

AMERICAN
INSTITUTE
of
ELECTRICAL
ENGINEERS



Pacific
General
Meeting

●
AUGUST 15-17
1955

● *at the*
FINLEN HOTEL
Butte, Montana

GENERAL INFORMATION

For those who attend the Pacific General Meeting in Butte, Montana, this year, there awaits an interesting program of stimulating technical sessions and social entertainment. With the members of the Montana Section as hosts, we can assure our guests a most enjoyable and well-spent visit. Headquarters for the meeting is the Finlen Hotel.

On Monday morning, August 15, Mr. W. H. Mott, General Chairman, will open the General Session. At this time we will be welcomed by the Mayor of Butte, Montana and be entertained by the Virginia City Players.

On the social side, there will be an informal Western Outing at the scenic Columbia Gardens on Monday evening and on Wednesday evening, a Dinner Dance at the Butte Country Club.

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. Student members 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 "Technical Sessions Guide" 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 on TRANSACTIONS Papers in duplicate must be left with the chairman and/or sent to Edward C. Day, Assistant Secretary, Committee on Technical Operations, AIEE, 33 W. 39th Street, New York 18, N. Y., before August 31, 1955. Discussions received later may not be included, depending upon the printing schedule of the paper to which the discussion is directed. The original typewritten double-spaced copy, together with original illustrations as photographs or inked tracings should be submitted.

Advance Copies of Papers may be purchased by members at the registration desk at the uniform price of \$4.00 each (\$8.00 each 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 \$10.00 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 78, N. Y. The TRANSACTIONS Papers will also be published in the Bimonthly Publications. Note: Unnumbered Conference Papers (CP.*) may be available for sale 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.

SCHEDULE OF EVENTS

SUNDAY, AUGUST 14

3:00 p.m. Registration

MONDAY, AUGUST 15

8:00 a.m. Registration

10:00 a.m. General Session

12:00 noon Students Luncheon

1:15 p.m. Trip to Anaconda Reduction Works

2:00 p.m. Butte Hill Surface Trip for Kelley Mine

2:00 p.m. Transformers and Relays
Instruments and Measurements

6:00 p.m. Informal Western Outing

TUESDAY, AUGUST 16

8:45 a.m. Trip to Anaconda Reduction Works

9:30 a.m. Butte Hill Surface Trip for Kelley Mine

9:30 a.m. Electric Space Heating and Heat Pumps
Magnetic Amplifiers

1:15 p.m. Trip to Anaconda Reduction Works

2:00 p.m. Butte Hill Surface Trip for Kelley Mine

2:00 p.m. Land Transportation
Transmission and Distribution

6:00 p.m. Dinner Dance

WEDNESDAY, AUGUST 17

8:45 a.m. Trip to Anaconda Reduction Works

9:30 a.m. Butte Hill Surface Trip for Kelley Mine

9:30 a.m. Cathodic Protection
Television, Measurements and Interference

1:00 p.m. Ladies Luncheon

1:15 p.m. Trip to Anaconda Reduction Works

2:00 p.m. Butte Hill Surface Trip for Kelley Mine

2:00 p.m. Community Antennas, Propagation and
Satellites
Safety

Monday, August 15

10:00 a.m.—General Session

Butte High School Auditorium
W. H. MOTT, Presiding

2:00 p.m.—Transformers and Relays

Montana Power Co. Auditorium
C. H. BJORQUIST, Presiding
Committees on Transformers and Relays

- CP.* Minimum Cost Loading of Transformers. Arthur Klopfenstein, Southern California Edison Co.
- 55-27. Impulse Tests on the Low-Voltage Windings of III Distribution Transformers. J. E. Holcomb, General Electric Co. Re-presented for discussion.
- CP.* Automatic Reclosure—Operating Experience on the Pacific Coast. Report of the Pacific Coast Subcommittee, of the Committee on Relays.
- 55-615. Automatic Load Shedding. Report of the Project III Committee on Devices for Control of Load Shedding and System Separation.
- CP55-621. The Design Testing and Application of High Voltage Condenser Bushings. E. J. Grimmer, Westinghouse Electric Corp.
- ### 2:00 p.m.—Instruments and Measurements
- Copper Bowl Room
W. S. PRITCHETT, Presiding
Committee on Instruments and Measurements
- CP55-616. A New Temperature Relay for Use with Resistance Temperature Detectors. M. E. Hodges, General Electric Co.
- CP55-617. Explosion Proofing Instrumentation Equipment for Flight Test Use. B. F. Hager, Boeing Airplane Co.
- CP55-628. A CRT Spot Size Measuring Instrument. R. B. Kuhn and D. Levine, Goodyear Aircraft Corp.

Tuesday, August 16

9:30 a.m.—Electric Space Heating and Heat Pumps

Montana Power Co. Auditorium
L. N. ROBERSON, Presiding
Committee on Domestic and Commercial Applications

- CP.* Where Do We Go From Here? L. M. Peoples, Cowlitz County Public Utilities District.
- CP.* What Will We Use for Heat Tomorrow? L. N. Roberson, L. N. Roberson Co.
- CP55-626. Electricity in the Cannery. R. S. Wilson, Richmond, Calif.

9:30 a.m.—Magnetic Amplifiers

Copper Bowl Room
HARRY ECKERLE, Presiding
Committee on Magnetic Amplifiers

- CP55-619. Magamp Regulating Systems for Synchronous Machines. J. V. Kresser, Westinghouse Electric Corp.
- 55-620. Magnetic Amplifier Sequential Circuits of the I Assymetrical Type. A. S. Fitzgerald, A. S. Fitzgerald Electrical Research Labs.
- CP.* The Use of Tantalum Capacitors in Magnetic Amplifier Circuits. R. G. Engman, Westinghouse Electric Corp.
- CP.* A Signal Discriminating Magnetic Amplifier. G. E. Lynn and J. F. Ringelman, Westinghouse Electric Corp.
- CP.* An Excited Voltage Regulator for Environmental Free Aircraft Alternators. R. V. Evans, North American Aviation.

2:00 p.m.—Land Transportation

Copper Bowl Room
E. A. FOSTER, Presiding
Committee on Land Transportation

- 55-627. Harmonics from Railroad Rectifiers on Power II System Reduced by Filters. S. J. Bozzella, Long Island Lighting Co., J. L. Kennedy, Long Island Railroad, M. Mahr, Jr., New York Telephone Co., and H. W. Wahlquist, Ebasco Services, Inc.
- CP.* Modern Electric Mine Haulage Equipment. J. W. Brauns, General Electric Co.
- CP.* The Growth of Safety Features in the Control of Electric Locomotives for Underground or Industrial Use. Allen McLanahan, Westinghouse Electric Corp.

2:00 p.m.—Transmission and Distribution

Montana Power Co. Auditorium
E. C. Starr, Presiding
Committee on Transmission and Distribution

- 55-622. Bureau of Reclamation 230-Kilovolt Transmission III Lines in North Dakota. T. M. Austin, Bureau of Reclamation.
- 55-623. Power Autotransformer Current Interruption III with an Air-Break Disconnect Switch. M. W. Anderson, Lighting Dept., City of Seattle.
- CP.* Microwave, a New and Powerful Tool for Electric Utility Operation. T. A. Combellick, Westinghouse Electric Corp.
- CP55-624. Limitations in the Regulation of Non-Infinite Bus Synchronous Systems. B. J. Wilson and W. K. Gardner, Naval Research Lab.

Wednesday, August 17

9:30 a.m.—Cathodic Protection

Silver Bow Room
R. M. WAINWRIGHT, Presiding
Committee on Chemical Industry

Panel Discussion on Cathodic Protection Practices:

- 1) Cathodic Protection in Electric Distribution Systems. O. W. Zastrow, REA.
- 2) Cathodic Protection in Telephone Underground Systems. G. G. Thomas, Mountain States Tel. & Tel. Co.
- 3) Cathodic Protection in Gas Distribution Systems (non-stray current areas). D. P. Price, Montana-Dakota Utilities Co.
- 4) Cathodic Protection in Gas Distribution Systems (stray current areas). C. R. Davis, Montana Power Co.
- 5) Cathodic Protection of Buildings, Refineries, and Industrial Plants. H. J. Keeling, Consulting Engineer.
- 6) Instruments for Cathodic Protection. R. M. Wainwright, University of Illinois.

55-625. Cathodic Protection Circuits. E. W. Schwarz and
II R. M. Wainwright, University of Illinois, Represented for discussion.

9:30 a.m.—Television, Measurements and Interference

Montana Power Co. Auditorium
J. B. EPPERSON, Presiding
Committee on Television and Aural Broadcasting Systems

- CP.* A New Recording Method for Color TV Using Black and White Film. W. L. Hughes, Iowa State College.
- CP55-618. Pacific Northwest Television. Dave Green, KXLY-TV.
- CP.* Harmonic Measurements on Television Transmitters. W. S. Byers, General Electric Co.
- CP.* Design of Electronic Equipment for Radio Interference Reduction. H. M. Sachs and A. L. Albin, Armour Research Foundation of Illinois Institute of Technology.

2:00 p.m.—Community Antennas, Propagation and Satellites

Montana Power Co. Auditorium
G. R. TOWN, Presiding
Committee on Television and Aural Broadcasting Systems

- CP.* VHF-UHF Tropospheric Research at the National Bureau of Standards. J. W. Herbstreit, National Bureau of Standards.

- CP.* Satellite and Booster Station Allocation Developments. O. W. B. Reed, Jr., Jansky and Bailey.
- CP.* Experience in Receiving and Rebroadcasting UHF Television Signals. J. B. Watkinson, KIMA. (presented by Verne Russell.)
- CP.* Community Television Antenna Systems. A. S. Taylor, Consulting Radio Engineer.

2:00 p.m.—Safety

Silver Bow Room
H. H. WATSON, Presiding
Committee on Safety

- CP.* Electrical Installations and Safety Precautions Used in Underground Mining Operations. W. R. Duffy, Anaconda Copper Mining Co.
- CP.* Safety Problems on Diesel-Electric Locomotives. R. A. Hoeft, Chicago, Milwaukee, St. Paul and Pacific Railroad.
- CP.* Milliamperes Can Kill You! (A demonstration of low-voltage electric shock hazards). M. L. Bassett, B. A. Gurney and T. M. C. Martin, Bonneville Power Administration.

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

INSPECTION TRIPS

Butte Hill Surface Trip for Kelley Mine. A guided tour will be conducted over the various surface installations of the Anaconda Company on the Butte Hill. This tour will take approximately two hours and will start from the Finlen Hotel. The first stop will be The Kelley Mine hoist where two dc motors of 3,000 hp and 2,250 hp are used to hoist approximately 15,000 tons of ore per day. Ore crushing, conveying storage and loading equipment will also be visited. Among other points of interest, such as open pit mining and the block caving area, will be the new precipitating plant where a large amount of metallic copper is recovered from mine water through electrolytic action by passing the water over scrap steel.

At the **Reduction Works at Anaconda**, the visitor will see the equipment for unloading, crushing and conveying not only the 15,000 tons daily from the Kelley Mine, but all of the rest of the ore produced on the Butte Hill, plus ore produced by the Anaconda Company at Yearington, Nevada. Not only thousands of tons of copper and zinc are reduced annually, but 90% of America's entire output of ferro-manganese is produced here. Sulphuric acid, phosphate and arsenic plants are also found in the operations here. The visitor will see rod mills, flotation plants, copper

and zinc casting furnaces, electric ferro-manganese furnaces and all of the electrical distribution and utilization equipment necessary for operations here.

This trip will also be scheduled each day, Monday afternoon to Thursday morning at 8:45 a.m. and 1:15 p.m.

The Montana Power Company, Billings Steam Plant, can be visited by members. They should contact Mr. George Scotten, Montana Power Office, Billings, Montana.

The Montana Power Company, Great Falls Generating Plants can be visited. Visitors should contact Mr. Dix Shevalier, Montana Power Office, Great Falls, Montana.

The Montana Power Company, Kerr Hydro Plant can be visited.

The **Anaconda Company at Great Falls** have regular plant tours each week-day at 10 a.m. and 2 p.m. and at 10 a.m. only on Saturday. There are no regular Sunday tours for visitors. If the visitors are desirous of seeing only electrical installations they can contact Mr. F. S. Weimer, manager, and such tours can be arranged. The new Aluminum Rod Mill should be in operation here by August 15th. Many visitors would probably be interested in seeing this equipment which was manufactured in Sweden (both mechanical and electrical) and comparing it with our equipment. The Great Falls Wire and Cable Mill should also prove interesting to most of the delegates. There are also large electrolytic zinc and copper sections in this plant.

The Anaconda Company extend a cordial invitation to delegates to visit their new **Aluminum Plant at Columbia Falls, Montana**. Members desiring to visit this plant should contact Mr. Carl J. Lundborg, at 9 a.m., August 13th, or 9 a.m., August 20th.

The U. S. Bureau of Reclamation extend a cordial invitation to all delegates to visit either the Canyon Ferry project, near Helena, or the Hungry Horse project at Hungry Horse, Montana. The Canyon Ferry project does not have regularly conducted tours. They will make every effort to conduct tours of the plant during the 3 week period starting August 7, 1955. Visitors are to contact the Project Superintendent, Mr. R. L. Ashenbrenner.

The Hungry Horse Project have regular trips from 9:30 a.m. to 4 p.m. every day during the summer. These trips start from the top of the Dam, and if the delegates will indicate to the attendant that they are attending the convention, every effort will be made to give them the "Deluxe" tour. If the visitor desires more information he should contact Mr. E. L. Gochnauer, Project Superintendent.

The U. S. Army Engineers installation at Fort Peck, Montana, is open to the general public during the hours of 9:30 a.m. to 5:30 p.m. Information stations are located at the Fort Peck Glasgow and Fort Peck Nashua Highway entrances to the Fort Peck Project are also open daily during the above hours. General information on the Fort Peck Dam and Fort Peck Recreational Area may be obtained at these stations.

ENTERTAINMENT

Monday evening, August 15, an informal western outing will be staged at the scenic Columbia Gardens. After the hospitality hour, an outdoor dinner, featuring the famous Butte "pasty", will be held. Later in the evening there will be a western mixer dance with square dance exhibitions and other entertainment. Tickets will be \$4.00 per person.

Tuesday evening is held open for informal visiting of Butte's famous steak houses or for visiting historical Virginia City and the Lewis and Clark Caverns.

Wednesday activity will center around the picturesque Butte Country Club for golf. Wednesday night is the Dinner-Dance at the Butte Country Club, featuring one of their prime rib dinners. Entertainment and dancing will follow. Formal dress is optional and tickets will be \$4.00 per person.

The Virginia City trip takes several hours for the 178 mile round trip jaunt. Virginia City was an early day center of gold mining with the rough and ready ways of the time. Road agents, Vigilantes and "neck-tie" parties seemed to make front page history and this atmosphere is provided today with much of the original furnishings and merchandise still in place.

In the evening, old time entertainment at its best can be enjoyed at the Virginia City Playhouse.

The Lewis and Clark Caverns can also be visited by anyone wishing to make arrangements. Dude ranches and fishing streams may hold the interest of others who wish to make the most of the entertainment resources.

LADIES EVENTS

Sunday, August 14

Registration, 3 p.m.—Finlen Hotel Lobby

Monday, August 15

Registration, 9 a.m.—Finlen Hotel Lobby

Coffee Hour, 9:30 a.m. to 11:00 a.m.—Finlen Hotel Roundup Room

Tea, 2:30 p.m. to 4:30 p.m.—Fez Club

(Program: Organ Music—Tickets: \$1.50)

Tuesday, August 16

Registration, 9 a.m.—Finlen Hotel Lobby

Coffee Hour, 9:30 a.m. to 11:00 a.m.—Finlen Hotel Roundup Room

Wednesday, August 17

Registration, 9 a.m.—Finlen Hotel Lobby

Coffee Hour, 9:30 a.m. to 11:00 a.m.—Finlen Hotel Roundup Room

Luncheon, 1 p.m.—Finlen Hotel Copper Bowl

(Program: Elizabeth Lochrie and her famous Indian paintings. Tickets: \$2.50 Ticket limit—200)

Ladies registration will be in charge of Evaline Ball and Marjorie German. Dorothy Blankmeyer and Betty Kamp-schrör are the hostesses at the Coffee Hour each morning. The Tea is being arranged by Dagmar Anderson and Priscilla Nealey, and the Luncheon will be in charge of Flo Lorimer and Myrtle Hofacker.

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COMMITTEE MEETINGS

Monday, August 15

4:00 p.m.—Instruments and Measurements Group Subcommittee VIII

Tuesday, August 16

12:00 Noon—Luncheon—Industrial Power Systems Pacific Coast Subcommittee

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