

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS



**PACIFIC  
GENERAL MEETING**

**Program**

*Please retain for use during  
entire meeting*

**SALT LAKE CITY  
UTAH**

**AUGUST 23 - 25, 1961**

*Meeting Headquarters*

**HOTEL UTAH**

## GENERAL INFORMATION

For those who attend this, the 50th Annual Pacific General Meeting, in Salt Lake City, Utah, there is scheduled a program that promises to be interesting and enjoyable. With members of the Utah Section as hosts you can look forward to a rewarding and pleasant meeting. Meeting Headquarters are at the Hotel Utah.

A welcoming Cocktail Party is being planned from 6:00 to 8:00 p.m. on Tuesday, August 22nd. For those who register on Tuesday, registration commences at 5:00 p.m. On the following Wednesday, the Lafayette Ballroom of the Hotel Utah will be the location for the Welcoming Luncheon where the featured speaker will be Dr. C. S. Winters of the General Motors Corporation. On Thursday, August 24th the Main Banquet will be held in the Hotel Utah, with a cocktail hour preceding the banquet. Entertainment will be provided after the banquet.

**Information** on all features may be obtained at the information desk located on the mezzanine of the Hotel Utah. Efforts will be made to deliver telegrams and messages promptly. Members who expect to receive mail are asked to inquire frequently at the information desk.

**Ticket Sales.** Tickets for social functions will be on sale on the mezzanine of the Hotel Utah.

**Transportation, Hotels & Inspection Trips** information can be obtained at a desk provided for this service on the mezzanine of the Hotel Utah.

**Registration Fees Required.** The registration fees for members, nonmembers, and ladies have been set at \$6.00, \$10.00 and \$2.00, respectively. Student members and children are registered without fee.

**Technical Sessions and Discussions** are covered by the "Technical Sessions Guide" at the discretion of the presiding officers. Sufficient time will be allowed for the presentation of each paper and five minutes for each discussion. To receive consideration for publication, discussions on TRANSACTIONS papers in duplicate must be sent to Edward C. Day, Assistant Secretary, Technical Operations Department, AIEE, 33 West 39th Street, New York 18, New York, before September 8th, 1961. 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.

## Pacific General Meeting

### SCHEDULE OF EVENTS

#### August 22—TUESDAY

Registration Begins—5:00 P.M.  
Cocktail Party—6:00 P.M.

#### August 23—WEDNESDAY

Technical Sessions—9:00 A.M.  
Reactor Instrumentation Systems  
Mining  
Relays  
Ladies' Hunt Breakfast—10:00 A.M.  
Men's Luncheon—12:00 Noon  
Kennecott Copper Corp. Trip—1:30 P.M.  
Technical Sessions—2:00 P.M.  
Chemical Industry  
Substations  
Electrical Instruments in Biology

#### August 24—THURSDAY

United States Steel Corp. Trip—  
9:00 A.M.  
Technical Sessions—9:00 A.M.  
Residential Electric Heating  
Industrial and Commercial Power  
Systems  
Wire Communications  
Materials Handling & Construction  
Industry  
Ladies' Coffee Hour—9:00 A.M.  
Ladies' Luncheon & Fashion Show—  
1:00 P.M.  
Hercules Powder Co. Trip—1:00 P.M.  
Technical Sessions—2:00 P.M.  
Industrial and Commercial Power  
Systems  
System Planning and Economics  
Radio Communications  
Solid State Devices  
Main Banquet—6:00 P.M.

#### August 25—FRIDAY

Ladies' Coffee Hour—9:00 A.M.  
Technical Sessions—9:00 A.M.  
Broadcasting  
Transmission and Distribution  
Feedback Control Systems

PAPERS MAY BE PURCHASED

Preprints of all *numbered* papers are on sale at 50¢ each to AIEE members (\$1.00 to nonmembers).

Papers bearing *Roman numerals* will be printed in the Transactions and the bimonthly publications as follows:

I COMMUNICATION AND ELECTRONICS.

II APPLICATIONS AND INDUSTRY.

III POWER APPARATUS AND SYSTEMS.

\**Asterisked papers* will be assigned numbers for sale at the same price at the meeting if copies are so provided by the authors; no further reproduction is presently scheduled.

After the meeting, all then unsold copies (including authors' papers on sale) are available by order and remittance to AIEE Order Department, 33 West 39th Street, New York 18, N. Y. Coupon books in \$10 denominations are available by order from Headquarters to those who wish to avoid remittance by check or otherwise.

## Wednesday, August 23

### 9:00 a.m.—Reactor Instrumentation Systems

Presidents Room

Chairman: C. F. OBERMESSER, Westinghouse Electric Corp.

Nucleonics Committee

CP.\* The Design of Nuclear Instrumentation Systems for Water Cooled Reactor Power Plants. R. Eastman, S. N. Ehrenpreis, Westinghouse Electric Corp.

CP61-929. Design and Performance of the Dresden Station In-Core Monitor System. R. K. Baird, J. Forster, General Electric Co.

CP61-951. Instrumenting a Sodium Cooled Reactor Power Plant for Control and Safety. E. Matlin, Atomics International.

CP61-950. Automation Study of a Nuclear Propulsion System. R. B. Rice, General Electric Co.

### 9:00 a.m.—Mining

Pioneer Room

Chairman: D. T. YOUNG, Kennecott Copper Corp.

Mining Industry Committee

CP.\* A.C. Motors & Controls As Applied to Loading Machines. B. Harbage, Jeffrey Mfg. Co.

CP.\* Semi-Conductor Control for Excavating Equipment. A. M. Vance, Westinghouse Electric Corp.

CP.\* Electric Drive for Off-Highway Vehicles. H. J. McLean, H. Vitt, General Electric Co.

### 9:00 a.m.—Relays

Junior Ballroom

Chairman: R. W. HIRTNER, Los Angeles Dept. of Water and Power

Relays Committee

61-925. Transient Voltages in Relay Control Circuits. W. K. Sonnemann, Westinghouse Electric Corp.

61-936. Protection of Control Circuit Rectifiers Against Surges from III D-C Coil Interruption. H. T. Seeley, General Electric Co.

61-935. A Static Voltage Differential Relay for Protection of Shunt III Capacitors. M. O. Tom, Bonneville Power Administration.

61-921. A Partial Survey of Relay Protection of Steam Driven A-C III Generators. AIEE Working Group of the Generator Protection Subcommittee of the Relays Committee, J. M. Bisbee, Chairman.

### 2:00 p.m.—Chemical Industry

Presidents Room

Chairman: C. B. SCHEER, Kaiser Engineers, Inc.

Chemical Industry Committee

61-944. Committee Report on Electrical Characteristics of Electrochemical Cell Line. AIEE W.G. of the Electrochemical Processes Sub. of the Chemical Industry Committee, R. P. Stratford, Chairman (Re-presented for Discussion only).

CP.\* Protection of Three Phase Motors Against Single Phasing. R. H. Long, H. E. Bovay, Jr., Consulting Engineers.

CP.\* The 1960 Extension to the Inspiration Electrolytic Tank House. R. E. Martin, C. E. Helms, Inspiration Consolidated Copper Co.

### 2:00 p.m.—Substations

Junior Ballroom

Chairman: J. A. MANEATIS, Pacific Gas & Electric Co.

Substations Committee

CP61-971. Dynamic Behavior of a 220 Kv Deadend Suspension Bus During Short Circuit. A. W. Atwood, Jr., M. H. Mills, D. I. Downs, H. M. Stone, Southern California Edison Co.

CP61-926. Considerations in Purchasing Mobile Substations. R. H. Schneider, Tacoma, Washington.

CP.\* Transformer Noise Problems on Substations. E. H. Wendt, Los Angeles Dept. of Water and Power.

### 2:00 p.m.—Electrical Instruments in Biology

Pioneer Room

Chairman: L. W. MATSCH, University of Arizona

Special Instruments and Auxiliary Apparatus

CP61-943. Electrical Techniques and the Heart in Health and Disease. G. G. Knickerbocker, W. B. Kouwenhoven, The Johns Hopkins University.

CP.\* Electronics, Plumbing and Last-Chance Cardiology. C. T. Dotter, University of Oregon.

## Thursday, August 24

### 9:00 a.m.—Residential Electric Heating

Presidents Room

Chairman: J. C. HOEY, General Electric Co.

Domestic and Commercial Applications Committee

CP.\* Investigation and Test of Grounding Method for Residential Installations. H. G. Ufer.

CP.\* Conductor Sizing for Electric Heating Loads. F. O. Wald, R. S. Patrick, Utah Power and Light Co.

### 9:00 a.m.—Industrial and Commercial Power Systems

Junior Ballroom

Chairman: R. A. ERWIN, Los Angeles Dept. of Water and Power

Industrial and Commercial Power Systems Committee

CP.\* Power System Design for a Modern Electrolytic Copper Refinery. D. T. Young, Kennecott Copper Corp.

CP61-953. Plant Electrical Engineering in the U. S. Army Chemical Corps. D. Kamoroff, U. S. Army Chemical Corps.

CP.\* Power Distribution and Supervisory Control for a Gas Compressor Plant. P. Belsky, Westinghouse Electric Corp.

**9:00 a.m.—Wire Communications**

*Gold Room*

Chairman: J. N. PETRIE, Automatic Electric Co.  
*Wire Communication Systems Committee*

- 61-945. Synthesis of Networks Simulating Impedance of Loaded Cable I Facilities. R. W. DeMonte, Bell Telephone Labs., Inc.
- CP61-946. Plug-In Span Pad and Artificial Line Units for Use on N & On Carrier. J. M. Ridd, Pacific Telephone and Telegraph Co.
- CP61-947. New Problems in Transmission Maintenance and Their Effect on Test Equipment Design Concepts. E. H. B. Bartelink, Northeast Electronics Corp.
- CP.\* Making the Three-Channel Stackable Carrier Meet Present Day Transmission Requirements. R. R. Ashman, L. B. Johnson, Lenkurt Electric Co.
- CP.\* Applications of a New 600 Channel Multiplexing System for Microwave. E. E. Combs, C. A. Kirkwood, Lynch Communication Systems, Inc.

**9:00 a.m.—Materials Handling & Construction Industry**

*Pioneer Room*

Chairman: H. A. ZOLLINGER, Westinghouse Electric Corp.  
*General Industry Applications Committee*

- CP.\* Atlas Launcher Platform Drive System. A. S. Bishay, American Machine & Foundry Co.; L. R. Foote, General Electric Co.
- CP.\* Electrification of Concrete Handling Equipment for Projects Construction. H. V. Nelson, B. F. Bennett, General Electric Co.

**9:00 a.m.—Reactor Operation**

*Room C38*

Chairman: C. F. OBERMESSER, Westinghouse Electric Corp.  
*Nucleonics Committee*

- CP61-930. Control and Transient Performance of the Dresden Nuclear Power Station. W. I. Collett, E. R. Owen, General Electric Co.
- CP61-931. A Combined Nuclear and Coal Fired Power Plant—HNPF. C. L. Dunsmore, Atomics International.
- CP.\* A Transistorized Radiation Pulse Amplifier. L. D. Test, H. H. Hendon; General Electric Co.

**2:00 p.m.—Industrial and Commercial Power Systems**

*Junior Ballroom*

Chairman: R. A. ERWIN, Los Angeles Dept. of Water and Power  
*Industrial and Commercial Power Systems*

- CP61-949. Electrical Design Features of a New High-Rise Office Building. J. P. Kesler, B. J. Stables, Black and Veatch.
- CP61-933. A Computer Approach to Setting Directional Overcurrent Relays on Industrial Network Type Systems. A. H. Knable, Allis-Chalmers Mfg. Co.
- CP.\* High Continuity Industrial Power Distribution with Metalclad Load Interrupter Switchgear. J. B. Castle, S & C Electric Co.

**2:00 p.m.—System Planning and Economics**

*Presidents Room*

Chairman: Vince Converti, Arizona Public Service Co.  
*System Engineering Committee*

- 60-1201. Optimized Transmission Tower Spotting on Digital Computer. V. Converti, E. J. Hyland, D. E. Tickle, Arizona Public Service Co. (Re-presented for Discussion only.)
- 61-932. Short-Circuit Comparison Study. R. B. Shipley, D. Coleman, III W. L. Nason, Tennessee Valley Authority.
- CP61-922. High-Voltage Power System Decrements. M. J. Lantz, Bonneville Power Administration.
- CP61-924. Estimating Appliance Consumption in Distribution Systems. T. A. Lambe, J. C. Clapham, University of British Columbia.
- 61-923. A Note on the Capital Recovery Factor. J. F. Brennan, Pacific III Gas and Electric Co.

**2:00 p.m.—Radio Communication**

*Pioneer Room*

Chairman: E. D. Barcus, Pacific Telephone and Telegraph Co.  
*Radio Communications Systems Committee*

- CP.\* Very Long Traveling Wave Antennas. D. K. Reynolds, University of Washington.
- CP61-928. Mobile Radio Test Laboratory. N. L. Brotzman, The Pacific Tel. & Tel. Co., Inc.
- CP.\* An Analysis of Simultaneous Use of Mobile Telephone Systems for One Way Signalling. C. A. Rypinski, Secode Corp.; D. L. MacDonald, The Pacific Tel. & Tel. Co., Inc.
- 61-927. Design of a 2-Way Radio Channel for Maintenance of Telephone Company Services. D. L. MacDonald, The Pacific Tel. & Tel. Co., Inc.
- 61-920. Remote Outage Location by Means of VHF Radio Systems. I M. Cooper, Motorola, Inc. (Re-presented for Discussion only.)
- 60-1280. Noise-Loading Test of a Complete Frequency-Division Multiplex Voice Point-to-Point Communication System. L. P. Yeh, Page Communications Engineers, Inc. (Re-presented for Discussion only.)

**2:00 p.m.—Solid State Devices**

*Room C38*

Chairman: R. Watson, Lockheed Missiles and Space Corp.  
*Solid State Devices Committee*

- CP.\* The Simulation of Solar Radiation. D. Bickler, Hoffman Electronics Corp.
- CP.\* Series Resistance Effects on Solar Cell Measurements. Martin Wolf and Hans Rauschenbach, Heliotek Corp.
- CP.\* Ferrite Line Width Measurements. D. C. Stinson, University of Arizona.
- CP.\* Cryotrons—State of the Art. J. Bremer, General Electric Co.

## Friday, August 25

### 9:00 a.m.—Broadcasting

#### Pioneer Room

Chairman: E. D. BARCUS, Pacific Telephone and Telegraph Co.  
*The Broadcasting Committee*

- CP.\* Auxiliary Television Broadcast Services. A. Taylor, University of Montana.
- CP.\* Some Considerations Affecting TV Allocations and Station Assignment Criteria. J. Barr, Federal Communications Commission.
- CP.\* Developing a State-Wide Educational UHF TV Network. O. W. B. Reed, Jr., Jansky & Bailey.
- CP.\* The Measurement of Random Video Interference to Monochrome and Color TV Pictures. J. M. Barstow and H. N. Christopher, Bell Telephone Labs., Inc.

### 9:00 a.m.—Transmission & Distribution

#### Junior Ballroom

Chairman: A. N. SHEALY, Kaiser Aluminum and Chemical Corp.  
*Transmission and Distribution Committee*

- CP61-940. Aluminum Cold Flow Compensation in Bolted Electrical Connections. G. L. Flynn, T. L. Rundlett, Anderson Electric Corp.
- 61-941. Unbalanced Open Conductors in Power Systems. N. Selseth, III The University of Michigan.
- CP.\* The NEAR System—Disaster Warning Via the Utility Network. R. I. Kopan, Midwest Research Institute.
- 61-942. The Effect of Negative Corona Upon the Formation of Positive III Corona. G. A. Pearson, Berkeley, California.

### 9:00 a.m.—Feedback Control Systems

#### Presidents Room

Chairman: A. M. HOPKINS, University of California  
*Feedback Control Systems Committee*

- CP61-937. Subharmonic Oscillations in On-Off Control Systems. J. C. Gille, Ecole Nationale Supérieure De L'Aéronautique; J. G. Paquet, Université Laval.
- CP61-938. Construction of the Lyapunov Function for Asymptotic Stability Via the Quadratic Form. L. K. Timothy, Autonetics.
- CP61-939. Discontinuous Automatic Control: Some Theoretical Considerations. G. J. Thaler, K. W. Han, U. S. Naval Postgraduate School.
- CP.\* Error Coefficient Synthesis of Sampled Data and Digital Control System Compensating Network. J. Spitzer, I.B.M. Corp. and T. J. Higgins, University of Wisconsin.

### INSPECTION TRIPS

Matching the diversity of Utah Industry, inspection trips have been arranged as follows:

**Wednesday, August 23, 1:30 P.M.—Kennecott Copper Corporation**—The Kennecott Copper Corporation operates complete mining, milling, smelting and refining facilities only 25 miles from downtown Salt Lake City. The Corporation's Bingham Canyon mine is generally acknowledged as the world's largest man-made excavation from which are produced nearly a half billion pounds of copper every year. Nearby at Magna, Utah is the largest copper smelter in the world and a short distance from there is the electrolytic refinery. The facilities in Utah produce about 22% of the nation's newly mined copper every year. The processing of this low grade copper ore is a high engineering achievement. Cost for this trip will be for transportation only, approximately \$1.50.

**Thursday, August 24, 9:00 A.M.—United States Steel Corporation**—The United States Steel Corporation's Columbia-Geneva Steel Division operates the most highly integrated steel mill west of the Mississippi River at Geneva, Utah. This facility was built in early 1940 and hence is a most modern steel facility. Since that day it has been continually expanded and modernized.

**Thursday, August 24, 1:00 P.M.—Hercules Powder Company**—At Bacchus, Utah not far from the Bingham Canyon mine, the Hercules Powder Company has a long established explosives plant. This facility is being expanded to cover work which is being performed by the company on the third stage of the Minute Man Missile and the second stage of the A2 Polaris Missile. Cost of this inspection trip will be approximately \$1.50 for transportation only.

**Friday, August 25, 2:00 P.M.**—A Tour is scheduled of the Educational TV facilities at the University of Utah. This will include a demonstration of a TV video tape recorder and TV translator, (on campus) facilities which provide additional classroom flexibility. Moderator—O. W. B. Reed, Jr.; Speaker and Host, Dail Ogden, University of Utah.

### SOCIAL EVENTS

With registration commencing at 5:00 P.M. in the Hotel Utah, a welcoming **Cocktail Party** is being planned for those registering, between the hours of 6:00 and 8:00 P.M., on Tuesday, August 22. On the following Wednesday, the Lafayette Ball Room of the Hotel Utah will be the location for the **Welcoming Luncheon** where the featured speaker will be Dr. C. S. Winters of the General Motors Corporation.

On Thursday, August 24, the **Main Banquet** will be held in the Hotel Utah with a cocktail hour preceding the banquet. Entertainment will be provided after the banquet.

### LADIES' EVENTS

**Tuesday, August 22, 5:00 P.M.—Registration**—Hotel Utah, Mezzanine.

**6:00-8:00 P.M.**—Welcoming Cocktail Party in the Jade & Gold Room of the Hotel Utah, Mezzanine.

Wednesday, August 23, 10:00 A.M.—Hunt Breakfast at Log Haven.

Bridge and Flower Arranging scheduled for the afternoon.

Log Haven is presently one of Salt Lake's favorite dining spots, located in beautiful Mill Creek Canyon, about twelve miles East of Salt Lake City. The restaurant was formerly a private estate, rustic in construction to fit with its surrounding scenery. The ladies will thoroughly enjoy this cool mountain retreat. An unusual and delightful spot.

Buses and cars will be provided for the ladies' transportation.

Thursday, August 24, 9:00 A.M.—The ladies will meet for coffee in the Jade Room of Historic Hotel Utah, the convention headquarters.

Hotel Utah is adjacent to the famed Temple Square and a delightful shopping center. After the coffee get-together, the ladies can thoroughly enjoy the rest of the morning taking a tour of the Mormon Temple grounds or shopping, all within two blocks of the Hotel.

1:00 P.M.—The ladies will be taken to the Fort Douglas Hidden Valley Country Club for a luncheon and Fashion Show.

The country club is located high on the East bench of the city and thus provides a spectacular view of Salt Lake Valley and the Great Salt Lake.

6:00 P.M.—Cocktails will be served in the Jade Room of Hotel Utah.

7:00 P.M.—The ladies will accompany their husbands to the Banquet. This evening will be a gala affair. . . . Fine food, exceptional entertainment, and for the "Young at heart," dancing.

Friday, August 25, 9:00 A.M.—The ladies will meet again for coffee in the Jade Room of the Hotel Utah.

The rest of the day will be free for sightseeing, shopping or playing. The hostesses will be happy to assist in providing the facilities and information that will afford the ladies maximum pleasure from their visit to Salt Lake.

PACIFIC GENERAL MEETING COMMITTEES

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- F. O. Wald, *Hotel & Facilities*

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- R. B. Hodges                                   R. S. Patrick

**Ladies' Activities**

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 J. E. Thomas

**COMMITTEE MEETINGS**

**Wednesday, Aug. 23**

	<u>Room</u>
2:30 P.M.—5:30 P.M. Reactor Control & Instrumentation Subcom. N. C.....	Hunt
4:00 P.M.—5:30 P.M. West Coast Subcommittee of T.O.D.....	C39

**Thursday, Aug. 24**

9:00 A.M.—12:00 Noon West Coast Subcommittee on Substations.....	C39
1:00 P.M.—2:00 P.M. West Coast Subcom. on Special Instruments & Auxiliary Apparatus.....	Hunt
4:00 P.M.—6:00 P.M. West Coast Subcommittee, Chemical Industry.....	Hunt

**Friday, Aug. 25**

12:30 P.M.—4:00 P.M. Luncheon—West Coast Subcommittee, Telemetry Com....	Hunt
7:00 P.M.—10:00 P.M. Dinner—Broadcasting Committee.....	C39

**OFFICERS OF AIEE 1961-1962**

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L. F. Hickernell	H. T. Marcy	

\*Ex Officio

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Gille, J. C. ....	6	Taylor, A. ....	6
		Test, L. D. ....	4
Han, K. W. ....	6	Thaler, G. J. ....	6
Harbage, B. ....	2	Tickle, D. E. ....	5
Helms, C. E. ....	3	Timothy, L. K. ....	6
Hendon, H. H. ....	4	Tom, M. O. ....	2
Higgins, T. J. ....	6		
Hyland, E. J. ....	5	Ufer, H. G. ....	3
Johnson, L. B. ....	4	Vance, A. M. ....	2
		Vitt, H. ....	2
Kamoroff, D. ....	3	Wald, F. O. ....	3
Kesler, J. P. ....	4	Wendt, E. H. ....	3
Kirkwood, C. A. ....	4	Wolf, Martin ....	5
Knable, A. H. ....	4		
Knickerbocker, G. G. ....	3	Yeh, L. P. ....	5
Kopan, R. I. ....	6	Young, D. T. ....	3
Kouwenhoven, W. B. ....	3		

MEMORANDUM

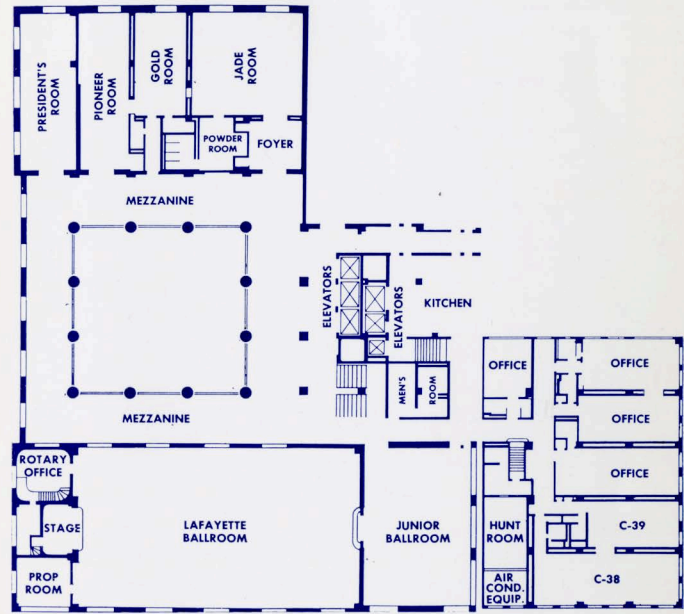


MEMORANDUM


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DAILY CALENDAR

	Evening	Happy Hr.	P.M.	Lunch	A.M.	Bkfst
Sunday						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						



HOTEL UTAH MEZZANINE FLOOR

A sepia-toned photograph of the Salt Lake Temple, a large Gothic Revival-style building with multiple spires and ornate architectural details. The temple is the central focus, with several large trees in the foreground partially obscuring its base. The trees have light-colored foliage, possibly blossoms. In the lower right foreground, there is a circular fountain with water spraying upwards. The overall scene is captured in a historical, monochromatic style.

Latter Day Saints (Mormon) Temple, Temple Square,  
Salt Lake City, Utah