled presses, stereotype machinery, and wire photo service. This is one of the most modern newspaper publishing plants in the nation. Tour will take about 1½ hours. Monday and Thursday, October 23 & 26, 4:30 p.m.

Trip 3. An inspection trip will be arranged covering the Belle Isle Generating Station of the Oklahoma Gas & Electric Company. The feature interest at this station is the first commercial installation of a gas turbine unit applied to electric generation. This unit has been in service since July, 1949, and has been phenomenally successful both as to dependability and performance. It has attracted international attention and will be seen in actual operation.

This tour will also include the Mustang Station which consists of two 50,000-kw steam turbogenerating units operating at 850 pounds per square inch at 900 degrees Fahrenheit. One of these units has been in operation since May, 1950, and the second unit will be placed in operation about

January, 1951. This tour will consume approximately three hours and involve bus travel of about 25 miles. Thursday and Friday, October 26 & 27, 2:00 p.m.

Trip 4. This tour is to Tinker Air Force Base, the largest Air Force Depot of the United States Department of Defense. Objects of interest will include the only jet engine overhaul assembly line in any of the Air Force depots; a closehand view of the overhaul of the R-3350 airplane engine used in B-29's; and a close-up inspection of the Air Force's larger bombers. Also, a tour of the Commanding General's control room will be made and a lecture in the auditorium will be provided by the Commanding Officer, Major General F. S. Borum, on "What Goes on in an Air Depot." This activity employs more than 15,000 people and the electric load approximates 10,000 kw. The tour, by bus, will take approximately three hours and is scheduled to cover about 25 miles. Tuesday, October 24, 1:30 p.m.

Trip 5. A tour through the downtown Oklahoma City Building of the Southwestern Bell Telephone Company will afford an opportunity for members to see in operation a large communication center. The inspection party will see the following: the terminal of the buried intercity long-distance cables from the east to south; facility for local exchange telephone service; equipment and switchboard for originating, terminating, and "through" long-distance telephone traffic; information and intercepting switchboards; facilities for providing and monitoring radio program network service; facilities for telegraph and leased wire service; a switching center for teletypewriter exchange service; facilities and switchboard positions for mobile radio-telephone service; a modern test center. Wednesday, October 25, 2:00 p.m. & 4:30 p.m.

Trip 6. A tour, on Monday Evening, through the studio of WKY-TV Television Station will be of interest to the ladies as well as the members. WKY-TV was the pioneer television station in the state. The entire station will be inspected including studios, control rooms, transmitter rooms and movie projection rooms. Cameras and other equipment will be operated in full view of the audience. A balcony is available for the visitors to view live broadcasts and see and hear a program in actual process of being televised. The tour is scheduled to start at 8:00 p.m.

**Fluid Mapper Program,
Thursday, October 26, 8:00 p.m.**

Developed by Professor A. D. Moore largely during the past two years, the devices he has called fluid mappers cause streamline fluid flow to give visual simulations of electrostatic, electromagnetic, heat conduction, and other analogous fields. During the program, an artificial stone slab is cast, and operated in a fluid mapper. Many color slides of the beautiful flow patterns will be shown.

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Telephone

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Mrs. G. R. Whitaker

Decoration

Art Center Tour and Coffee

Mrs. J. S. Wantland

Mrs. W. R. Wolfe

Hostess

Bridge and Canasta

Mrs. Otis Howard

Mrs. Paul Berry

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Luncheon and Style Show

Finance

J. S. Wantland

Hotel

R. L. Jones, *Chairman*

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COMMITTEE MEETINGS

Monday, October 23

- 4:00 p.m.—Wire Communications Room 1003
- 5:00 p.m.—Energy Sources Subcommittee . . . Room 1005
- 8:00 p.m.—Technical Program Room 1003

Tuesday, October 24

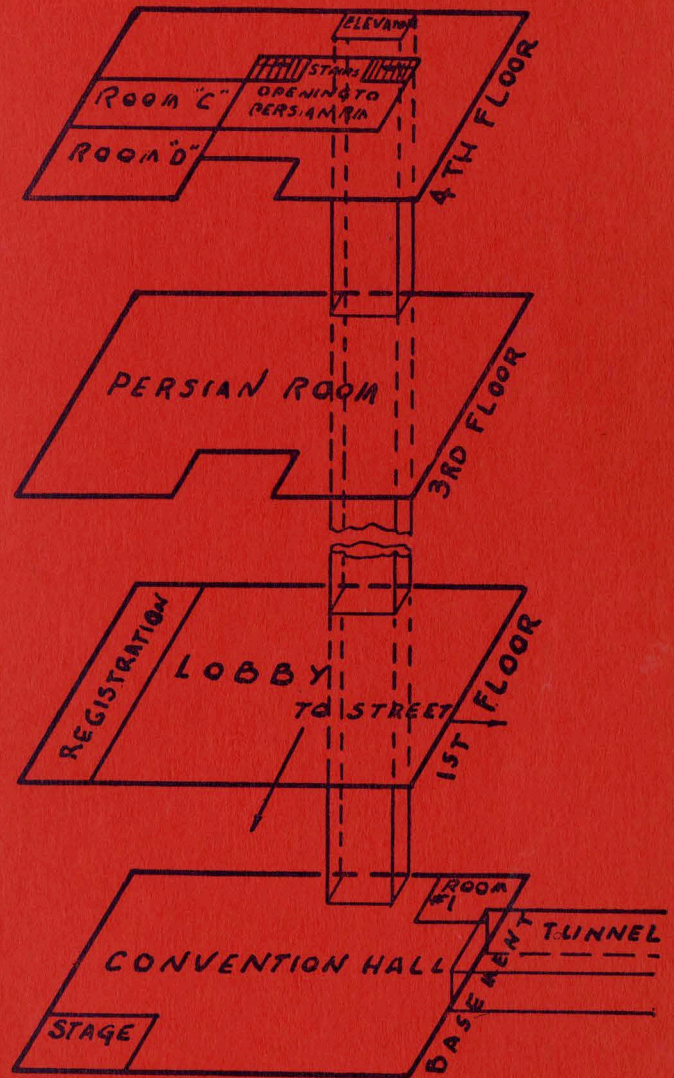
- 12:00 noon—Luncheon—Insulated Conductors
Administration Subcommittee . . . Blue Room
- 2:00 p.m.—Power Generation Room 1003
- 2:00 p.m.—Planning and Coordination Room 1005

Wednesday, October 25

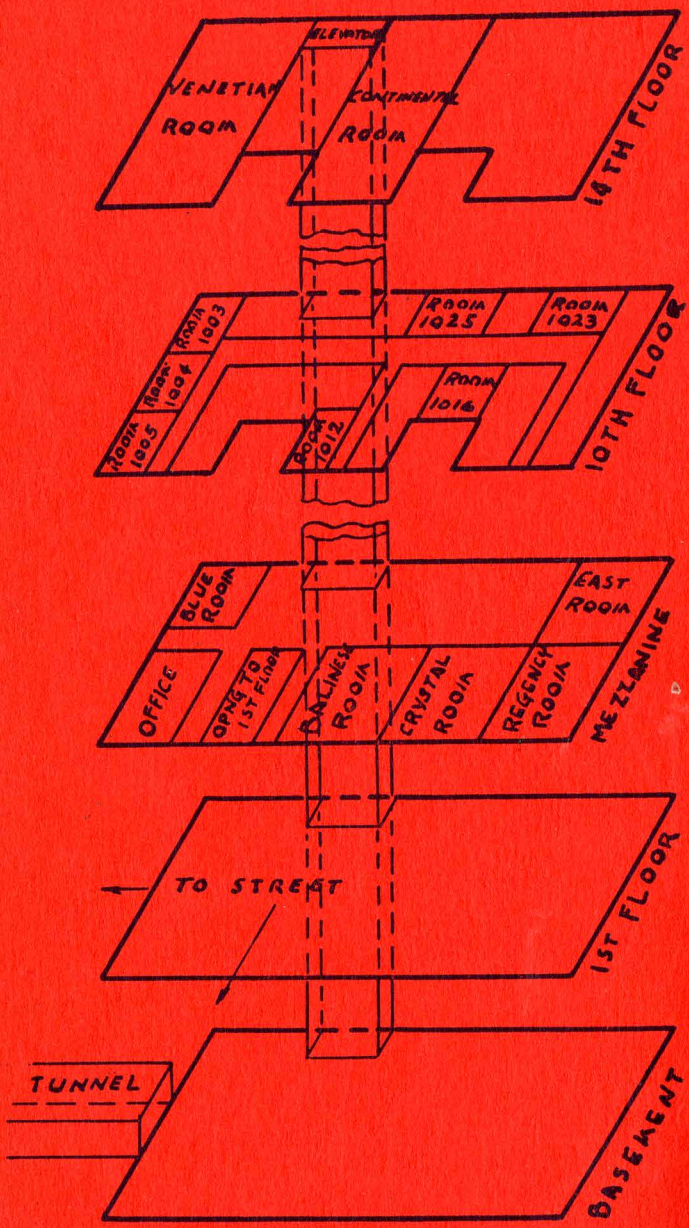
- 9:30 a.m.—Forum—Technical Committee Chairmen
Room 1
- 12:00 noon—Luncheon—District No. 7
Executive Committee East Room
- 2:00 p.m.—Forum—Technical Committee Chairmen
Room 1
- 2:00 p.m.—Education Room 1005
- 3:00 p.m.—Power Division Room 1003

Thursday, October 26

- 9:30 a.m.—Board of Directors Room C
- 9:30 a.m.—Industry Division Room 1003
- 9:30 a.m.—System Engineering Room 1005
- 12:00 noon—Luncheon—Board of Directors . . . East Room
- 2:00 p.m.—Board of Directors Room C
- 2:00 p.m.—Technical Advisory Room 1005
- 2:00 p.m.—Cathodic Protection Subcommittee . Room 1016



SKIRVIN TOWER HOTEL



SKIRVIN HOTEL