

# JOINT 7 AND 15 DISTRICTS MEETING

## APRIL 30-MAY 2, 1962

### St. Louis, Missouri



### Headquarters

### Chase Hotel

#### SCHEDULE OF EVENTS

##### Saturday—April 28

6:00 P.M. to 9:00 P.M.—  
Registration

##### Sunday—April 29

8:00 A.M.—Tour—Taum Sauk  
Project

12:00 NOON to 6:00 P.M.—  
Registration

##### Monday—April 30

8:30 A.M.—Registration

8:30 A.M.—General Session

12:00 NOON—Luncheon

1:00 P.M.—Tour—Chrysler Corp.

2:00 P.M.—Technical Session

6:00 P.M.—Cruise on “Mississippi  
Belle”

7:30 P.M.—Tour—McDonnell  
Aircraft Corp.

##### Tuesday—May 1

8:30 A.M.—Registration

9:00 A.M.—Student Counselors’  
Meeting

9:00 A.M.—Technical Sessions

12:00 NOON—Luncheon for  
Members and Students

1:00 P.M.—Tour—Peabody Coal Co.

2:00 P.M.—Technical Sessions

6:15 P.M.—Hospitality and  
Entertainment Hour

7:00 P.M.—Banquet

##### Wednesday—May 2

8:30 A.M.—Registration

9:00 A.M.—Technical Sessions

2:00 P.M.—Technical Sessions

**Electrical Engineering—Master and Servant of Technological Progress** is the theme for the Joint Mid-America District 7 and Southwest District 15 meeting to be held in St. Louis, Missouri April 30, May 1 and 2. Meeting headquarters will be the centrally located Chase Hotel facing Forest Park. The meeting will include a general session, twenty-six technical sessions, two Student Paper sessions, and a complement of inspection trips and entertainment. The principal speaker at the opening session will be Clarence H. Linder, Past President AIEE.

#### TECHNICAL PROGRAM

Approximately 100 papers sponsored by 10 Technical Program Sub-committees will certainly emphasize and enlarge on the theme. The program offers subjects of interest to all members, as the technical sessions were specifically designed around the interest of engineers in industry, educational institutions, engineering and specific groups in Mid-America District 7 and Southwest District 15.

Attention is called to the total program sequentially listed. Note the activities of the Engineering Education, Science and Electronics, Power, Industrial, Communication, Aviation, Instrumentation, Ferrous and Non-Ferrous Metals, Chemical and Petro-Chemical, and Maintenance Sub-Committees.

#### HOTEL RESERVATIONS

A block of rooms has been set aside at the **Chase Hotel**, Kingshighway and Lindell Boulevard, for members and guests attending the meeting. Requests for reservations should be sent to the hotel on the Hotel Reservation Card or by specifically referring to the AIEE meeting. The hotel will confirm each reservation. Reservations should be made as early as possible to obtain the best accommodations. If a request cannot be filled at the Chase a similar reservation will be made at another nearby hotel.

Rooms have been allotted for those attending the meeting at the following daily rates:

Single Room . . . . .	\$ 8.00 to \$15.00	Twin Bedroom . . . . .	\$14.00 to \$20.00
Double Bedroom . . . . .	\$13.00 to \$17.00	Suites . . . . .	\$24.00 to \$50.00

All rooms have private bath.

#### TRANSPORTATION

St. Louis is easily accessible by all modes of transportation. U. S. highways 40, 50, 66, 67 and the new Interstate 70 pass through the city. Ten railroads operate passenger service into St. Louis' Union Station and planes of six major airlines serve the city at Lambert St. Louis Municipal Airport.

#### REGISTRATION

Since the tour to the **Taum Sauk Project** will be on Sunday preceding the opening day of the meeting, many members will avail themselves of the opportunity to spend the week end in St. Louis. Accordingly, the registration desk in the Chase Lounge will be open from 6:00 p.m. to 9:00 p.m. Saturday, April 28 and from 12:00 noon to 6:00 p.m. Sunday, April 29. Registration desk hours during the meeting will be 8:30 a.m. to 6:00 p.m. Monday and Tuesday, and 8:30 a.m. to 10:00 a.m. Wednesday.

The initial mailing of the program will include return cards for registration and hotel reservations. Those attending are urged to fill out and mail the cards at once. This will help the Registration and Hotel Committees to accommodate members more efficiently on arrival. Badges and tickets will be ready at the registration desk for those registering in advance.

Registration fees are \$4.00 for members, \$7.00 for nonmembers, \$2.00 for ladies, and no fee for student members.

#### LUNCHEONS

Two noonday luncheons are planned in the Chase Club in the Chase Hotel. The luncheon on Monday, April 30, will be a joint event with the **St. Louis Electrical Board of Trade**, one of the outstanding organizations in this field. The speaker will be Dr. Patrick Conley, Vice President, Westinghouse Electric Corporation on the subject **Superhighways for Kilowatts**, S. C. Wright, Vice-President, District No. 7, presiding. Tickets are \$4.75.

Student Prize Paper Awards will be presented by W. H. Chase, President, AIEE, at the luncheon on Tuesday. The second feature of this meeting for members and students will be an address **“Project Mercury”** by Logan T. MacMillan, Companywide Project Manager for

*Continued on page 5*

# JOINT 7 AND 15 DISTRICTS MEETING

## ADVANCE COPIES OF PAPERS

Members may obtain preprints of numbered papers at the uniform price of 50¢ each (\$1.00 each to nonmembers), by sending enclosed order form and remittance to the AIEE Order Department, 345 East 47th Street, New York 17, 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.

## Monday, April 30

### 2:00 p.m. — Power Generation

Regency Room, Chase 1st floor  
Chairman: T. F. SKINNER, General Electric Company  
St. Louis, Missouri

- DP62-620. Full Automatic Operation — Riverside Power Station. L. R. Eddins, Gulf States Utilities Company, Lake Charles, Louisiana.
- DP62-633. Insurance Cost Considerations in the Design of Electrical Systems in Generating Stations. B. J. Stables, Black & Veatch Consulting Engineers, Kansas City, Missouri.
- DP62-634. Static Burner Control Systems. Ross Forney and Douglas McKinley, Forney Engineering Company, Dallas, Texas.
- DP62-655. Electrical Features of Public Service Company of Oklahoma's New Northeastern Generating Station. W. A. Baker, Public Service Company of Oklahoma, Tulsa, Oklahoma; and Roger J. Davis, Black & Veatch Consulting Engineers, Kansas City, Missouri.

### 2:00 p.m. — Feedback Controls

Lido Room, Chase 1st floor  
T. E. LAISURE, Westinghouse Electric Corporation  
Kansas City, Missouri

- DP.\* Static Contactors — Present and Future. D. A. Mueller and A. S. Nadrowski, Westinghouse Electric Corporation, Buffalo, New York.
- DP62-649. The Development of Performance Criteria for Automatic Control Systems. Dr. John Zaborszky, Washington University, St. Louis, Missouri.
- DP62-616. An Integral Square Self-Optimizing Adaptive Control. Dr. John Zaborszky and Roger Lee Berger, Washington University, St. Louis, Missouri.
- DP.\* Synthesis of Feedback Control Systems by Use of Analytic Expressions for Log-Root-LOC and Log Gain-Contours. Prof. T. J. Higgins, University of Wisconsin, Madison, Wisconsin; and Donald V. Starich, Northwestern University, Evanston, Illinois.
- DP.\* Describing-Function Analysis of a Type — 1 Control System With Asymmetrical Backlash Characteristics. Prof. T. J. Higgins, University of Wisconsin, Madison, Wisconsin; and John J. Poklar, AC Spark Plug Corporation, Milwaukee, Wisconsin.

### 2:00 p.m. — Medical and Biological Techniques

Hunt Room, Chase 2nd floor  
E. W. LOGAN, Emerson Electric Manufacturing Co.  
St. Louis, Missouri

- DP62-653. Factors Influencing the Effectiveness of Closed Chest Cardiac Massage and Defibrillation. John C. Schuder, Ph.D., and Harry Stoeckle, M.D., University of Missouri School of Medicine, Columbia, Missouri.

- DP62-617. Energy Transport Into the Closed Chest from a set of Very Large Mutually Orthogonal Coils. John C. Schuder, Ph.D., and Hugh E. Stephenson, Jr., M.D., University of Missouri School of Medicine, Columbia, Missouri.
- DP.\* Studies of the Unborn Heart: The Biomedical Engineering Program at Marquette. Saul D. Larks, Arthur C. Moller and A. B. Drought, Marquette University, Milwaukee, Wisconsin.

### 2:00 p.m. — Communications Data

Palladian Room, Chase 2nd floor  
F. R. ARNOLDY, Southwestern Bell Telephone Co.  
St. Louis, Missouri

- DP.\* Data Communications — Its Role in Management Decisions. H. J. McMains, American Telephone and Telegraph Company, New York, New York.
- DP.\* The Collins Communications and Data Processing System. Tom Prichett, Jr., Ph.D., Alpha Systems Division, Collins Radio Company, Dallas, Texas.
- DP.\* Control System With Individual Station Access and Error Checking Codes. E. L. Broders, American Telephone and Telegraph Company, Kansas City, Missouri.
- DP.\* Pipe Line Telecontrol. F. Vinton Long, Texas Eastern Transmission Corporation, Shreveport, Louisiana.

### 2:00 p.m. — Aviation Systems

Park Room, Chase 2nd floor  
WILLIAM M. GRAVES, General Electric Company  
St. Louis, Missouri

- DP62-641. Slope — Line Navigation. T. K. Vickers, Hazeltine Technical Development Center, Indianapolis, Indiana.
- DP62-642. An Electrical Distribution System for a Jet Age Airport. A. H. Rector, Burns and McDonnell Engineering Company, Kansas City, Missouri.
- DP.\* Project EROS. R. E. Perkinson, McDonnell Aircraft Corporation, St. Louis, Missouri.

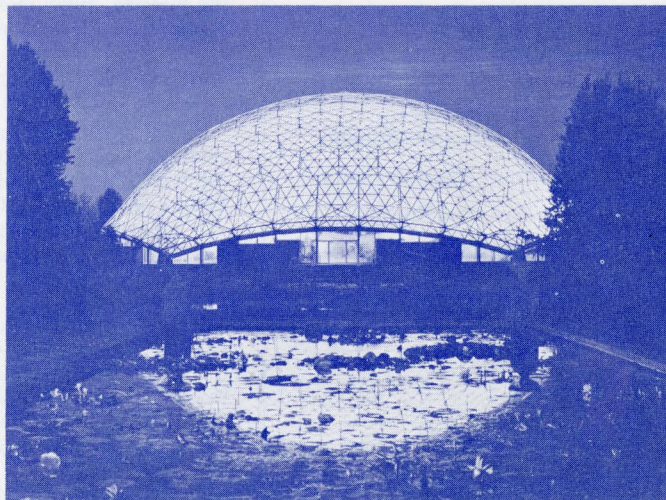
### 2:00 p.m. — District 7 Student Prize Papers Contest

Colonial Room, Chase 2nd floor

Participating universities are:

St. Louis University	Missouri School of Mines
University of Arkansas	Oklahoma State College
Kansas State College	University of Oklahoma
University of Kansas	Washington University
University of Missouri	University of Wichita

First place papers of AIEE Student Members from each university will be presented and judged for District honors.



The Climatron at the Missouri Botanical Garden in St. Louis.

# TECHNICAL PROGRAM

## 7:30 p.m. — Chemical and Petro-Chemical Forum

Regency Room, Chase 1st floor  
SUBJECT: Electronic Control. Applications in Chemical and Petro-Chemical Processes

Moderator: CLAUDE L. PARISH, Monsanto Chemical Company  
St. Louis, Missouri

### Panelists

JAN J. LOWEY-BALL, *Assistant Manager*, Chemical Design and Construction, Union Carbide International, Houston, Texas.

DR. LEON COOPER, *Professor*, Engineering Science, Washington University, St. Louis, Missouri.

MR. CHARLES THURMAN, *Engineering Supervisor*, Monsanto Chemical Company, Barton Plant, Luling, Louisiana.

MR. JOHN T. TEED, *Market Manager for Petroleum & Petro-Chemical Industry*, Minneapolis-Honeywell Company, Philadelphia, Pennsylvania.

MR. W. L. SKAGGS, *District Sales Manager*, TRW Computer Company, Houston, Texas.

MR. DONALD T. CUSACK, *Manager of Sales for Process Industries*, Hagan Chemicals and Controls, Inc., Pittsburgh, Pennsylvania.

## Tuesday, May 1

### 9:00 a.m. — Power Transmission

Regency Room, Chase 1st floor

Chairman: MILES MAXWELL, Westinghouse Electric Corporation  
Dallas, Texas

DP.\* Design Features of North-South Texas 345 Kv Line — Houston to Jewett Section. R. M. McCuiston, Houston Lighting and Power Company, Houston, Texas.

DP62-618. Transmission Losses and Economy Loading. J. R. Tudor, Ph.D., University of Missouri, Columbia, Missouri; and W. A. Lewis, Ph.D., Illinois Institute of Technology, Chicago, Illinois.

DP62-619. High Voltage Transmission — A Review of Economic Factors. G. S. Whitlow, Union Electric Company, St. Louis, Missouri.

DP62-650. Insulation Coordination — Bulk Substations. R. J. Becker, Union Electric Company, St. Louis, Missouri.

### 9:00 a.m. — Corrosion and Cathodic Protection

Lido Room, Chase 1st floor

HARLAN T. HOLMES, Arkansas Power and Light Company  
Little Rock, Arkansas

DP.\* Underground Corrosion. W. J. Schwerdtfeger, National Bureau of Standards, Washington, D. C.

DP62-621. Fundamentals of Cathodic Protection. B. Husock, Harco Corporation, Cleveland, Ohio.

DP.\* Corrosion and Cathodic Protection of Underground Lead Sheathed Cables. E. K. Benson, New York Telephone Company, Buffalo, New York.

DP.\* Cathodic Protection of Water Treatment Equipment. William Heideman, Mobile Oil Company, East St. Louis, Illinois.

### 9:00 a.m. — Teaching Techniques

Park Room, Chase 2nd floor

JOSEPH C. HOGAN, University of Missouri, Columbia, Missouri

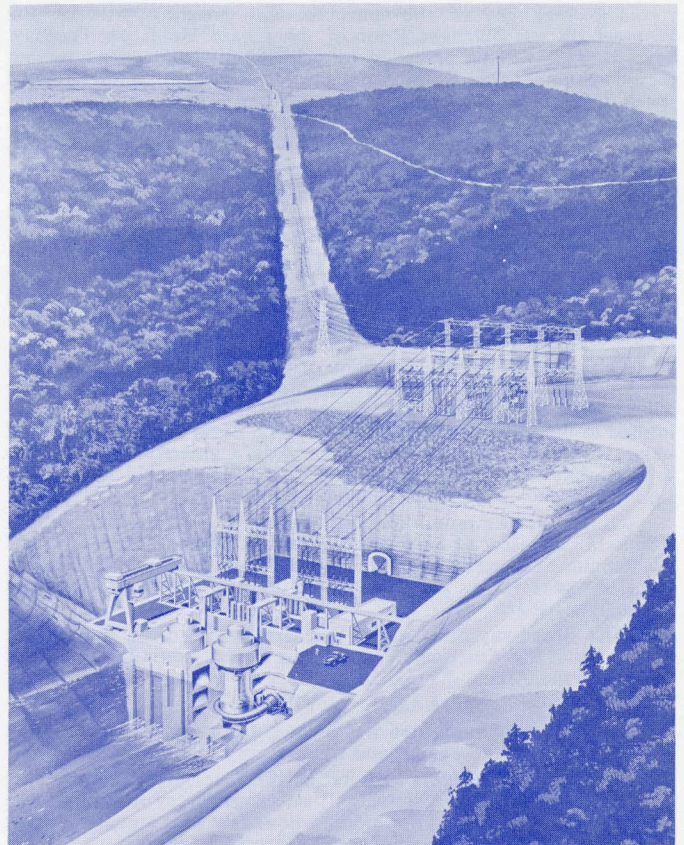
DP.\* Principles of Programmed Learning. Henry C. Ellis, General Programmed Teaching, Inc., Albuquerque, New Mexico.

DP.\* PLATO (Programmed Logic for Automatic Teaching Operations) as a Teacher of Electrical Engineering. D. L. Bitzer, Coordinated Science Laboratory; and E. C. Jordan, University of Illinois, Urbana, Illinois.

DP.\* Experiments With Programmed Learning in Teaching Undergraduate Electrical Engineering. E. M. Williams, Carnegie Institute of Technology, Pittsburgh, Pennsylvania.

DP62-640. Programmed Learning Experiments in Engineering at UCLA. Arnold Roe and Harry W. Case, University of California, Los Angeles, California.

DP.\* An Experiment in the Effect of Repetitive Steps in Programmed Learning. R. K. Moore, University of New Mexico, Albuquerque, New Mexico; Henry C. Ellis, General Programmed Teaching, Inc., Albuquerque, New Mexico; Charles M. Greenwood, University of New Mexico, Albuquerque, New Mexico; and Howard P. Lindburg, Teaching Machines, Inc., Albuquerque, New Mexico.



Taum Sauk power plant, switching station and upper reservoir.

### 9:00 a.m. — Instrumentation Process

Palladian Room, Chase 2nd floor

GEORGE J. FIEDLER, Sverdrup and Parcel & Associates, Inc.  
St. Louis, Missouri

DP62-643. Digital Speed and Length Measurement. W. C. Carter, Westinghouse Electric Corporation, East Pittsburgh, Pennsylvania.

DP62-646. Control and Instrumentation Phillips West Texas-Houston Line. H. V. Christensen, Phillips Pipe Line Company, Bartlesville, Oklahoma; and B. E. Ewers, Phillips Petroleum Company, Bartlesville, Oklahoma.

DP.\* Industrial Telemetry Systems and Their Applications. Robert L. Seaman, The Bristol Company, Bridgeton, Missouri.

### 9:00 a.m. — Aviation Communications

Hunt Room, Chase 2nd floor

FRED A. DARWIN, McDonnell Aircraft Corporation  
St. Louis, Missouri

DP.\* TV Display Markers for Air Traffic Control. D. M. Stuart and G. E. Fenimore, Hazeltine Technical Development Center, Indianapolis, Indiana.

DP.\* Strategic Air Command Communications and Electronics. Col. Paul R. Stoney, Offutt Air Force Base, Nebraska.

DP.\* Radio Interference. Dr. C. Bradner Brown, Navy Department, Washington, D. C.

### 9:00 a.m. — District 7 Student Prize Papers Contest

Colonial Room, Chase 2nd floor

### 2:00 p.m. — Power Distribution

Regency Room, Chase 1st floor

Chairman: C. B. DERRICK, Texas Power and Light Company  
Dallas, Texas

DP62-622. Load and Loss Factors of Urban Residential Distribution Transformer Loads. H. G. Meyer, Union Electric Company, St. Louis, Missouri; and P. J. McLafferty, Westinghouse Electric Corporation, St. Louis, Missouri.

# JOINT 7 AND 15 DISTRICTS MEETING

- DP.\* Small Town Distribution Planning — 4 Kv, 13 Kv, or 33 Kv. Frank J. Meyer, Public Service Company of Oklahoma, Tulsa, Oklahoma.
- DP62-736. Experience With an Automatic 2000 Kw Diesel Generator. Ray Appleman, Public Service Company of Oklahoma, Tulsa, Oklahoma.
- DP62-623. Economic Implication of Higher Temperature for Power Transformers. W. M. Rodgers, General Electric Company, Rome, Georgia.

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

Lido Room, Chase 1st floor

MAX PINKARD, Dallas Power and Light Company, Dallas, Texas

- DP62-654. Power System Problems of a Large Refinery Served from 138 Kv Transmission System. C. D. Wade, Cosden Petroleum Corporation, Big Spring, Texas.
- DP.\* Design Considerations for Electrical Systems in Chemical and Plastics Plants. Glenn Putnam, Texas Eastman Company, Longview, Texas.
- DP.\* The Changing Configuration of Semiconductor Rectifiers. W. H. Harman, Jr. and I. K. Dortort, I-T-E Circuit Breaker Company, Philadelphia, Pennsylvania.
- DP62-651. American Zinc Company Silicon Rectifier Installation, 750 Volt, 22,000 Ampere. J. Wesley Burgess, American Zinc, Lead and Smelting Company, East St. Louis, Illinois; and Ferris R. Summers, Westinghouse Electric Corporation, Houston, Texas.

## 2:00 p.m. — Teaching Techniques

Park Room, Chase 2nd floor

RICHARD K. MOORE, University of New Mexico  
Albuquerque, New Mexico

- DP62-624. Sound — Motion Pictures, a Fourth Dimension in Electrical Engineering Teaching. J. P. Neal, University of Illinois, Urbana, Illinois.
- DP.\* Do-It-Yourself Movies for Achieving Learning Objectives. J. E. Senne, Washington University, St. Louis, Missouri.
- DP.\* Teaching Digital Computers in Freshman Engineering Drawing Courses. C. J. Baer and W. P. Smith, University of Kansas, Lawrence, Kansas.
- DP.\* Communication in a Learning Situation. Bennett L. Basore, Dikewood Corporation, Albuquerque, New Mexico.

## 2:00 p.m. — Theoretical and Applied Science

Hunt Room, Chase 2nd floor

W. G. MARTIN III, Emerson Electric Manufacturing Company  
St. Louis, Missouri

- DP62-637. Reliability of Fuses in Scientific and Electronic Applications. W. A. Mathews, Bussmann Manufacturing Division, McGraw Edison Company, St. Louis, Missouri.
- DP62-625. The Negator — A New Synthetic Network Component. Pierre M. Honnell, Ph.D., Washington University, St. Louis, Missouri.
- DP62-626. Complex Plane Representation of Frequency Response Functions. E. L. Michaels, Ph.D., University of Houston, Houston, Texas.
- DP.\* Particle Accelerators from the Engineer's Viewpoint. T. H. McCreer, Argonne National Laboratory, Argonne, Illinois.

## 2:00 p.m. — Instrumentation for Power Generation

Colonial Room, Chase 2nd floor

P. D. WOODRUFF, General Electric Company, Houston, Texas

- DP.\* Control and Instrumentation for Nuclear Power Plants. A. H. McQueen, General Electric Company, San Jose, California.
- DP62-644. Experience with Combustion Control Using Transistorized Operational Amplifiers. Bell Sample, Houston Light and Power Company.
- DP62-645. Instrumentation and Data Logging Changes Required for Conversion of Power Plant to Computer Control. Garen Balekjian, Ph.D., Consolidated Systems Corporation, Monrovia, California; and James W. Ratz, Allis-Chalmers Manufacturing Company, West Allis, Wisconsin.

## 2:00 p.m. — Communication for Flight and Space

Palladian Room, Chase 2nd floor

GEORGE W. FOX, Union Electric Company, St. Louis, Missouri

- DP.\* Space Communications. M. G. Staton, Astro-Electronics Division, Radio Corporation of America, Princeton, New Jersey.

- DP.\* The Public Communication of Flight Information at Air Terminals. R. G. Coffeen, Burns and McDonnell Engineering Company, Kansas City, Missouri.

## Wednesday, May 2

### 9:00 a.m. — Protective Relaying

Regency Room, Chase 1st floor

Chairman: W. C. Woods, Westinghouse Electric Corporation  
Houston, Texas

- DP.\* What is Being Done by AIEE Relay Committee. J. R. Linders, Cleveland Electric Illuminating Company, Cleveland, Ohio.
- DP62-627. Transmission Line Reclosing as Affected by Tapped Motor Loads. R. A. Larner and L. Schwobel, Texas Electric Service Company, Fort Worth, Texas.
- DP62-628. Problems Encountered in Microwave Relaying. G. T. De La Mayr, Gulf States Utilities Company, Beaumont, Texas.

### 9:00 a.m. — Industrial Process Equipment

Lido Room, Chase 1st floor

J. R. SHOUP, Wagner Electric Corporation, Houston, Texas

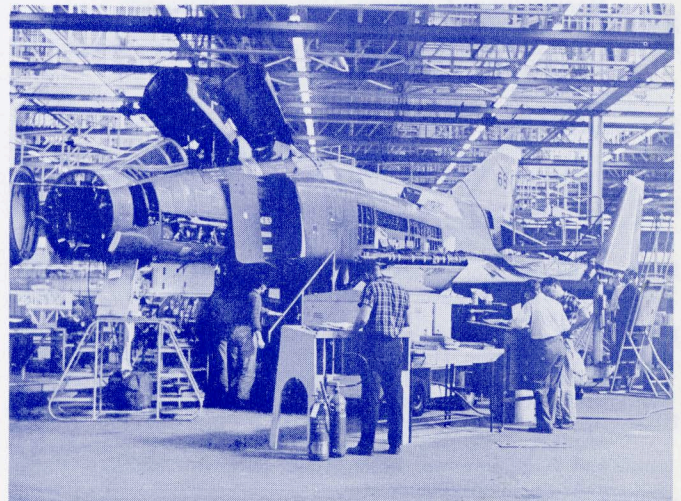
- DP.\* Application of Electrical Equipment in the Fire Brick Industry. Denver M. Hudson, A. P. Green Fire Brick Company, Mexico, Missouri.
- DP.\* Distribution Problems Encountered in Paper Mills Expansions. O. E. Lundelius and H. E. Wilson, Jr., Brown and Root, Inc., Houston, Texas.
- DP.\* Applications of Electrical Equipment in the Paper Industry. B. B. Prater, International Paper Company, Mobile, Alabama.
- DP.\* Automation of a Filtered Water System. Temple N. Brown, Reynolds Metals Company, Malvern, Arkansas.

### 9:00 a.m. — Underground Mining

Hunt Room, Chase 2nd floor

JOHN R. LONG, Meramec Mining Company, Sullivan, Missouri

- DP62-629. AIEE Report on Preliminary Recommended Practices for Process Plant Power Distribution. A. C. Lordi, Chairman, Westinghouse Electric Corporation, E. Pittsburgh, Pa.
- DP.\* Preliminary Recommended Operating Practices for Maintenance in the Underground Mine. A. E. Molinski, Bethlehem Mines Corporation, Johnstown, Pennsylvania.
- DP.\* Preliminary Recommended Standards for Mine Power Centers. Mining Industry Committee, Standards Sub-committee.
- DP.\* Underground Mine Power Distribution Systems. Douglas Parker, National Potash Company, Carlsbad, New Mexico; and A. T. Jones, Duval Sulphur and Potash Company, Carlsbad, New Mexico.



F4H Phantom II on the assembly line at the McDonnell Aircraft Corporation.

# TECHNICAL PROGRAM

## 9:00 a.m. — Industrial Maintenance

Palladian Room, Chase 2nd floor

R. G. RETTIG, General Electric Company, St. Louis, Missouri

- DP62-652. Maintenance of Magnetic Amplifiers in a Steel Mill. J. H. Harper, Lone Star Steel Company, Lone Star, Texas.
- DP62-638. Designing Industrial Plant Electrical Systems from a Maintenance Viewpoint. W. B. Murney, Mississippi Lime Company, Ste. Genevieve, Missouri.
- DP62-648. Total Maintenance on Rotating Electrical Equipment. K. J. Doll, General Electric Company, Schenectady, N. Y.

## 9:00 a.m. — Drive Systems

Colonial Room, Chase 2nd floor

T. HARMON, Granite City Steel Company, Granite City, Illinois

- DP.\* Applying Motors and Control to Sendzimer Mills. Anthony V. Baron, Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin.
- DP.\* Continuous Annealing Line Drive Systems. R. M. Bosshardt, Reliance Electric Corporation, Cleveland, Ohio.
- DP.\* Modern Electrical Drive Systems for Steel and Non-Ferrous Metals Industries. W. H. Dauberman, Westinghouse Electric Corporation, East Pittsburgh, Pennsylvania.
- DP.\* Power Rectifiers for Drives in the Metal Industry. A. E. Brown, Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin.

## 2:00 p.m. — Generation and Transmission

Regency Room, Chase 1st floor

Chairman: N. C. SPENCER, Gulf States Utilities Company  
Beaumont, Texas

- DP.\* Automatic Control for the Tatum Sauk Project. R. G. Jonas and M. R. Meagher, Union Electric Company, St. Louis, Missouri.
- DP62-647. Logic Diagrams — A Tool for Communications in the Design and Operation of Control Systems for Generating Stations. J. P. Kesler and H. J. Windisch, Black and Veatch Consulting Engineers, Kansas City, Missouri.
- DP62-737. Design Features of a Large 138 Kv Generation-Transmission Substation. Jack C. Wells, Public Service Company of Oklahoma, Tulsa, Oklahoma.
- DP62-636. Conversion of Single Pole 69 Kv Line to 138 Kv Single Pole. W. R. Harris, Gulf States Utilities Company, Beaumont, Texas.

## 2:00 p.m. — Practical Design Considerations

Lido Room, Chase 1st floor

J. W. LOWE, Westinghouse Electric Corporation, El Paso, Texas

- DP62-639. Practical Methods of Calculating Values in Commercial and Industrial Power Systems. G. M. Young, Westinghouse Electric Corporation, St. Louis, Missouri.
- DP62-630. Criteria and Performance of an Optimized Drive for a Pivoted Hydromechanic Test Facility. A. S. Godar, W. J. Roa, Sverdrup and Parcel and Associates, Inc., St. Louis, Missouri; and D. E. King and C. M. Smith, Allis-Chalmers Manufacturing Company, Milwaukee, Wisconsin.
- DP62-631. Interesting Features of the Electrical System for Chesapeake Bay Bridge-Tunnel Project. P. W. Reime and D. Paul Ayers, Sverdrup and Parcel and Associates, Inc., St. Louis, Missouri.

## 2:00 p.m. — Surface Mining

Hunt Room, Chase 2nd floor

RALPH BAILEY, Peabody Coal Company, St. Louis, Missouri

- DP.\* Preliminary Recommended Practices for Open Pit Mine Power Distributions. L. E. Briscoe, Ayrshire Collieries Corporation, Indianapolis, Indiana.
- DP.\* Semiconductor Control for Large Excavators. A. M. Vance, Westinghouse Electric Corporation, East Pittsburgh, Pennsylvania.
- DP.\* Application, Use, and Maintenance of Cable Connectors. George Person, United States Steel Corporation, Uniontown, Pennsylvania; and Herman Cordes, United States Steel Corporation, Lynch, Kentucky.
- DP.\* Application and Use of Cable Fault Finders. T. M. Urban, Multi-Amp Electronics Corporation, Cranford, New Jersey; and J. E. Johnson, Philadelphia Electric Company, Philadelphia, Pennsylvania.
- DP.\* Operation of a Remotely Controlled Continuous Miner. Robert T. Taylor, Peabody Coal Company, St. Louis, Missouri.



Seventy cubic yard shovel at the River King Mine.

## 2:00 p.m. — Electric Utility Maintenance

Palladian Room, Chase 2nd floor

R. S. MINER, Dallas Power and Light Company, Dallas, Texas

- DP.\* Maintenance of Major Substation Equipment. R. E. Sybert, D. E. Simmons, and E. H. McKinley, Houston Light and Power Company, Houston, Texas.
- DP.\* Power Distribution Systems for Railroad Classification Yards. W. O. Muller, Missouri Pacific Railroad Company, St. Louis, Missouri.
- DP62-635. Maintenance Practices in Electric Utility Communications and Protection Equipment. C. B. Derrick, Texas Power and Light Company, Dallas, Texas.

## 2:00 p.m. — Control Systems

Colonial Room, Chase 2nd floor

W. R. ARMBRUSTER, Dow Metal Products Company  
Madison, Illinois

- DP62-632. Remote Control of Soaking Pit Cover Cranes by Pit Crane Operators. J. O. Burcham, Sheffield Division, Armco Steel Corporation, Kansas City, Missouri.
- DP.\* Application of Computers to Primary Rolling Mills. A. W. Smith, Westinghouse Electric Corporation, East Pittsburgh, Pennsylvania.
- DP.\* Process Line Control Digital Regulation Methods. R. R. Potts, Reliance Electric Corporation, Cleveland, Ohio.
- CPA62-453. Statistical Evaluation of Automatic Gage Control in Hot Strip Mills. M. J. Cuoco and J. C. Price, General Electric Company, Schenectady, New York.

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Mercury, McDonnell Aircraft Corporation. Professor W. M. McCabe, St. Louis University, presiding.

Tickets are \$4.75 for members and \$2.50 for students and counselors. Luncheon time on both days is 12:00 o'clock.

## ENTERTAINMENT

A delightful, informal, five hour cruise downstream on the Mississippi River with dinner and dancing aboard the "Mississippi Belle" is scheduled for Monday evening, April 30. Passengers will be welcomed aboard at 6:00 p.m., an hour before the boat leaves the levee at the foot of Locust Street. Points of interest along the river will be observed and described and a "live" orchestra will furnish music for dancing until the "Belle" returns at 11:30 p.m. Since the capacity of the boat is limited to one hundred ten passengers and since tickets will be distributed on a first come, first served basis, members are urged to make reservations well in advance. The cost of the cruise, including dinner, is \$6.00 a person.

# JOINT 7 AND 15 DISTRICTS MEETING

The highlight of the entertainment program will be the **Banquet** on the Starlight Roof of the Chase Hotel on Tuesday, May 1. This will be preceded by a hospitality and entertainment period in the Zodiac Room from 6:15 to 7:00 p.m. The principal speaker at the banquet will be Edwin M. Clark, President, Southwestern Bell Telephone Company who will talk on the subject, "The Engineer and the Business World." Tickets for the banquet, including cocktails, are \$10.00 a person. Dress, informal.

Numerous attractions are available to the visitor. The new **Houston baseball team** of the expanded National League will be in St. Louis for the first time for games with the St. Louis Cardinals at Busch Stadium. No golf tournament is scheduled but arrangements will be made for members to play on most of the many courses around St. Louis. Bowlers will find ample accommodations in the abundance of modern automatic alleys in the metropolitan area.

One of the largest collections of transportation vehicles from horse-drawn cars to modern locomotives is displayed at the **Museum of Transport**, the fabulous Lindbergh Trophies are exhibited in the Jefferson Memorial Building, floral displays in natural habitats may be seen in the ultramodern Climatron and no trip to St. Louis is complete without a visit to the world famous St. Louis Zoo and to nostalgic Gaslight Square.

Other popular points of interest are the Art Museum, Milles Fountain, Museum of Science and Natural History, St. Louis and Washington Universities, Eugene Field home, Campbell House, the Old Court House and the site of the new Jefferson Memorial (Riverfront) Plaza.

The Broadway hit "Advise and Consent" will be the current stage play at the American Theatre and the St. Louis Police Circus will be at the Arena.

## LADIES' EVENTS

The Ladies' Committee has arranged a program of activities that will be most enjoyable and entertaining.

**Ladies' Headquarters** will be in the Georgian Room in the Park Plaza Hotel where coffee will be served every morning from nine to ten-thirty. Here the ladies will renew acquaintances, meet new friends and plan the day, or play cards and visit.

**Monday at 9:30 a.m.**, buses will leave the hotel for an interesting tour of St. Louis. Visits will be made to the St. Louis Cathedral, Gaslight Square with a glimpse of interesting shops, the famous Climatron in Shaw's Garden, Forest Park and the Jewel Box, and the Gown Room and Country Store at Jefferson Memorial. The tour will end at the lovely home of the Chairman of the local Women's Auxiliary. Here luncheon will be served in an atmosphere of the gaslight era. All of the above will be by courtesy of the Women's Auxiliary of the St. Louis Section.

**Monday night** the ladies will join the men for the cruise, including dinner and dancing, on the Mississippi River. Boarding time, six o'clock.

**Tuesday, at noon**, luncheon will be served and a fashion show presented in the famous Gourmet Room in the Park Plaza Hotel. Fashions will be by Eunice Farmer whose shop has a unique and attractive French flair. Her syndicated question and answer column, "Sew Simple," is carried in over 80 newspapers throughout the country. Tickets for the luncheon and fashion show are \$4.50.

**Tuesday night** the ladies will join the men at 6:15 for the hospitality hour and banquet.

**Wednesday**, following the coffee hour, will be open for side trips or shopping in the Maryland Plaza area or in downtown St. Louis.

## INSPECTION TRIPS

Varied and informative trips have been planned for members attending the District meeting.

An unusual pre-meeting attraction will be an all-day tour on Sunday, April 29 to Union Electric's **Taum Sauk pumped storage** power development which is drawing world wide attention. Located 90 miles southwest of St. Louis in the rugged St. Francois Mountains this \$50,000,000 project will add 350,000 kw to system capability of some 2,400,000 kw. Its two reversible pump-turbines will be the most powerful units of this type ever built and the plant will be the largest of its kind in the United States when completed in the spring of 1963.

Simply described, the Taum Sauk project consists of a reservoir on a mountain top, connected by a 7,000 foot long tunnel to the power house some 800 feet below on a lower reservoir formed by damming a small stream.

Off-peak steam power will be used to pump water from the lower to the upper reservoir from which it can be released as

needed for generating power. Primary purposes of the project are to provide peaking capacity and emergency reserve.

The drive, winding through the scenic Ozark Highlands, offers many features of natural beauty and points of historical interest some of which will be visited. These include among others, a Tennessee walking horse farm, Ft. Davidson and the Elephant Rocks.

Buses will leave the Chase Hotel promptly at 8:00 a.m. and return there at approximately 6:30 p.m. Cost of the tour will be \$4.00 including luncheon at the noted Greystone Inn, Ironton, Missouri. Ladies are invited and advance reservations are necessary. Reservations should be made by writing direct to Mr. H. E. Gove, Union Electric Company, P.O. Box 149, St. Louis 66, Missouri.

Two inspection trips have been arranged for Monday, April 30. Buses will leave the Chase Hotel at 1:00 p.m. for the **Chrysler Corporation**, St. Louis Assembly Plant at Fenton, Missouri. In this newest Chrysler plant with thirty-one acres of manufacturing space under one roof visitors will see Plymouth, Dodge, Valiant and Lancer automobiles assembled on a highly automated assembly line capable of producing a car a minute, or 960 per day on two shifts. All four automobiles, with their many choices of engines, transmissions, axles, colors, and so on, are assembled on one line. This operation calls for tight scheduling and control to insure that the right parts are available at the right time on the assembly line. Electronics plays a major role in this operation. Tickets for the tour are \$2.00 each.

The second inspection trip of the day will be to the **McDonnell Aircraft Corporation**. Those who arrive in St. Louis at Lambert Field catch a few glimpses of the vast physical properties that make up this enterprise. McDonnell is one of the largest airframe manufacturers in the United States. Activity has been devoted primarily to the development of airplanes, missiles, helicopters and spacecraft.

The tour will include observation of the manufacture of Mercury Capsules through the windows of the "White Room," examination of an actual Mercury Capsule of the type that has completed successful flights into space, and other interesting activities in the McDonnell plant. Buses will leave the Lindell Boulevard entrance of the Chase at 7:30 p.m. Wives are invited. Cost is \$2.00 a person.

A trip to the **Peabody Coal Company River King Mine** at Freeburg, Illinois is scheduled for Tuesday afternoon, May 1. The River King Mine, located in the famous Belleville coal district of southern Illinois, is one of the more highly mechanized coal strip mines in the world. At this mine one of the largest stripping shovels ever built—a machine with a 70 cubic yard dipper capacity—digs overburden ranging from 65 feet to more than 100 feet deep. This shovel can move 3500 yards per hour. A large 1250-B walking dragline with 200-ft. boom and 30 yd. bucket trims the spoil slopes and cuts down the piles of spoil. A wheel excavator, standing 176 feet high, digs material on one side of the open pit and carries the dirt by conveyor system to the spoil area some 400 feet away at speeds in excess of 1000 feet per minute.

Production began at River King in August 1957 from a rich coal seam 5½ to 6 feet thick. In 1961 the mine produced 2,750,000 tons.

The operation also uses electric-powered rotary type drills, electric shovels for coal loading, and a large number of other types of heavy machinery. The washing and preparation plant has a capacity of 1200 tons per hour.

Bus transportation from Hotel Chase at 1:00 p.m., returning at 5:00 p.m. Cost is \$2.50 per person.

All time references are to Central Daylight Saving Time.

## MEETING COMMITTEE

Members of the **Mid-America and Southwest District Meeting Committee** are: G. P. Gamble, chairman; H. J. Kongabel and G. F. Kyte, vice-chairmen; H. E. Gove, secretary; R. M. Lehman, chairman, Registration & Information Committee; E. C. Mulcahy, chairman, Entertainment Committee; D. P. Ayers, chairman, Hotel & Equipment Committee; J. K. Howell, chairman, Technical Program Committee; M. J. Fisher, chairman, Student Activities; Mrs. G. S. Whitlow, chairman, Ladies' Activities Subcommittee; E. E. Gilcrease, chairman, Publicity Committee; C. B. Fall, chairman, Budget & Finance Committee, and C. E. Howe, Section Liaison.

Issued by

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS  
345 East 47th Street, New York 17, N. Y.

PRINTED IN U.S.A.