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# PROGRAM

*Combined  
Annual and  
Pacific Coast  
Convention*

OF THE  
AMERICAN  
INSTITUTE *of*  
ELECTRICAL  
ENGINEERS

1884



1921

JUNE 21-24  
1921

HOTEL UTAH  
SALT LAKE CITY, UTAH

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## Combined 37th Annual and 10th Pacific Coast Convention

JUNE 21-24, 1921

SALT LAKE CITY

UTAH



### *Institute Headquarters*

During the convention, Institute Headquarters will be at the Hotel Utah, where the technical sessions will be held.

### *Registration Booth and Information Bureau*

Members are requested to register *promptly*. The Registration Booth and the Information Bureau are on the mezzanine floor of the hotel.

### *Opening Session*

The Convention will be opened with an address of "Welcome" by Honorable Charles R. Mabey, Governor of Utah, followed by the Annual Presidential Address by Arthur W. Berresford. The Technical Committee Reports will then be presented and a regular technical session will follow.

### *Complete Schedules*

A daily time schedule of all events to take place during the Convention, technical sessions, excursions, dinners, lectures, recitals, etc., will be found on pages 8 and 9.

For titles and authors of the papers to be presented at the technical sessions, see pages 4 and 5. Complete details of excursions, ladies entertainment, sports, etc., are given under the respective headings.

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## Technical Program

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Reprints of all papers will be distributed at the Registration Bureau and in the meeting rooms during the Convention.

Each speaker at every meeting is requested to announce his name and home city.

### Tuesday, June 21—10:00 A. M.

*Welcome Address*, by Charles R. Mabey, Governor of Utah.

*President's Address*, by Arthur W. Berresford.

#### *Technical Committee Reports.*

*Hydroelectric Developments at Niagara Falls*, by J. L. Harper and J. A. Johnson, both of Niagara Falls Power Company.

*Advances in the Art of Waterwheel Designs and Settings*, by W. M. White, Allis-Chalmers Co.

### Wednesday, June 22—9:30 A. M.

*Long Distance Transmission of Electric Energy*, by L. E. Imlay, Superpower Survey, New York, N. Y.

*Voltage and Power Factor Control of 66,000-Volt Transmission Lines Connecting Two Generating Stations*, by Raymond Bailey, Philadelphia Electric Company.

#### SYMPOSIUM ON LONG-DISTANCE TRANSMISSION SYSTEMS.

a. *Voltage Regulation and Insulation for Large-Power Long-Distance Transmission Systems*, by F. G. Baum, Consulting Hydroelectric Engineer, San Francisco, Cal.

b. *Some Transmission Line Tests*, by W. W. Lewis, General Electric Co., Schenectady, N. Y.

c. *Notes on the Operation of Large Interconnected Systems*, by L. L. Elden, Edison Electric Illuminating Co., Boston, Mass.

*Modern Production of Suspension Insulators*, by E. H. Fritz, Pittsburgh High-Voltage Insulator Co., and G. I. Gilchrist, Westinghouse Electric & Mfg. Company.

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### Thursday, June 23—9:30 A. M.

*Voltage and Current Harmonics Caused by Corona*, by F. W. Peek, Jr., General Electric Co., Pittsfield, Mass.

*A Solution of the Porcelain Insulator Problem*, by E. E. F. Creighton, General Electric Co., Schenectady, N. Y., and F. L. Hunt, Turners Falls Power & Electric Company.

*Transformers for Interconnecting High-Voltage Systems or for Feeding Synchronous Condensers from a Tertiary Winding*, by J. F. Peters and M. E. Skinner, both of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

*Electric Strength of Air under Continuous Potentials and as Influenced by Temperature*, by J. B. Whitehead and F. W. Lee, both of Johns Hopkins University, Baltimore, Md.

### Friday, June 24—9:30 A. M.

*Little Things from Little Places*, by Guido Semenza, Local Honorary Secretary of A.I.E.E., for Italy; Consulting Engineer, Milan, Italy.

*Synchronous Motors for Ship Propulsion*, by E. S. Henningsen, General Electric Co., Schenectady, N. Y.

*Magnetic Properties of Compressed Powdered Iron*, by Buckner Speed and G. W. Elmen, Research Laboratories of the American Tel. and Tel. Co., and the Western Electric Co., Inc.

*Heat Losses in Conductors in A-C. Machines*, by W. V. Lyon, Massachusetts Institute of Technology.

## Ladies' Entertainment

The Chairman of the Ladies' Entertainment Committee has prepared a program which will provide a very wide range of entertainment. An effort will be made to have available at all times for those ladies who desire them, automobiles, guides to

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the Country Club, parks or canyons; tennis courts, gymnasium privileges; all kinds of bathing, sulphur water, fresh water, salt water.

In addition to the afternoon and evening events appearing on the regular convention schedule, which the ladies are especially invited to attend together with the gentlemen, the committee has arranged the following special features, to be participated in only by the ladies:

*Tuesday, June 21—12:30 P. M.*

Luncheon at University Club.

*Thursday, June 23—10:00 A. M.*

Special auto excursion from Hotel Utah to Ogden Canyon. Luncheon at the Hermitage, returning to Salt Lake City in time for dinner. A delightful drive along the foothills of the Wasatch mountains to one of the most attractive canyons.

*Friday, June 24—11:00 A. M.*

Auto drive leaving Hotel Utah to Parley's Canyon. Luncheon at the Country Club. Those who do not care for the Saltair trip on the regular schedule may remain at the Club for golf and tennis tournaments, or may attend the baseball game.

## *Sports*

*Mershon Golf Cup.* The Mershon Golf Cup will again be offered in competition. In the conditions of gift, Past-President Mershon stipulated that to become the personal property of any member of the Institute, he must twice win the golf tournament. So far, six golf enthusiasts have their names inscribed on the trophy.

*John B. Fiskén Cup.* This golf cup, presented to John B. Fiskén by the Portland Section, will also be competed for, but by members of the Pacific Coast Section only. The winner of the tournament at which it will be offered will hold the cup only for the succeeding year.

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In addition to the Golf and Tennis Tournaments and the Baseball Game between Eastern and Western members, it will be possible for those members desiring to devote more attention to this feature to arrange for additional tennis or golf.

*Baseball Game.* A baseball game between Eastern and Western members is scheduled for Friday, June 24th, at 2 o'clock, at the Municipal Grounds, 13th South and 7th East Streets. Take No. 8 car on First South Street at Main Street, 2nd South or 3rd South, going South. Cars run from corner of Main and 1st South Streets 2 minutes before the hour and every ten minutes thereafter.

*Golf.* The links of the Salt Lake Country Club will be available for those who participate in the two Golf Tournaments, the Mershon Cup, and the Fiskén Cup. The Country Club is easily reached by auto or street cars.

*Tennis.* The Salt Lake Tennis Club and the Salt Lake Country Club have courteously placed their respective club house facilities and courts at the service of Institute members and their guests. Each club has five excellent dirt courts. The location of the Clubs, and street car access thereto, are as follows:

*Salt Lake Tennis Club.* 245 South 10th East Street. Take No. 6 car (going East) at corner of Main and 2nd South Streets; get off at 10th East Street and walk south one-half block. Cars run five minutes after the hour and every ten minutes thereafter.

*Salt Lake Country Club.* 2375 South 9th East Street. Take No. 7 car (going south) at corner of Main and 1st South Streets (don't take car marked "21st South Only"); get off at Country Club. Cars run five minutes after the hour and every ten minutes thereafter.

*L. D. S. Gymnasium.* Two courts just east of Hotel Utah.

*University Club.* Two courts one block east of Hotel Utah.

*Gymnasium.* The Desert Gymnasium just east of the Hotel Utah has kindly offered free use of their gymnasium facilities, including the swimming pool and lockers for fifty or more guests.

# Schedule of Events

Combined 37th Annual and 10th Pacific Coast Convention of A. I. E. E. Salt Lake City, Utah, June 21-24, 1921.

	MORNING	AFTERNOON	EVENING
<p><i>Tuesday</i> <i>June 21</i></p>	<p style="text-align: center;">10:00 A. M.</p> <p>Welcome by Hon. C. R. Mabey, Governor of Utah. President's Address. Reports of Technical Committees. Technical Session.</p>	<p style="text-align: center;">12:30 P. M.</p> <p>Sections Committee Luncheon (delegates and officers).</p> <p style="text-align: center;">3:00 P. M.</p> <p>Inspection Latter Day Saints Buildings and Grounds. Organ Recital in Tabernacle.</p>	<p style="text-align: center;">7:00 P. M.</p> <p>Scenic Auto Trip to Wasatch Drive and Capitol Hill.</p> <p style="text-align: center;">9:30 P. M.</p> <p>Informal Reception and Dancing at Hotel Utah.</p>
<p><i>Wednesday</i> <i>June 22</i></p>	<p style="text-align: center;">9:30 A. M.</p> <p>Technical Session.</p>	<p style="text-align: center;">12:30 P. M.</p> <p>*Railroad Excursion to Bingham Canyon, Mines and Smelters. Lunch served on train.</p>	<p style="text-align: center;">8:30 P. M.</p> <p>Piano-Harp Recital at Hotel Utah.</p> <p style="text-align: center;">9:30 P. M.</p> <p>Sections Committee Conference (Open to all interested.)</p>
<p><i>Thursday</i> <i>June 23</i></p>	<p style="text-align: center;">9:30 A. M.</p> <p>Technical Session.</p>	<p style="text-align: center;">12:30 P. M.</p> <p>Board of Directors Luncheon and Meeting. Ladies' Luncheon at University Club</p> <p style="text-align: center;">3:00 P. M.</p> <p>Inspection of Terminal Sub-station and Auto Trip. Ladies Theatre Party.</p>	<p style="text-align: center;">8:30 P. M.</p> <p>Lecture by Dr. Broaddus at Hotel Utah on "Natural Parks of Utah."</p>
<p><i>Friday</i> <i>June 24</i></p>	<p style="text-align: center;">9:30 A. M.</p> <p>Technical Session.</p>	<p style="text-align: center;">2:00 P. M.</p> <p>Golf Tournament } Finals. Tennis Tournament } Baseball Game: East vs. West.</p> <p style="text-align: center;">4:00 P. M.</p> <p>Saltair Trip: Bathing. Inspection of Automatic Sub-station, Salt Works, etc.</p>	<p style="text-align: center;">7:00 P. M.</p> <p>*Big Western Dinner in Ship Cafe and Dancing in Pavilion.</p>
<p><i>Saturday</i> <i>June 25</i></p>	<p>After-Convention Excursions to Local Points of Interest: Terminal Outdoor Substations, Electric Railways, Power Stations, Pumping Plant, Smelters, Mills, etc; Mountain Parks, Canyons, Brighton, Park City, Bird Island, Shoshone Falls, Bryce Canyon, Zion Canyon, Grand Canyon, Yellowstone Park, etc. For details see pages 10, 11 and 12.</p>		

Ladies will participate in all afternoon and evening programs. (See Ladies Entertainment, page 5). Facilities for golf and tennis will be available every afternoon.

\*Special excursion ticket on sale at Registration Booth provides accommodations for Wednesday trip to Bingham and Friday trip to Saltair, including bathing and Big Western Dinner.

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## *Trips and Excursions*

The following brief summaries give information regarding cost, method of transportation and time required for a number of trips which will interest engineers—some of which are in the regular Convention schedule, the remainder are After-Convention trips. Substation inspections scheduled for Thursday and Friday afternoon can be made at other times.

In the mountain country surrounding Salt Lake City, the electrical energy used is almost entirely developed by water power. Those interested in the production, transmission and distribution of power have an opportunity to see how it is done under very difficult topographical conditions. A number of the trips outlined show the application of hydroelectric power to the mining industry and how the problems of transmission are met.

The Bureau of Information can supply full particulars regarding any of the trips mentioned. Visitors should immediately register for such trips as they may desire to make.

*Park City.* The richest silver camp in the world and oldest in Utah. Elevation, 8,000 to 11,500 feet. Located about 35 miles east of Salt Lake City on the Denver and Rio Grande Railroad, on transcontinental automobile route, an easy hour and a half drive from the city through beautiful Parley's Canyon. The largest electrolytic zinc plant in the west is located here. Representatives of the Utah Power and Light Company will welcome all visitors and conduct them on inspection. Reached by railroad or stage; fare approximately \$5.00. Time required, one day.

*Eureka.* Elevation, 6,400 to 11,000 feet. Eureka is without doubt the most interesting metal mining camp in Utah. Produces copper, lead, zinc, silver, gold, iron and many of the rarer minerals. Shipments average fifteen million pounds of ore a week. Located about 75 miles due south of Salt Lake City on the Denver and Rio Grande or Salt Lake Route, or can be reached by automobile. Representatives of the Utah Power and Light Company will welcome all visitors and conduct them on inspection. Fare, railroad, approximately \$9.00. Time required, two days. Fare, automobile, about \$25.00 for the trip. Time required, one day.

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*Bingham Canyon.* The world's greatest mining camp. Elevation, 5,000 to 9,500 feet. This trip is scheduled for Wednesday afternoon, June 22nd. Train will leave the Oregon Short Line Depot at 12:30 P. M. Get your tickets at Registration Booth. Lunch will be served on the train. Within one hour's ride, one can see 41 miles of track terraced on hillsides over 1,000 feet high, where locomotives, steam shovels, cars and over 10,000 men are kept busy day and night digging copper, gold, silver, lead and other precious ores. An inspection of the Arthur Mills and the Garfield Smelter, together with a wonderful opportunity to view Great Salt Lake and the mountains are included.

*Carbon County Coal Mines.* 6,000,000 tons of high grade bituminous coal mined in this field in 1920. Interesting feature of this field is that instead of using steam electric power produced from their own coal, the mining companies find it economical to purchase hydroelectric power for their mining operations. The mines are located 125 miles south of Salt Lake City and reached by the main line of the D. & R. G. Ry. Railway fare, \$13.74 round trip. Time, about one and one-half days.

*Mills and Smelters.* If you are interested in seeing how ores are smelted and refined, and have but a limited amount of time available, a short visit to either the United States Smelting, Refining and Mining Company's smelter at Midvale, or the American Smelting and Refining Company's smelter at Murray will be worth while. Both smelters can be reached by street cars which pass Convention headquarters. Cost of trip, \$2.00. Time required, one day.

*Salduro—Potash Works.* On the Great Salt Lake Desert, 100 miles west of Salt Lake City, is a potash industry, a subsidiary of the Solvay Process Co. It is located on the main line of the Western Pacific Railroad, and if you are going through to California over this road, you may be interested in stopping off one day to see it. It is a two days' trip to see this industry and return to Salt Lake City. You will be taken care of over night at Salduro at nominal cost, and can look over the process and return to Salt Lake City the next day. Total cost of trip, approximately \$20.00.

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*Zion National Park, Cedar Breaks, Grand Canyon National Park and Bryce Canyon.* A ten day scenic trip, magnificent in extent, has been arranged which takes in Zion National Park, Cedar Breaks, the North Rim of the Grand Canyon and Bryce Canyon, a new and unexplored country. If time is not available, shorter trips can be made to any one or two of the above points of interest.

Round trip tickets for the popular "All Expense Tours," via National Park Transportation & Camping Company service, include all auto transportation and all meals and lodgings en route.

Zion and Grand Canyon Parks, Cedar Breaks and Bryce Canyon, 10 days, \$140.00 per person.

*Brighton Resort.* (Big Cottonwood Canyon). One of the most inspiring touring trips to the heart and tops of the Wasatch range, southeast from Salt Lake City, is that to Brighton Resort, 36 miles from the city by automobile through Big Cottonwood Canyon. Here is a mountain locked retreat of striking and unusual beauty, one of the best for midsummer rest, recreation and study. The altitude is 8,600 feet. Accommodations at this charming Alps-like retreat are provided at the Brighton Hotel and the Balsam Inn, including lodgings and meals. The round trip fare from Salt Lake City will be \$4.00 during the A.I.E.E. Convention.

*Yellowstone National Park.* For those members who did not buy their excursion tickets to the Convention via Yellowstone, and wish to see this most magnificent natural park, the Oregon Short Line operates a "Yellowstone Special," night service, leaving Salt Lake City at 8 P. M., and arriving at West Yellowstone at 7:30 A. M. For the four and one-half days trip through the Park there is a choice of either hotel or camp tours at \$45 and \$54 respectively, all expenses included. This tour covers all points of interest.

*Mountain Climbs.* Those who feel the "Call of the Wild" will be able to satisfy it, for the Wasatch Mountains are almost at the door of the Hotel. All sorts of "climbs" and "hikes" are available, long climbs, short ones and intermediate. If visitors will make their desires known at the Bureau of Information, full directions will be given and arrangements made for any kind of a climb or "hike" desired.

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## *Meetings and Papers Committee*

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and Chairmen of all Sections.



## *Rules Governing Presentation and Discussion of Papers*

At technical sessions papers may be read by title only, or by abstract, as determined by the Meetings and Papers Committee.

Members desiring to discuss a paper should notify the Meetings and Papers Committee, or the Chairman of the meeting, in advance of the meeting. Such members will be allowed not to exceed ten minutes each for discussion before any other members are given an opportunity to discuss the paper.

Written discussion submitted in advance by an absent member may be read by some member who is present, and five minutes may be allowed for its presentation.

In the open discussion following the presentation of the discussion by letter and by members who have given advance notification, each member will be allowed five minutes unless additional time is available after all others who desire to speak have been heard.

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