

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS



**SUMMER AND PACIFIC
GENERAL MEETING
AND
AIR TRANSPORTATION CONFERENCE**

**SEATTLE, WASHINGTON
JUNE 21-26, 1959**

●
OLYMPIC HOTEL

GENERAL INFORMATION

For those who attend the Summer and Pacific General Meeting and Air Transportation Conference this year in Seattle, there awaits a full week of stimulating technical sessions and social entertainment. With the members of the Seattle Section as hosts, we can assure our guests a most enjoyable and well-spent week. Headquarters for the meeting is the Olympic Hotel.

At our Annual Meeting, Monday afternoon, June 23rd, the Lamme Medal will be presented jointly to Messrs. P. L. Alger and Sterling Beckwith.

On the social side there will be a Kla-how-ya Kloshe Tillicum Sunday afternoon, an Informal Dance, a Theatre Party and a Kiana Potlatch Salmon Barbecue.

Registration Fees Required. In accordance with the policy set up by the Board of Directors, a registration fee of \$5.00 has been established for members and a fee of \$8.00 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. To receive consideration for publication, discussion on TRANSACTIONS Papers in duplicate must be left with the Chairman and/or sent to Edward C. Day, Assistant Secretary, Technical Operations Department, AIEE, 33 West 39th Street, New York 18, New York, before July 10, 1959. 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 inked tracings should be submitted.

Advance Copies of Papers may be purchased by members at the Technical Papers Desk at the uniform price of \$.40 each (\$.80 each for 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 18, New York. 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

	Program	Trips	Sports	Entertainment	Ladies Entertainment
Sunday June 21				3:00 P.M. Reception	
Monday June 22	9:00 A.M. Technical Sessions 2:00 P.M. Annual Meeting	2:00 & 7:30 P.M. Telephone Bldg.	Golf By Arrangement	<i>Stores are Open Tonight</i>	9:00-10:00 A.M. Coffee Hour 2:00 P.M. Color Lecture
Tuesday June 23	9:00 A.M. Technical Sessions 10:00 A.M. Women's Auxiliary 12:00 Noon General Luncheon 2:00 P.M. Technical Sessions	9:30 A.M. Boeing— Seattle 1:00 P.M. Naval Shipyards	Golf By Arrangement	8:00 P.M. Theatre Party 9:30 P.M. Dancing	9:00-10:00 A.M. Coffee Hour 1:00 P.M. Sightseeing Tour and Tea
Wednesday June 24	9:00 A.M. Technical Sessions 12:00 Noon General Luncheon 2:00 P.M. Technical Sessions 7:30 P.M. Discussion Panel	6:45 A.M. Skagit Tour 12:30 P.M. Aerial Cruise 2:00 & 7:30 P.M. Telephone Bldg. 5:00 P.M. Scott Paper Mill	Golf By Arrangement 4:30 P.M. Sail Boat Race	<i>Excellent Trips Available Today</i>	9:00-10:00 A.M. Coffee Hour 12:00 Noon Luncheon and Fashion Lecture
Thursday June 25	9:00 A.M. Technical Sessions 1:30 P.M. Technical Sessions	<i>Don't Forget the Salmon Barbecue</i>	Golf By Arrangement	4:30 P.M. Salmon Barbecue	10:00 A.M. Brunch and Flower Arranging
Friday June 26	9:00 A.M. Technical Sessions 2:00 P.M. Technical Sessions	6:45 A.M. Skagit Tour 8:30 A.M. Weyerhaeuser Trip 1:30 P.M. Boeing— Renton	Golf By Arrangement Fishing Trip Evening Departure		9:00-10:00 A.M. Coffee Hour

SCHEDULE OF TECHNICAL SESSIONS

Note: Thursday afternoon sessions will convene at 1:30 p.m.

MONDAY—JUNE 22

9:00 A.M.

Chemical Industry
Insulated Conductors
Rotating Machinery
Basic Sciences
Research
Safety

2:00 P.M.

Annual Meeting

8:00 P.M.

The Art of Aircraft Control

TUESDAY—JUNE 23

9:00 A.M.

Domestic & Commercial Applications
Chemical Industry
Power Generation
Relays
Rotating Machinery
Radiation Effects Symposium I
Section Delegates Conference
Industrial & Commercial Power Systems
Optimum Nonlinear Control
Telemetry System Considerations

2:00 P.M.

Electric Heating in Schools, Churches
Power Generation
System Engineering, Substations & Relays
Research Seminar
Computing Devices
Radiation Effects Symposium II
Section Delegates Conference
Uses of Aluminum Conduit and Conductors in Industry
Control Systems

WED.—JUNE 24

9:00 A.M.

Ionic Systems
High Temperature Equipment
Rotating Machinery
System Planning
Environmental Effects on Electrical Insulation
Data Communication
Indicating & Integrating Instruments

2:00 P.M.

Solar Power in Space
High Temperature Equipment
Nucleonics
Relays and Transmission & Distribution
Emergency and Scheduled Generator Shut Down
Discussion on Radiation Effects
Communication Switching Systems

7:30 P.M.

Electrical Problems in Space

THURS.—JUNE 25

9:00 A.M.

Constant-Frequency Variable Speed Generators
Testing of Vehicles in Flight
Transmission and Distribution & Protective Devices
Aluminum Substation Buses & Connectors
Switchgear
Microwave Relay Systems
Solid State Devices

1:30 P.M.

Thermoelectric Generators
Radio Communication & Television
Space Vehicle Instrumentation
Transmission & Distribution
Mobile Transformers & Substations
Magnetic Amplifiers
Communication Theory

FRIDAY—JUNE 26

9:00 A.M.

Power Sources
Reliability
Rapid Transit
Pulp and Paper Industry
Transmission & Distribution
Substations
Magnetic Amplifiers
Transformers
Plastic Insulated Telephone Wire & Cable

2:00 P.M.

Design Problems
Power Sources
Land Transportation
Transmission and Distribution
Transformers
Wire Communications

MON.—JUNE 22

9:00 A.M.

OLYMPIC HOTEL
SPANISH BALLROOM

Chairman:
E. W. Greenfield, Wash-
ington State Univer-
sity

Sponsor:
Chemical Industry
Committee

9:00 A.M.

OLYMPIC HOTEL
UNIVERSITY ROOM

Chairman:
E. J. Merrell, Habir-
shaw Wire and Cable
Div., Phelps Dodge
Copper Products
Corp.

Sponsor:
Insulated Conductors
Committee

9:00 A.M.

OLYMPIC HOTEL
GEORGIAN ROOM

Chairman:
C. L. Sidway, Southern
California Edison Co.

Sponsor:
Rotating Machinery
Committee

TECHNICAL PROGRAM

CHEMICAL INDUSTRY

- CP.* An Arabo-Galactan Industry for the Pacific Northwest. M. Adams, State College of Washington.
- CP.* Pozzolan Production at the Priest River Dam. E. N. Klemgard, State College of Washington; A. E. Strom, Grant County PUD.
- 59-820. Trends in Ground Bed Design for Cathodic protection of II Underground Structures. A. P. Landry and I. N. Howell, Southern Bell Tel. & Tel. Co.
- 59-505. Deep Ground Beds for Cathodic Protection. S. E. Trouard and E. A. Wagner, Jr., New Orleans Public Service, Inc.
- 59-821. Cathodic Protection Applications at the Hanford Works. II C. S. Bucholz, General Electric Co.
- CP.* Theory and Practice of Paint Application. G. Martin, Parker Paint Mfg. Co., Inc.

INSULATED CONDUCTORS

- 59-496. A 35 KV Polyethylene Insulated Cable Installation. G. J. III Crowdes, Simplex Wire and Cable Co.
- CP.* Operating Experience With Thermoplastic Insulated Wire and Cable in Chemical Plants—Progress Report No. 2. M. M. Gilbert, E. I. Dupont De Nemours and Co., Inc.
- CP59-892. The Texada Island Submarine Cable Crossing. P. J. Croft, British Columbia Power Commission.

ROTATING MACHINERY

- 57-130. A New Stator Coil Transposition for Large Machines. W. L. III Ringland and L. T. Rosenberg, Allis-Chalmers Mfg. Co.
- 59-683. The Polyphase Induction Machine With Solid Iron Rotor. III N. Kesavamurthy and P. K. Rajagopalan, Indian Institute of Technology.
- 59-810. Constant Frequency A-C Power Using Variable Speed Gen- III eration. R. D. Jessee, Westinghouse Electric Corp.; W. J. Spaven, Walter Kidde & Co., Inc.

MON. (Continued)

9:00 A.M.

OLYMPIC HOTEL
WILLIAMSBURG
BALLROOM

Chairman:
W. C. Dunlap Jr., Ben-
dix Aviation Corp.

Sponsor:
Basic Sciences
Committee

9:00 A.M.

OLYMPIC HOTEL
REGENTS ROOM

Chairman:
E. C. Starr, Bonneville
Power Administration

Sponsor:
Research Committee

9:00 A.M.

OLYMPIC HOTEL
OLYMPIC BOWL

Chairman:
T. M. C. Martin, El Cer-
rito, Calif.

Sponsor:
Safety Committee

BASIC SCIENCES

59-917. Mixed Transcendental and Polynomial Transforms. O. J. M. I Smith, University of California.

CP59-918. The Analysis of Sampled-Data Systems With Non-Linear Elements. R. E. Andeen, Sperry Rand Corp.

CP.* Analysis of Pulse Duration Sampled-Data Systems With Linear Elements. R. E. Andeen, Sperry Rand Corp.

59-919. Recurrence Relations in the Solution of a Certain Class of I Nonlinear Systems. A. A. Wolf, University of Pennsylvania.

RESEARCH IN THE UNIVERSITIES AND RESEARCH INSTITUTIONS

CP.* Graduate Study and Research in Electrical Engineering at the University of California. S. Silver and R. M. Saunders, University of California.

CP59-882. High-Voltage Research in a College Laboratory. L. N. Stone, Oregon State College.

CP59-936. Preliminary Design of Hydrological Data Telemetering Equipment. L. A. Beattie, G. G. Hespelt and L. M. Maxwell, University of Idaho.

CP59-884. An Aviation Hazard Light for Mid-Span Operation on Power Transmission Lines. H. J. Dana, Washington State Institute of Technology.

CP.* Academic and Industrial Electrical Research for Future Space Vehicles. Karl Martinez, Boeing Airplane Co.

CP.* Electricity for Space Vehicles. V. Hart, Boeing Airplane Co.

SAFETY

CP.* Hazard Control in Electrical Testing. J. V. Grimaldi, General Electric Co.

CP59-923. Electrical Safety Regulations in the United States, Canada and Europe. L. D. Price and H. P. Michener, National Electrical Manufacturers Association.

CP59-940. 120 Volt Three-Wire Receptacles and Their Attachment Plugs. C. F. Dalziel, University of California.

CP.* Mouth-to-Mouth Resuscitation (Film). A. Gordon, Children's Hospital, Los Angeles, California.

MON. (Continued)

2:00 P.M.

OLYMPIC HOTEL
SPANISH BALLROOM

Chairman:
H. R. Loew

President:
L. F. Hickernell

8:00 P.M.

OLYMPIC HOTEL
REX ROOM

Chairman:
O. J. M. Smith, Uni-
versity of California

Sponsor:
Feedback Control Sys-
tems Committee

TUES.—JUNE 23

9:00 A.M.

OLYMPIC HOTEL
COLONIAL ROOM

Chairman:
L. N. Roberson,
Roberson, Inc.

Sponsor:
Domestic and Commer-
cial Applications
Committee

GENERAL SESSION—H. R. Loew, Presiding
Invocation—Rev. Edward Hummon, Pastor, University Lutheran Church

Welcome—Hon. Gordon S. Clinton, Mayor, City of Seattle

Greetings—J. M. Nelson, Vice President District No. 9
A. W. Kessler, Past Chairman Seattle Section
G. D. Jorgensen, Chairman Seattle Section

ANNUAL MEETING—L. F. Hickernell, Presiding

- 1) Report of the Treasurer, C. H. Linder
- 2) President's Address, L. F. Hickernell
- 3) Election of Officers, Teller's Report
- 4) Introduction of New Officers
- 5) Induction of President-Elect J. H. Foote
- 6) Presentation of District Student Paper Prizes
- 7) Lamme Medal Presentation
History of the Medal, Mark Princi
Career of Medalist Sterling Beckwith, L. T. Rosenberg
Career of Medalist P. L. Alger, B. M. Cain
Presentation of Lamme Medals by President Hickernell
Response of the Medalists
- 8) Other business

THE ART OF AIRCRAFT CONTROL—FLY BY WIRE

Panel Members: Mr. David M. Petrie, Pilotless Aircraft Div., Boeing Airplane Company, Seattle, Washington; Mr. Robert H. Hurlow, Systems Management Office, Boeing Airplane Company, Seattle, Washington; Mr. Elliot Buxton, Autonetics Div. of North American Aviation Incorporated, Downey, California; Mr. Wallace Lundahl, Section Head, Aeronautical Div., Minneapolis-Honeywell Regulator Company, Minneapolis 13, Minnesota; Mr. Alfred M. Salmon, United Airlines, Plant Representative, Seattle, Washington.

DOMESTIC AND COMMERCIAL APPLICATIONS

- CP.* The 1959 National Electrical Code. H. H. Watson, General Electric Co.
- CP.* The Impact of Electric Heating on a Public Utility. D. H. Ohney, Washington Water Power Co.
- CP.* A Control-Free Earth Heat Pump. R. A. Balch, Line Materials Industries.
- CP.* Trials and Tribulations of a Heat Pump. K. M. Wood, Wood & Landerholm.

TUES. (Continued)

9:00 A.M.

OLYMPIC HOTEL
OLYMPIC BOWL

Chairman:

C. J. Macdonald,
Bechtel Corp.

Sponsor:

Chemical Industry
Committee

9:00 A.M.

OLYMPIC HOTEL
SPANISH BALLROOM

Chairman:

K. J. Granbois, Safe
Harbor Water &
Power Co.

Sponsor:

Power Generation
Committee

9:00 A.M.

SEATTLE CITY LIGHT
BUILDING
AUDITORIUM*

Chairman:

M. A. Bostwick, Port-
land General Electric
Co.

Sponsor:

Relays Committee

9:00 A.M.

OLYMPIC HOTEL
REX ROOM

Chairman:

C. H. Bjorquist, U. S.
Bureau of Reclama-
tion

Sponsor:

Rotating Machinery
Committee

CHEMICAL INDUSTRY

- CP.* The Pacific Northwest Chlorine-Caustic Industry. J. Judy, Hooker Chemical Corp.
- CP.* New Products from the Forests. M. D. Strickler, State College of Washington.
- 59-822. High Speed Restarting and Protection of Large Synchronous Motors. C. L. Phillips, General Electric Co. and M. H. Yuen, Bechtel Corp.
- CP59-891. High Speed Reclosing of Circuit Breakers on Systems Utilizing Synchronous Motors. R. V. Shepherd and W. R. Morton, General Electric Co.
- 59-823. Battery Impedance: Farads, Milliohms, Microhenries. E. A. Willihnganz and P. Rohner, C. & D. Batteries, Inc.

POWER GENERATION

- 59-880. Measurements of Hydraulic Turbine Windage and Friction Losses. R. L. Krahn, U.S. Army Corps of Engineers.
- 59-819. Performance of Large Waterwheel Generator Pivoted Pad Thrust Bearing Determined by Tests Under Normal Operating Conditions. R. A. Baudry, E. C. Kuhn and G. D. Cooper, Westinghouse Electric Corp.
- 59-881. Automatic Controls of Hydroelectric Stations of the B. C. Electric Company Limited. S. R. Hayden, E. P. Ehmayer, H. A. Baumann and R. S. Moulds, B. C. Engineering Co., Ltd.
- CP59-933. Electric Features of the Niagara Power Project. J. Saloma, Charles T. Main, Inc. Presented by L. M. Berry.

RELAYS

- CP59-796. System Swing Detector Relay. J. N. Haroian, Idaho Power Co.
- 59-775. An Automatic Trip-and-Carrier Test for Phase Comparison Carrier Current Relays. R. W. Hirtler, The City of Los Angeles Dept. of Water and Power.
- 59-797. Special Circuits for Ground Relay Current Polarization from Auto-Transformers Having Delta Tertiary. P. A. Oakes, Idaho Power Co.
- CP59-798. Optimum System and Motor Protection Through Proper System Grounding and Relaying. R. W. Swarhout, General Electric Co.; R. C. Dickson, Phelps Dodge Copper Refining Corp.

ROTATING MACHINERY

- 59-684. Electronic Surge Testing of Universal Armatures With Null Detection. H. R. Weed, Ohio State University.
- CP59-803. Amplitude Build-Up During Acceleration of Oscillatory Systems Possessing Several Degrees of Freedom. O. I. Elgerd, University of Florida.

*1015 Third Ave.—2 Blocks from Headquarters.

TUES. (Continued)

9:00 A.M.

OLYMPIC HOTEL
GEORGIAN ROOM

Chairman:

C. G. Currin, Dow
Corning Corp.

Sponsor:

Electrical Insulation &
Nucleonics
Committees

9:00 A.M.

OLYMPIC HOTEL
WILLIAMSBURG
BALLROOM

9:00 A.M.

OLYMPIC HOTEL
UNIVERSITY ROOM

Chairman:

R. A. Erwin, Los Angeles
Dept. of Water and
Power

Sponsor:

Industrial and Commer-
cial Power Systems
Committee

9:00 A.M.

WASHINGTON
ATHLETIC CLUB
ROOM 400**

Chairman:

A. M. Hopkin, Univer-
sity of California

Sponsor:

Feedback Control
Systems Committee

RADIATION EFFECTS SYMPOSIUM I: ECONOMIC AND ENGINEERING ASPECTS OF NUCLEAR POWER

- CP.* The Economic Utilization of Nuclear Power. H. Vann, Atomic Energy Commission.
- CP.* Some Control and Auxiliary Power Aspects of Nuclear Power Plants. A. R. Jones, Westinghouse Electric Corp.
- CP.* Radiation Effects Problems in Electronic Design. D. M. Newell and P. S. Miglicco, Convair.

SECTION DELEGATES CONFERENCE

INDUSTRIAL AND COMMERCIAL POWER SYSTEMS

- CP59-815. Electrical Distribution in British Industrial Plants. H. Clay, McLellan and Partners.
- CP59-816. Gas Turbine Drive For Industrial Power Generation. Z. S. Stys, Brown Boveri Corp.
- CP.* A New Approach to Commercial Building Power Distribution. C. F. Hanson, Pacific Telephone and Telegraph Co.

OPTIMUM NONLINEAR CONTROL

- CP59-836. Switching Criteria For Certain Contactor Servomechanisms With Arbitrary Inputs. C. A. Anderson, Maxwell Air Force Base.
- CP59-837. Modified Optimum Nonlinear Control. T. Mitsumaki, Hitachi Central Research Lab.
- 59-838. A Practical Standard Transistorized Optimum Response II Controller. K. Chen, Westinghouse Electric Corp. and D. R. Little, Curtiss-Wright Corp.
- CP59-840. Dual Mode Relay Servos. R. N. Buland, Aeronutronic Systems Inc. and N. Furumoto, University of California.

**1325 Sixth Ave.—2 Blocks from Headquarters.

TUES. (Continued)

9:00 A.M.

WASHINGTON
ATHLETIC CLUB**
EAST ROOM*Chairman:*
T. J. Martin, Boeing
Airplane Co.*Sponsor:*
Telemetering
Committee

2:00 P.M.

OLYMPIC HOTEL
COLONIAL ROOM*Chairman:*
T. T. Woodson, Waste
King Corp.*Sponsor:*
Domestic and Commer-
cial Applications
Committee

2:00 P.M.

OLYMPIC HOTEL
SPANISH BALLROOM*Chairman:*
J. H. Kinghorn, Amer-
ican Electric Power
Co., Inc.*Sponsor:*
Power Generation
Committee

2:00 P.M.

SEATTLE CITY LIGHT
BUILDING
AUDITORIUM**Chairman:*
M. E. Byrne, Idaho
Power Co.*Sponsor:*
Relays, System Engineer-
ing and Substations
Committees**TELEMETERING SYSTEM CONSIDERATIONS**

- CP.* Real Time Flutter Analysis by FM/FM Telemetering. H. R. Darby and L. E. Nackley, Convair.
- CP.* Techniques for More Realistic Evaluation of Telemetering Pickups. R. O. Smith and Paul Lederer, National Bureau of Standards.
- CP.* A Linear Programming Technique for Increasing Telemetry Systems Reliability. S. Moglewer, Northrup Division.
- CP59-942. Digital Data Handling Techniques of Telemetering in Integrated Systems. L. K. Hedding, Union Switch and Signal.
- CP.* Telemetering Requirements for Inflight Environmental Measurements. M. R. Beckman, U. S. Naval Missile Center.

ELECTRIC HEATING IN SCHOOLS, CHURCHES, ETC.

- CP.* General Aspects of Electric Heating for School Rooms. W. G. Potter, Edward L. Weigand Co.
- CP59-926. Electric Heating for Schools. B. A. Travis, Beverly A. Travis & Asso.
- CP.* Electric Heating in Churches. L. N. Roberson, Roberson, Inc.
- CP59-927. Electric Floor Heating by Steel Grid Mesh System. G. E. Hutchcroft and H. P. Gluckman, Los Angeles Dept. of Water and Power.

POWER GENERATION

- 59-877. Power Plant Control Board Locations and Operation. E. G. III Norell, Sargent and Lundy.
- CP59-878. Minimum Recommended Protection For Unit-Connected Steam Stations. AIEE W.G. on Steam Station Protection of the Power Generation Committee, D. M. Sauter, Chairman.
- CP59-866. Automatic Power Control of a Seed and Blanket Power Reactor Plant Through Use of a Cyclic Device and Contactor Control System. R. Saucedo, Westinghouse Bettis Atomic Power Dept. and D. J. Ford, University of Pittsburgh.
- CP59-935. Report of Working Group on Hydraulic Governor Applications. G. J. Vencill, Union Electric Co.

SYSTEM ENGINEERING, SUBSTATIONS AND RELAYS

- 59-916. Integration of Brownlee Into the Idaho Power Company System. D. R. Russell, C. N. Teed, L. O. Evans and M. E. Byrne, Idaho Power Co.
- 59-921. Design, Construction and Operation of Brownlee Hydroelectric Development. G. B. Soule, T. R. Heikes, W. B. Mitchell and O. E. Schaufelberger, Idaho Power Co.
- 59-806. Underfrequency Protection of Power Systems for System Relief Load Shedding—System Splitting. C. F. Dalziel, University of California and E. W. Steinback, Kaiser Engineers.
- 59-922. Design Features of Bulk Power Stations on the Southern California Edison Company System. O. R. Bulkley, Southern California Edison Co.

**1325 Sixth Ave.—2 Blocks from Headquarters.

*1015 Third Ave.—2 Blocks from Headquarters.

TUES. (Continued)

2:00 P.M.

OLYMPIC HOTEL
OLYMPIC BOWL*Chairman:*
E. W. Greenfield,
Washington State
College*Sponsor:*
Research Committee

2:00 P.M.

OLYMPIC HOTEL
REX ROOM*Chairman:*
R. E. Wall, University of
Washington*Sponsor:*
Computing Devices
Committee

2:00 P.M.

OLYMPIC HOTEL
GEORGIAN ROOM*Chairman:*
J. C. Pigg, Oak Ridge
National Laboratory*Sponsor:*
Electrical Insulation and
Nucleonics
Committees

2:00 P.M.

OLYMPIC HOTEL
WILLIAMSBURG
BALLROOM2:00 P.M.
OLYMPIC HOTEL
UNIVERSITY ROOM*Chairman:*
A. C. Friel, Dow
Chemical Co.*Sponsor:*
Industrial and Commer-
cial Power Systems
Committee**SEMINAR ON ELECTRICAL RESEARCH IN THE WEST**

- Panel I. Fundamental Researches of Interest to Electrical Engineers. Moderator, L. N. Stone, University of Oregon.
Panel Members: M. M. McWhorter, Stanford University; Myron Swarin, University of Washington; Frank Noakes, University of British Columbia.
- Panel II. Descriptions of Research Facilities in the West, Moderator, H. A. Baldwin, University of Arizona.
Panel Members: A. E. Paige and Carl Hedberg, University of Denver; Don Smith, University of British Columbia; J. E. Hobson, United Fruit Co.
- Panel III. Research Areas in Electricity Still Inadequately Covered. Moderator, A. L. Betts, Washington State University.
Panel Members: F. L. Singer, Bell Telephone Labs; E. D. Cook, General Electric Co.; Karl Martinez, Boeing Airplane Co.

COMPUTING DEVICES

- CP.* Automatic Checkout—A Data Processing Problem. E. R. Woods, Convair.
- CP.* A 400 Channel Automatic Data Acquisition and Interpretation System (DAISY). S. Rogers, Convair.
- CP.* FOXY—A Solid State Analog Memory for Functions of Two Variables. P. C. Sheretz, L. J. Kamm, L. E. Steffin, Convair.
- CP.* Cathode Ray Oscilloscope Instrumentation for High Speed Digital Computer. L. C. Hedrick, Tektronix, Inc.

RADIATION EFFECTS SYMPOSIUM II: EFFECTS OF RADIATION ON MATERIALS

- CP.* Nature of Radiation. D. G. Maeder, Oak Ridge National Laboratory.
- CP.* Effects of Irradiation in Materials. D. K. Holmes, Oak Ridge National Laboratory.
- CP.* Health Physics and the Effects of Radiation in Man. R. H. Ritchie, Oak Ridge National Laboratory.

SECTION DELEGATES CONFERENCE**USES OF ALUMINUM CONDUIT AND CONDUCTORS IN INDUSTRY**

- CP59-769. The Use of Aluminum Conduit in Industry. H. Esch, Kaiser Aluminum and Chemical Sales, Inc.
- CP59-1029. Kitimat Smelter—The Auxiliary Power Distribution System and Its Use of Insulated Aluminum Conductors. Y. Kato and M. F. Wilding, Aluminum Co. of Canada, Ltd.

TUES. (Continued)

2:00 P.M.

WASHINGTON
ATHLETIC CLUB
ROOM 400***Chairman:*
Harold Chestnut, Gen-
eral Electric Co.*Sponsor:*
Feedback Control Sys-
tems Committee**WED.—JUNE 24**

9:00 A.M.

OLYMPIC HOTEL
GEORGIAN ROOM*Chairman:*
T. H. McNary, Jr.,
Boeing Airplane Co.*Sponsor:*
Air Transportation
Committee

9:00 A.M.

OLYMPIC HOTEL
OLYMPIC BOWL*Chairman:*
C. G. Martin,
Thompson Products*Sponsor:*
Air Transportation
Committee

9:00 A.M.

OLYMPIC HOTEL
WILLIAMSBURG
BALLROOM*Chairman:*
L. T. Fisher, U. S.
Engineers*Sponsor:*
Rotating Machinery
Committee**CONTROL SYSTEMS**

- 59-682. Input-Output Relationships for Multi-Sampled-Loop Systems.
II G. C. Lendaris and E. I. Jury, University of California.
- 59-828. Analysis of Nonlinear Sampled-Data Control Systems, Part
II I. E. Kinnen and J. Tou, Purdue University.
- 59-829. Analysis of Nonlinear Sampled-Data Control Systems, Part
II II. E. Kinnen and J. Tou, Purdue University.
- 59-830. Design of Continuous Linear Control Systems for Minimum
II Probabilistic Error. J. Zaborsky, Washington University and
J. W. Diesel, McDonnell Aircraft Corp.
- 59-831. Design of Sampled Data Control Systems for Minimum Prob-
II ablistic Error. J. Zabroszky, Washington University and
J. W. Diesel, McDonnell Aircraft Corp.
- 59-832. Optimization of Multi-Output Linear Time-Varying Systems
II Subject to Multiple or Redundant Nonstationary Inputs. E. L.
Peterson, General Electric Co.

IONIC SYSTEMS

- 59-833. Practical Considerations of an Ion Propulsion System. A. E.
II Lennert, The Martin Co.
- CP59-834. A Nuclear-Ionic System for Space Flight. J. E. Cobb,
G. B. Shook and W. E. Cutler, Lockheed Aircraft Corp.
- CP.* Optimum Power Generation From a Moving Plasma. J. L.
Neuringer, Republic Aviation Corp.
- 59-885. Some Effects of Hypersonic Ionization on the Design of Elec-
II trical and Electronic Components. W. B. Sisco and J. M.
Fiskin, Douglas Aircraft Co., Inc.

HIGH TEMPERATURE EQUIPMENT

- CP59-902. Design and Development of an Airborne Alternating Cur-
rent Generation and Distribution System for Use in 600°F
Ambients. J. J. Pierro, North American Aviation, Inc.
- 59-848. A Solid Rotor A.C. Generator for High Temperature Elec-
II trical Systems. J. T. Bateman, General Electric Co.
- 59-864. Generator Insulation Systems Development for Mach 3 Air-
II craft. W. B. Penn, R. L. Balke and F. M. Precopio, General
Electric Co.
- CP59-865. Bearing Systems for High Temperature Aircraft Genera-
tors. G. D. Bradley, General Electric Co.
- 59-771. Development of Fuses and Terminals for High Temperature
II Applications. W. F. Bonwitt and H. Buttner, Burndy Corp

ROTATING MACHINERY

- 59-976. A Variable-Speed Reversible Drive Using an Induction Motor.
G. Hausen, P. P. Biringer and G. R. Slemmon, University of
Toronto.
- CP59-811. Generalized Variable Speed Motors, Frequency Convertors
and Variable Speed Drives. P. K. Charlu, P.S.G. College of
Technology.
- CP59-929. Veneer Lathe Drives in New Guinea. T. M. Googin, Con-
solidated Purchasing and Design, Inc. and R. P. Bleikamp,
Westinghouse Electric Corp.

**1325 Sixth Ave.—2 Blocks from Headquarters.

WED. (Continued)

9:00 A.M.

OLYMPIC HOTEL
UNIVERSITY ROOM*Chairman:*
F. I. Lawson, Pacific
Gas and Electric Co.*Sponsor:*
System Engineering
Committee

9:00 A.M.

SEATTLE CITY LIGHT
BUILDING
AUDITORIUM**Chairman:*
E. L. Brancato, Naval
Research Laboratory*Sponsor:*
Electrical Insulation
Committee

9:00 A.M.

OLYMPIC HOTEL
COLONIAL ROOM*Chairman:*
A. E. Frost, Western
Union Telegraph Co.*Sponsor:*
Data Communication
Committee

9:00 A.M.

OLYMPIC HOTEL
REX ROOM*Chairman:*
C. F. Savage, Jr., Gen-
eral Electric Co.*Sponsor:*
Indicating and Integrat-
ing Instruments
Committee**SYSTEM PLANNING**

- CP59-908. A Practical Approach to Economic Load Dispatching Be-
tween Interconnected Utility Companies. E. J. Burdick, Radio
Corp. of America and Americo Lazzari, Arizona Public Ser-
vice Co.
- CP59-858. Billing for Economy Energy in a Power Pool. P. G. Lubi-
sich, Los Angeles Dept. of Water and Power.
- 59-263. 230 KV Versus 60 KV Subtransmission. V. W. Ruskin and
III A. Langmuir, B. C. Engineering Co. Ltd. (Re-presented for
Discussion only)
- CP59-802. A New Approach to Load Research. G. B. Tupper, West-
inghouse Electric Corp. and L. H. Newman, Ebasco Services,
Inc.
- 59-817. An Introduction to the Study of System Planning by Opera-
III tional Gaming Models. J. K. Dillard, Westinghouse Electric
Corp. and H. K. Sels, Public Service Electric and Gas Co.

ENVIRONMENTAL EFFECTS ON ELECTRICAL INSULATION

- 59-800. A Study of the Effects of Corona on Polyethylene. E. J.
I McMahon, D. E. Maloney and J. R. Perkins, E. I. du Pont de
Nemours & Co., Inc.
- CP.* Radiation Damage to Polypropylene and Poloxymethylene.
L. M. Epstein, Westinghouse Electric Corp.
- CP.* Post-Irradiation Thermal and Electrical Properties of Magnet
Wire Insulation. J. W. Kallander, Naval Research Laboratory.
- CP.* A Calculation of Absorbed Dose from Neutrons. C. H. Cheek
and V. J. Linnenbom, Naval Research Laboratory.
- CP.* Electron Attachment and Its Effect on Pre-Breakdown Cur-
rents in Gases. R. Geballe, University of Washington.

DATA COMMUNICATION

- 59-890. Simulation of Data Switching Systems on a Digital Computer.
I F. J. Gross, Bell Telephone Labs., Inc.
- 59-812. A High Volume, High Speed Weather Information Distribu-
I tion System. E. E. Schwenzfeger, Bell Telephone Labs., Inc.
- CP.* Design Aspects of AM Digital Transmission Systems. C. R.
Fisher, Stromberg-Carlson Co.
- CP.* Connecting an Asynchronous Data Source to a Synchronous
Data Transmission System. F. E. Froelich, Bell Telephone
Labs., Inc.

INDICATING AND INTEGRATING INSTRUMENTS

- CP59-875. Principles and Considerations in the Design of a Hall Mul-
tipplier. T. Barabutes and W. J. Schmidt, Westinghouse Elec-
tric Corp.
- CP59-876. Thermal Voltage Converters for Accurate Voltage Measure-
ments to 30 Megacycles. F. L. Hermach, National Bureau of
Standards.
- CP.* Linearity Tests of A-C Voltage Dividers. N. E. Morrison,
Electro-Measurements, Inc.
- 59-805. Correlation of Measured and Calculated Substation Ground
I Grid Resistance. A. L. Kinyon, Bonneville Power Adminis-
tration.

*1015 Third Ave.—2 Blocks from Headquarters.

WED. (Continued)

2:00 P.M.

OLYMPIC HOTEL
GEORGIAN ROOM*Chairman:*
E. W. Colehower, The
Martin Co.*Sponsor:*
Air Transportation
Committee

2:00 P.M.

OLYMPIC HOTEL
OLYMPIC BOWL*Chairman:*
R. A. Rugge, W. L.
Maxson Corp.*Sponsor:*
Air Transportation
Committee

2:00 P.M.

OLYMPIC HOTEL
REX ROOM*Chairman:*
J. E. Barkle, Bechtel
Corp.*Sponsor:*
Nucleonics Committee

2:00 P.M.

OLYMPIC HOTEL
WILLIAMSBURG
BALLROOM*Chairman:*
H. P. Sleeper, Public
Service Co. of New
Jersey*Sponsor:*
Relays and Transmission
and Distribution
Committees**SOLAR POWER IN SPACE**

- CP59-903. Solar-Mechanical Power Plant Design Problems. J. M. Stem, Wright Air Development Center, USAF.
- 59-869. Optimum Reflector-Absorber Geometry for a Solar Generator. R. W. Stineman, Boeing Airplane Co.
- CP59-886. Photovoltaic Solar Energy Converters for Space Vehicles—Present Capabilities and Objectives. A. B. Francis and W. W. Happ, Lockheed Aircraft Corp.
- CP59-904. A Thermionic Power Supply Using Solar Heat for Space Application. E. F. Casey and G. Street, Jr., General Electric Co.

HIGH TEMPERATURE EQUIPMENT

- 59-883. New Materials for Transformer-Rectifier Unit High-Temperature Aircraft. J. G. Hoop and D. K. McIlvaine, Westinghouse Electric Corp.
- CP59-905. Electrical Components for 600°F. Control Circuit. K. A. Teumer, Sundstrand Aviation.
- CP59-900. Component Parts Status for 600°F. Aircraft Generator Control. J. P. Hanna and J. F. Scoville, General Electric Co.
- 59-907. Computer Evaluation of High-Temperature Aircraft AC Electrical System Designs. W. E. Sollecito and D. A. Swann, General Electric Co.
- CP.* 600°F Constant-Speed Drive—Mechanical Traction Type. J. J. Jaquith and C. A. Sandner, Lycoming Division, AVCO.

NUCLEONICS

- CP59-928. Automatic Control of Boiling Water Reactors. W. C. Lipinski, A. Hirsch and C. A. Pesce, Argonne National Laboratory.
- CP.* Operational Testing of the GETR. H. T. Wells and J. O. Arterburn General Electric Co.
- CP.* Reliability and Fail-Safe Requirements for Nuclear Process Monitoring Equipment. R. Sherrard, General Electric Co.
- CP.* Cable Penetration Seals for the Dresden Reactor Enclosure. A. J. McCrocklin, General Electric Co. and S. P. Giambra, Bechtel Corp.
- CP.* The Electrical System of the Bevatron Rapid Beam Ejector. C. G. Dols, University of California Radiation Laboratory.

RELAYS AND TRANSMISSION AND DISTRIBUTION

- 58-1229. Distribution Protection as Used on the Portland General Electric Co. System, Portland, Oregon. M. A. Bostwick, Portland General Electric Co.
- 58-1196. Distribution Circuit Protection. E. L. Guenzel and W. T. III Morris, Texas Electric Service Co.
- CP59-941. Selective Ground Relaying of Distribution Lines on 4-8 Primary Amperes. C. Lowerison and F. V. Gillum, Southern California Edison Co.
- 58-1322. High Speed Magnetic Air Breaker for Distribution Circuits. III H. P. Sleeper, Public Service Electric and Gas Co. and J. D. Findley, Westinghouse Electric Corp. (Re-Presented for Discussion only.)
- 59-893. Zero-Sequence Current Density in the Earth. M. E. Forsman, University of Florida.

WED. (Continued)

2:00 P.M.

OLYMPIC HOTEL
UNIVERSITY ROOM*Chairman:*
J. P. Jolliffe, Bonneville
Power Administration*Sponsor:*
System Engineering and
Power Generation
Committees

2:00 P.M.

SEATTLE CITY LIGHT
BUILDING
AUDITORIUM**Chairmen:*
E. L. Brancato &
V. J. Linnenbom, Naval
Research Laboratory*Sponsor:*
Electrical Insulation and
Nucleonics
Committees

2:00 P.M.

OLYMPIC HOTEL
COLONIAL ROOM*Chairman:*
H. F. May, Bell Tele-
phone Labs., Inc.*Sponsor:*
Communication
Switching Systems
Committee**EMERGENCY AND SCHEDULED GENERATOR SHUT-DOWN**

- 59-939. Response of Steam and Hydro Generating Plants to Generating Plants to Generation Control Tests. A. Klopfenstein, Southern California Edison Co.
- 59-852. Measurement of the Transfer Functions in the Electric Power III Systems Using Spontaneous Power Variations. M. Mesarovic, MIT; I. Obradovic, D. Kalic, and S. Spiridonovic, Nikola Tesla Institute.
- 59-851. Mathematical Models for Use in the Simulation of Power III Generation Outages—I Fundamental Considerations. C. J. Baldwin and D. P. Gaver, Westinghouse Electric Corp.; C. H. Hoffman, Public Service Electric and Gas Co.
- 59-849. Mathematical Models for Use in the Simulation of Power III Generation Outages—II Power System Forced Outage Distributions. C. J. Baldwin and D. P. Gaver, Westinghouse Electric Corp.; J. E. Billings and C. H. Hoffman, Public Service Electric and Gas Co.
- 59-850. A Study of the Economic Shut-Down of Generating Units in III Daily Dispatch. C. J. Baldwin and K. M. Dale, Westinghouse Electric Corp.; R. F. Dittrich, Public Service Electric and Gas Co.

ROUND TABLE DISCUSSION ON RADIATION EFFECTS**COMMUNICATION SWITCHING SYSTEMS**

- 59-824. A New Dynamic Impedance Matching Circuit As Applied To I A Conference Repeater. O. D. Grandstaff, General Telephone Labs., Inc.
- CP59-825. Transistorized Universal Tone Detector. E. J. Glenner, General Telephone Labs., Inc.
- 59-826. A Small High-Speed Transistor and Ferrite Core Memory I System. W. L. Shafer, Jr., W. N. Toy and H. E. Priebe, Jr., Bell Telephone Labs., Inc.
- CP59-827. Lossless Transmission Circuit for an Electronic Telephone Switching System Employing Time Division Multiplex Switching. L. K. Lugten, Automatic Electric Co.
- CP.* Some Impressions of Telecommunications in the U.S.S.R. I. Molnar, General Telephone Labs., Inc.

*1015 Third Ave.—2 Blocks from Headquarters.

WED. (Continued)

7:30 P.M.

OLYMPIC HOTEL
SPANISH BALLROOM*Chairman:*
E. C. Wells, Boeing
Airplane Co.*Sponsor:*
Air Transportation
Committee**THURS.—JUNE 25**

9:00 A.M.

OLYMPIC HOTEL
SPANISH BALLROOM*Chairman:*
J. L. Converse, Boeing
Airplane Co.*Sponsor:*
Air Transportation
Committee

9:00 A.M.

OLYMPIC HOTEL
WILLIAMSBURG
BALLROOM*Chairman:*
V. R. Boulton, Aerojet
General Corp.*Sponsor:*
Aircraft and Flight Test
Instrumentation
Committee

9:00 A.M.

OLYMPIC HOTEL
OLYMPIC BOWL*Chairman:*
J. T. Lusignan, Jr., Ohio
Brass Co.*Sponsor:*
Transmission and Distribu-
tion and Protective
Devices Committees**ELECTRICAL PROBLEMS IN SPACE**

Panel Discussion:

- CP.* W. H. Bostick, Stevens Institute of Technology.
- CP.* M. Riaz, University of Minnesota.
- CP.* R. B. Kershner, Johns Hopkins University.
- CP.* C. W. Burrell, Lockheed Aircraft Corp.

CONSTANT-FREQUENCY VARIABLE-SPEED GENERATORS

- 59-773. Constant-Frequency Variable-Speed Frequency-Make-Up Generators. B. V. Hoard, Boeing Airplane Co.
- 59-780. Variable Speed, Constant Frequency Devices—A Survey of the Methods in Use and Proposed. T. B. Owen, Santa Monica, California.
- CP59-772. Precision Power Frequency With Variable Speed Generators. S. E. Rauch, University of California and L. J. Johnson, Hallamore Electronics Co.
- 59-872. Variable-Speed, Constant-Frequency Generator System For Aircraft. K. M. Chirgwin and L. J. Stratton, Jack & Heintz, Inc.

TESTING OF VEHICLES IN FLIGHT

- CP.* Instrumentation Requirements for a Long-Range Re-Entry Vehicle. J. E. Regar, General Electric Co.
- CP59-863. System Considerations in Flight Test Planning. V. G. Fauque, Westinghouse Electric Corp.
- CP.* High-Speed Data-Gathering System. W. D. van Dyke, Douglas Aircraft Co.
- CP59-860. Instrumentation for Research on Human Performance. D. B. Hatmaker, Lockheed Aircraft Corp.
- CP.* A Standardized Resistance Temperature Probe for Use in the Region of 300°F. G. R. Deppe, Aerojet-General Corp.

TRANSMISSION AND DISTRIBUTION AND PROTECTIVE DEVICES

- 59-895. Lighting Protection of Equipment on Multiple Line Buses. III A. H. Knable, Allis-Chalmers Mfg. Co.
- CP.* Arrester Protection of High Voltage Stations Against Lightning. A. J. Schultz, R. H. Hopkinson, G. D. Breuer and I. B. Johnson, General Electric Co.
- 59-894. Switching Surge Voltages Due to the Interruption of Transformer Magnetizing Current. H. K. Amchin, American Electric Power Service Corp. and R. T. Curto, The Detroit Edison Co.
- CP.* Switching Surges on Energizing a Transformer Terminated Line. A. J. Schultz and I. B. Johnson, General Electric Co.
- 59-568. Shielding 13.8 KV Distribution Circuits. M. L. Hurstell and III M. G. West, New Orleans Public Service, Inc.

THURS. (Continued)

9:00 A.M.

OLYMPIC HOTEL
REGENTS ROOM*Chairman:*
T. A. Phillips, Arizona
Public Service Co.*Sponsor:*
Substations and Trans-
mission and Distribu-
tion Committees

9:00 A.M.

OLYMPIC HOTEL
UNIVERSITY ROOM*Chairman:*
E. J. Harrington,
Bonneville Power
Administration*Sponsor:*
Switchgear Committee

9:00 A.M.

OLYMPIC HOTEL
REX ROOM*Chairman:*
C. A. Wells, The Pacific
Telephone and
Telegraph Co.*Sponsor:*
Radio Communication
Systems Committee**ALUMINUM SUBSTATION BUSES AND CONNECTORS**

- CP58-1286. Aluminum Angle Substation Bus Conductor. L. C. Weber, Northern States Power Co. and H. Fossum, Pioneer Service & Engineering Co.
- CP59-930. Fasteners for Electrical Connections on Aluminum Bus Conductors. J. W. Atman, W. J. Dewalt and D. H. Sandell, Aluminum Company of America.
- CP59-844. Corrosion Performance of Aluminum, Aluminized Steel and Galvanized Steel Hardware in Severe Marine Environments. T. A. Lowe, Kaiser Aluminum & Chemical Corp. and M. K. Dean, Hawaiian Electric Co.
- CP59-845. The Critical Aspects of Steel Hardware in Aluminum Connectors. W. Frank, Burndy Corp.

SWITCHGEAR

- 59-187. Twenty Years' Experience With Outdoor Single-Tank Oil Circuit Breakers. S. Clare and W. O. Rowan, The Hydro-Electric Power Commission of Ontario. (Re-presented for discussion only)
- 59-846. High Power Laboratory Tests On High Capacity High Voltage Oil Circuit Breakers. N. E. Reed, Kelman Electric & Mfg. Co. and E. B. Rietz, I-T-E Circuit Breaker Co. (Re-presented for Discussion only)
- CP59-857. Improved Insulation in Metal-Clad Switchgear. R. Frink, Westinghouse Electric Corp.
- CP.* Experience With the Current Limiting High Interrupting Capacity Low Voltage Circuit Breaker. W. H. Edmunds, I-T-E Circuit Breaker Co.

MICROWAVE RELAY SYSTEMS

- CP.* The TJ Microwave Radio Relay System. S. D. Hathaway and J. Gammie, Bell Telephone Labs, Inc.
- 59-943. The Flagstaff-Phoenix TJ Radio System. J. W. Hidy, Mountain States Telephone and Telegraph Co.
- CP59-931. 96 Channel Multiplex System for on Carrier on Radio. M. Aruck and C. I. L. Cronberg, Jr., Bell Telephone Labs, Inc.
- 59-874. A New High-Capacity Microwave Relay System. C. G. Arnold, I V. E. Isaac, H. R. Mathwich, R. F. Privett and L. E. Thompson, Radio Corporation of America.
- 59-889. Microwave Systems on the Pacific Great Eastern Railway. I R. N. Doble, Pacific Great Eastern Railway Co. and J. E. Raftis, Canadian Motorola Electronics, Ltd.

THURS. (Continued)

9:00 A.M.

SEATTLE CITY
LIGHT BUILDING
AUDITORIUM**Chairman:*
C. F. Spitzer, Lockheed
Aircraft Corp.*Sponsor:*
Solid State Devices
Committee**SOLID STATE DEVICES**

- 59-766. An Electric Analog of Heat Flow in Power Transistors. J. Reese, W. W. Granneman and J. R. Durant, University of New Mexico.
I
- 59-909. Design Parameters for Optimizing the Efficiency of Thermoelectric Generators Utilizing P-Type and N-Type Lead Telluride. R. W. Fritts, Minnesota Mining and Manufacturing Co.
I
- CP.* Measurement of Thermoelectric Materials Under Simulated Generator Conditions—II. C. S. Duncan, Westinghouse Research Labs.
- CP.* Theoretical Efficiency of Thermoelectric Generators with Constant Thomson Coefficient. D. L. Kerr and R. L. Gessner, General Electric Co.
- CP.* Encapsulation of Thermoelectric Materials. E. Fischer-Calbrie, General Electric Co.

1:30 P.M.

SEATTLE CITY LIGHT
BUILDING
AUDITORIUM**Chairman:*
E. D. Barcus, The Pacific
Telephone and
Telegraph Co.*Sponsor:*
TV and Aural Broad-
casting Systems and
Radio Communication
Systems Committees**RADIO COMMUNICATION AND TELEVISION**

- CP.* Television-Education's Newest Partner in Seattle. J. L. Boor, KCTS-TV, Seattle, Washington.
- CP.* Some Technical Aspects of Video Tape Recording. J. L. Middlebrooks, Radio KING, Seattle, Washington
- CP.* Advancement in Mobile Communications. J. S. Smith, General Electric Co.
- 59-920. Global Public Telephone Service—1958. D. D. Donald and I T. A. Chandler, American Telephone and Telegraph Co. (Re-presented for Discussion only.)
- 59-944. A Transistorized Pulse Code Repeater. G. R. Partridge, Raytheon Mfg. Co.
I
- CP59-768. Spectral Folding in a Single-Tone FM Signal. J. J. Bussgang, Radio Corp. of America and A. H. Nuttal, Massachusetts Inst. of Technology.
- 59-925. An Approach to the Study of Automatic Target Tracking.
I L. Pode, Sherman Oaks, California.

SPACE VEHICLE INSTRUMENTATION

- CP.* Analysis of Thermal Instrumentation Capability for Hypervelocity Re-entry Vehicles. L. Foster, General Electric Co.
- CP.* Motion Parameter Measurements for a Re-entry Vehicle Following a Ballistic Trajectory. J. Picard, General Electric Co.
- CP.* Integrated Instrumentation in Man-Vehicle Systems. C. Gibson, Douglas Aircraft Co., Inc.

*1015 Third Ave.—2 Blocks from Headquarters.

THURS. (Continued)

1:30 P.M.

OLYMPIC HOTEL
OLYMPIC BOWL*Chairman:*
E. L. Kanouse,
Los Angeles Dept. of
Water and Power*Sponsor:*
Transmission and Distri-
bution Committee

1:30 P.M.

OLYMPIC HOTEL
REGENTS ROOM*Chairman:*
Harold Fossum, Pioneer
Service and
Engineering Co.*Sponsor:*
Substations and
Transformers
Committees

1:30 P.M.

OLYMPIC HOTEL
UNIVERSITY ROOM*Chairman:*
H. C. Bourne, University
of California*Sponsor:*
Magnetic Amplifiers
Committee**TRANSMISSION AND DISTRIBUTION**

- 59-808. Electromagnetic Unbalance of Untransposed Transmission III Lines—III Double Circuit Lines. E. T. B. Gross, Illinois Institute of Technology; J. H. Drinnan, British Columbia Engineering Co., Ltd.; E. Jochum, Allis-Chalmers Mfg. Co.
- 59-807. Corona and Conductor Work Function. H. S. Dixon, Berkeley III Laboratory.
- 59-767. Development of a Square Law Radio Noise Meter—II. F. J. III Trebby, Kaiser Aluminum and Chemical Corp.
- 59-896. EHV Single and Twin Bundle Conductors—Influence of Conductor Diameter and Strand Diameter on Radio Influence Voltage and Corona Initiation Voltage. L. N. Stone, Oregon State College.
- 59-814. Radio Interference Attenuation on Energized H.V. Transmission III Lines, Measurement and Application. L. N. Stone, Oregon State College; R. S. Gens and E. H. Gehrig, Bonneville Power Administration.

MOBILE TRANSFORMERS AND SUBSTATIONS

- CP59-842. Field Experience With 15,000 KVA Highway Mobile Transformers. R. E. Brown and J. W. Pettinos, City Public Service Board of San Antonio, Texas.
- CP59-843. Application of Large Mobile Transformers on Pacific Gas and Electric Company System. J. L. Buckley, Pacific Gas & Electric Co.
- CP59-932. Design of a 40 Mva Mobile Transformer/Autotransformer. J. E. Hall, General Electric Co.
- CP.* Railway and Highway Type Mobile Transformers on BPA System. L. I. Gradasoff, Bonneville Power Administration.

MAGNETIC AMPLIFIERS

- 59-788. Theory of Ferroresonance. J. T. Salihi, Lenkurt Electric Co., I Inc.
- CP59-789. Graphical Evaluation of Magnetic Amplifier Performance Based On Constant-Voltage Reset Test. D. Nitzan, University of California.
- 59-635. Shunt-Coupled Magnetic Amplifier Circuits. R. M. Hubbard, I Boeing Airplane Co. (Re-presented for Discussion only)
- 59-790. Magnetic Amplifier Circuits—A Classification of Half-Wave and Full-Wave Non-Reversible and Reversible Self-Saturating Circuits. D. L. McMurtrie, Raytheon Manufacturing Co. (Re-presented for Discussion only)
- 59-791. All Transistor Magnetic Core Memories. B. T. Goda, W. R. I Johnston, S. Markowitz, M. Rosenberg and R. Stuart-Williams, Telemeter Magnetics, Inc. (Re-presented for discussion only.)
- 59-776. The Winding Capacitances in Magnetic Amplifiers. I. Jo- I hansen, Massachusetts Institute of Technology.

THURS. (Continued)

1:30 P.M.

OLYMPIC HOTEL
SPANISH BALLROOM

Chairman:
C. J. Breitwieser, Air
Logistics Corp.

Sponsor:
Air Transportation
Committee

1:30 P.M.

OLYMPIC HOTEL
REX ROOM

Chairman:
L. G. Abraham, Bell
Telephone
Laboratories, Inc.

Sponsor:
Communication Theory
Committee

FRIDAY—JUNE 26

9:00 A.M.

OLYMPIC HOTEL
SPANISH BALLROOM

Chairman:
R. J. Sorenson, Lock-
heed Aircraft Co.

Sponsor:
Air Transportation
Committee

THERMOELECTRIC GENERATORS

- 59-867. An Elementary Design Discussion of Thermoelectric Generation. E. W. Bollmeier, Minnesota Mining and Manufacturing Co.
- CP59-937. Minimizing the Weight of Thermoelectric Generators in Space Applications. D. L. Kerr and R. L. Gessner, General Electric Co.
- 59-847. Solar Powered Thermoelectric Generator Design Considerations. N. F. Schuh, Westinghouse Electric Corp., and R. J. Tallent, Boeing Airplane Co.
- CP59-887. Utilization of Thermoelectric Effects for Power Generation. W. W. Happ and S. R. Hawkins, Lockheed Aircraft Corp.

COMMUNICATION THEORY

- CP.* Figure of Merit for Information Networks. L. S. Schwartz, New York University.
- 59-809. An Experimental Study of Detection in Nonstationary Noise. I T. R. Williams and J. B. Thomas, Princeton University.
- CP.* An Error-Correcting Code for Quaternary Data Transmission. E. H. Scherer, Westinghouse Electric Corp.

POWER SOURCES

- CP59-910. Conception Design of a Thermionic Space Power Plant. F. N. Huffman, The Martin Co.
- CP59-911. Nuclear Thermoelectric Power Supply. R. J. Harvey, The Martin Co.
- CP59-934. Minimum Weight Thermoelectric Generators Applied to Air Breathing Propulsion Systems. P. C. Holden and R. E. Klokow, Westinghouse Electric Corp.
- CP.* Generation of Electric Power in Space Vehicles by Means of a Cryogenic Fuel Powered Engine. H. Howard, R. Laughlin and N. Morgan, Vickers, Inc.

FRI. (Continued)

9:00 A.M.

OLYMPIC HOTEL
OLYMPIC BOWL

Chairman:
R. T. Smith, University
of Texas

Sponsor:
Air Transportation
Committee

9:00 A.M.

OLYMPIC HOTEL
REX ROOM

Chairman:
J. T. Turner, British Co-
lumbia Electric Co.,
Ltd.

Sponsor:
Land Transportation
Committee

9:00 A.M.

OLYMPIC HOTEL
WILLIAMSBURG
BALLROOM

Chairman:
W. S. Gordon,
Consulting Engineer

Sponsor:
General Industry Appli-
cations Committee

RELIABILITY

- 59-888. Reliability Analysis for Aircraft Generators. J. T. Duane and II L. J. Yeager, General Electric Co.
- 59-912. Functional Cycling to Assure Reliability of Aircraft Control Equipment. R. E. Hulseley and L. L. Kessler, Westinghouse Electric Corp.
- CP59-871. A Method of Comparative Reliability Prediction for Developmental Design Selection. V. L. Grose, Boeing Airplane Co.
- 59-565. The Effect of Variable High Altitude Humidity on the Wear of Non-Dusting Brushes. L. E. Moberly and J. L. Johnson, Westinghouse Electric Corp.

RAPID TRANSIT

- CP59-856. Automania Gives Way to Rapid Transit in the Bay Area. J. C. Beckett, San Francisco Bay Area Rapid Transit District.
- CP59-782. Planning for Public Transportation. M. O. Anderberg, Seattle Transit System.
- CP.* A Study of Mass Transportation Needs in Metropolitan Los Angeles. C. T. Abbott, Coverdale & Colpitts.

PULP AND PAPER INDUSTRY

- CP.* Practical Analysis of Regulating Systems for the Paper Industry. R. J. Farrell, Reliance Electric and Engineering Co.
- CP59-853. Cable Applications in Paper Mills. E. E. McIlveen, The Okonite Co.
- CP.* Application of Computer Control in Pulp and Paper Manufacture. T. M. Stout, Thompson-Ramo-Wooldridge Products Co.
- 59-813. Transistor Amplistat Regulated Sectional Drive at Southland Paper Mills. A. E. Vickery, Southland Paper Mills and G. E. Shaad, General Electric Co.

FRI. (Continued)

9:00 A.M.

SEATTLE CITY LIGHT
BUILDING
AUDITORIUM**Chairman:*
J. A. Rawls, Virginia
Electric and Power
Co.*Sponsor:*
Transmission and Dis-
tribution Committee

9:00 A.M.

OLYMPIC HOTEL
GEORGIAN ROOM*Chairman:*
R. F. Stevens, Bonneville
Power Administration*Sponsor:*
Substations Committee

9:00 A.M.

OLYMPIC HOTEL
REGENTS ROOM*Chairman:*
R. M. Hubbard, Boeing
Airplane Co.*Sponsor:*
Magnetic Amplifiers
Committee**TRANSMISSION AND DISTRIBUTION**

- CP59-859. Effect of Twin Conductor Arrangement on Transmission Line Constants. F. Taher, University of Cairo.
- 59-897. EHV Single and Twin Bundle Conductors—Electrical Characteristics and Conductor Selection. E. Hazan, Kaiser Aluminum and Chemical Corp.
- CP59-898. Short-Time Annealing Characteristics of Electrical Conductors Part I: Methodology. L. F. Roehmann, Kaiser Aluminum and Chemical Corp.
- 59-899. Laboratory and Field Evaluation of Connectors and Other Accessories for Aluminum Conductors in Severe Marine Environments. W. J. Sanders, Kaiser Aluminum and Chemical Corp.
- 58-449. High Strength Aluminum Alloy Conductors. E. W. Greenfield, Kaiser Aluminum and Chemical Corp. (Re-presented for Discussion only)

SUBSTATIONS

- 59-781. Modular Design for Aluminum Substation Structures. G. W. Swanson and P. A. McCleer, Consumers Power Co.
- CP.* Aluminum Alloy Substation Structures. J. E. Williams, Aluminum Company of America and A. D. Sangdahl, H. K. Porter Co., Inc.
- CP.* Recent Developments in Aluminum Substation Structures. R. H. Vaterlaus, Kaiser Aluminum & Chemical Corp.
- 59-189. Rationalization of Electrical Clearances for Applications at EHV's 230 KV to 460/500 KV. P. L. Bellaschi, Portland, Oregon. (Re-presented for discussion only.)

MAGNETIC AMPLIFIERS

- 59-765. Transistor—Magnetic Control Circuits For Aircraft Electric Systems. A. W. Pratt, Jack & Heintz, Inc.
- CP59-784. Magnetic Amplifier Regulated Rectifiers. A. S. FitzGerald, Mill Valley, California.
- 59-785. Capacitively Coupled Magnetic Amplifiers. H. W. Collins, Westinghouse Electric Corp. (Re-presented for Discussion only)
- 59-786. A More Stable Three-Phase Transistor-Core Power Inverter. W. E. Jewett and P. L. Schmidt, Bell Telephone Laboratories, Inc. (Re-presented for Discussion only)
- 59-668. Analog Division Circuit. W. McMurray, General Electric Co. (Re-presented for Discussion only)
- CP59-787. Use of a Series Saturable Reactor As a Fluorescent Lamp Dimming Ballast. P. E. Massie, Day-Ray Products, Inc.

*1015 Third Ave.—2 Blocks from Headquarters.

FRI. (Continued)

9:00 A.M.

OLYMPIC HOTEL
UNIVERSITY ROOM*Chairman:*
K. M. Stevens, Southern
California Edison Co.*Sponsor:*
Transformers
Committee

9:00 A.M.

WASHINGTON
ATHLETIC CLUB**
ROOM 400*Chairman:*
C. D. Howe, Pacific
Telephone and
Telegraph Co.*Sponsor:*
Wire Communication
Systems Committee

2:00 P.M.

OLYMPIC HOTEL
OLYMPIC BOWL*Chairman:*
J. D. Miner, Jr., West-
inghouse Electric
Corp.*Sponsor:*
Air Transportation
Committee**TRANSFORMERS**

- 59-783. An Economic Analysis of Distribution Transformer Application. C. F. Mitchell, Commonwealth Edison Co.; J. O. Sweeny and J. L. Cantwell, General Electric Co.
- CP.* Universal Connectors for Distribution Transformers. M. Brenner, Penn-Union Electric Corp.
- 59-818. Vaporization Cooling for Power Transformers. P. Narbut and A. J. Maslin, Westinghouse Electric Corp.; C. Wasserman, Baltimore Gas and Electric Co.
- 59-854. Fault Pressure and Gas Detector Relays. H. A. Fohrhaltz, General Electric Co.
- 57-1146. Standard Basic Impulse Insulation Levels. Report by the AIEE Standards Coordinating Committee No. 8, J. H. Foote, Chairman. (Re-presented for Discussion only)

PLASTIC INSULATED TELEPHONE WIRE AND CABLE

- 59-792. Manufacture of Composite Cable Sheath for Telephone Exchange Cable. D. A. Hughes, Western Electric Co.
- 59-777. The Design and Manufacture of Direct Burial Wire. J. L. Robb and W. L. Roberts, Superior Cable Corp.
- CP59-793. Design of Polyethylene Insulated Multipair Telephone Cable. A. S. Windeler, Bell Telephone Laboratories, Inc.
- 59-778. Transmission Properties of Polyethylene Insulated Telephone Cables At Voice and Carrier Frequencies. G. S. Eager, Jr., L. Jachimowicz, I. Kolodny and D. E. Robinson, General Cable Corp.

DESIGN PROBLEMS

- CP.* The Materials Problem in Secondary Nuclear Power. W. L. Rice, Wright Air Development Center, USAF.
- 59-873. Nuclear Radiation and Electronic Equipment. J. R. Crittenden, General Electric Co.
- 59-913. Temperature Prediction in Thermal-Lag Equipment. P. B. Richards, Thompson-Ramo-Wooldridge, Inc.
- 59-879. Characteristics and Measurement of Ripple in Aircraft Electric Power Systems. O. Markowitz, U. S. Naval Air Development Center.

**1325 Sixth Ave.—2 Blocks from Headquarters.

FRI. (Continued)

2:00 P.M.

OLYMPIC HOTEL
SPANISH BALLROOM*Chairman:*
M. H. Lowe, General
Electric Co.*Sponsor:*
Air Transportation
Committee

2:00 P.M.

OLYMPIC HOTEL
REX ROOM*Chairman:*
H. R. Morgan, Chicago,
Milwaukee, St. Paul
and Pacific Rwy. Co.*Sponsor:*
Land Transportation
Committee

2:00 P.M.

SEATTLE CITY LIGHT
BUILDING
AUDITORIUM**Chairman:*
I. B. Johnson, General
Electric Co.*Sponsor:*
Transmission and Dis-
tribution Committee**POWER SOURCES**

- CP59-914. Electrostatic Power Generation for Space Propulsion. O. P. Breaux, United States Air Force.
- CP59-835. Electrochemical Auxiliary Power Sources for Missiles and Space Flight. M. Eisenberg, Lockheed Aircraft Corp.
- CP59-915. A Simple Variable Speed Independent Frequency Generator. A. K. Wickson, Canadian Westinghouse Co., Ltd.
- CP59-861. Space Electric Power Transmission. G. W. Bills, North American Aviation, Inc.

LAND TRANSPORTATION

- 59-779. A High Capacity Maintenance-Free Generating System For II Motor Coaches. R. L. Larson, General Motors Corp.
- 59-492. Multiple-Unit Operation of Diesel and Electric Locomotives II on The Milwaukee Road. L. Wylie, Seattle, Washington.
- CP59-799. Semi-Conductor Rectifiers For Traction Power On Electric Railways. V. E. Staff, DeLeuw Cather & Co.; S. B. Lent, Metropolitan Transit Authority.

TRANSMISSION AND DISTRIBUTION

- 59-900. Sag-Tension Computations and Field Measurements of Bonneville Power Administration. P. F. Winkelman, Bonneville Power Administration.
- 59-868. Design of Overhead Lines With 5005 Aluminum Alloy Cables. III H. W. Adams, Reynolds Metals Co.
- CP59-901. Fatigue Characteristics of EC and 5005 Alloy Aluminum Wire. C. E. Burley, Reynolds Metals Co.
- 59-801. Factors Affecting Vibratory Stresses in Cables Near the Point III of Support. R. F. Steidel, Jr., University of California.
- 59-178. Improved Systems for Recording Conductor Vibrations. C. B. III Rawlins and J. R. Harvey, Aluminum Co. of America. (Represented for Discussion only)

*1015 Third Ave.—2 Blocks from Headquarters.

FRI. (Continued)

2:00 P.M.

OLYMPIC HOTEL
UNIVERSITY ROOM*Chairman:*
C. H. Bjorquist,
Bonneville Power
Administration*Sponsor:*
Transformers
Committee

2:00 P.M.

OLYMPIC HOTEL
WILLIAMSBURG
BALLROOM*Chairman:*
A. L. Albert, Oregon
State College*Sponsor:*
Wire Communication
Systems Committee**TRANSFORMERS**

- 59-281. Accelerated Aging Characteristics of Formex and Paper Insulated Wires in Transformer Oil. M. F. Beavers, H. H. Brustle, J. H. Carpenter and W. J. Degnan, General Electric Co.
- CP.* A New Insulation System. M. F. Beavers, E. L. Raab and J. C. Leslie, General Electric Co.
- CP.* Factors Affecting the Aging Characteristics of Various Wire Coating Materials in Transformer Oil. G. F. Lipsey and P. W. Juneau, Jr., General Electric Co.
- SP-76. Proposed Guide for Maintenance of Transformer Askarel. Report by Insulating Fluids Subcommittee of AIEE Transformer Committee, C. P. Xenis, Chairman.
- 58-1150. The Relationship Between Operating Voltage and the Standard Dielectric Tests for Power and Distribution Transformers. Dielectric Tests Subcommittee of AIEE Transformers Committee Working Group, H. H. Wagner, Chairman. (Represented for discussion only.)

WIRE COMMUNICATIONS

- 59-774. Synthesis of Cable Simulation Networks. R. W. DeMonte, I Bell Telephone Labs., Inc.
- 59-794. A New Transistorized Negative Impedance Telephone Repeater. R. P. Dimmer and E. L. Roback, General Telephone Labs.
- CP59-855. Design Features of the 45-C2 Carrier Telephone System. V. Babin, Lenkurt Electric Co.

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 J. M. Nelson, *Vice President, 9th District*

COMMITTEE MEETINGS**MONDAY, JUNE 22nd****9:00 A.M.—NOON**

Power Generation Committee
 Towers, Poles and Conductors Subcommittee
 Sections Committee
 District No. 5 Representatives

9:00 A.M.—5:00 P.M.

West Coast Subcommittee on Transformers

10:00 A.M.—NOON

Component Specifications Subcommittee

12 NOON—2:00 P.M.

Luncheon—Lamme Medal

2:00 P.M.—5:00 P.M.

Feedback Control Systems Committee

7:00 P.M.

Hydro-Electric Power Subcommittee

TUESDAY, JUNE 23rd**9:00 A.M.—NOON**

Aircraft Electric Rotating Machinery Subcommittee
 Periodicals and Transactions
 Research Committee
 Radio Noise Working Committee
 Public Relations Committee
 Student Branches
 Section Delegates Conference

12:00 NOON—2:00 P.M.

Luncheon—Research Committee
 Luncheon—Communication Division

2:00 P.M.—5:00 P.M.

Research Committee
 Communication Division
 General Systems Subcommittee
 Student Branches
 Air Transportation Committee

4:00 P.M.

Aircraft Electric System Subcommittee

5:00 P.M.

Pacific Coast Heating Appliance Subcommittee

WEDNESDAY, JUNE 24th**9:00 A.M.—NOON**

Industrial and Commercial Power Systems
 Professional Development and Recognition Department
 Educational Publications
 Power Division
 Transmission and Distribution Committee
 Science and Electronics Division
 Vice Presidents, Dist. Secy's, and Adm. Dept.
 Nonlinear Control Subcommittee

REGATTA ROOM***

QUEENS ROOM

DISPLAY ROOM 223

DISPLAY ROOM 219

DISPLAY ROOM 203

DISPLAY ROOM 227

EMPIRE ROOM

QUEENS ROOM

DISPLAY ROOM 203

DISPLAY ROOM 227

DISPLAY ROOM 231

DISPLAY ROOM 219

DISPLAY ROOM 223

DISPLAY ROOM 203

ADMIRALTY ROOM*

WILLIAMSBURG

BALLROOM

QUEENS ROOM

EMPIRE ROOM

QUEENS ROOM

EMPIRE ROOM

DISPLAY ROOM 203

ADMIRALTY ROOM*

REGATTA ROOM***

DISPLAY ROOM 231

DISPLAY ROOM 219

DISPLAY ROOM 231

DISPLAY ROOM 227

REGATTA ROOM***

DISPLAY ROOM 203

GREEN ROOM**

DISPLAY ROOM 219

QUEENS ROOM

ROOM 235

COMMITTEE MEETINGS (Continued)

EMPIRE ROOM

9:00 A.M.—4:30 P.M.

Substation Committee & West Coast Substation Subcommittee

DISPLAY ROOM 223

9:00 A.M.—5:00 P.M.

Institute Student Affairs Committee

DISPLAY ROOM 219

2:00 P.M.—5:00 P.M.

West Coast Subcommittee of Chemical Industry

DISPLAY ROOM 203

Data Communication Committee

QUEENS ROOM

Vice Presidents, District Secretaries, and Adm. Dept.

DISPLAY ROOM 231

Publications Dept.

DISPLAY ROOM 235

Pulp & Paper Industry Subcommittee

DISPLAY ROOM 219

5:00 P.M.

Subcommittee on Effects of Radiation on Insulation

EMPIRE ROOM

Dinner—Aircraft & Flight Test Instrumentation

WILLIAMSBURG ROOM

7:30 P.M.

Forum of Technical Committee Chairmen

THURSDAY, JUNE 25th

EMPIRE ROOM

9:00 A.M.—11:30 A.M.

System Engineering Committee

DISPLAY ROOM 219

9:00 A.M.—NOON

Constitution and Bylaws Committee

QUEENS ROOM

Technical Operations Department

DISPLAY ROOM 203

Radiation Technology & Radiation Effects in Insulation Subcommittees

EMPIRE ROOM

12:00—2:00 P.M.

Luncheon—Technical Operations Department

DISPLAY ROOM 231

Luncheon—West Coast Subcommittee of the Radio Communications Systems Committee

DISPLAY ROOM 227

Luncheon—Education Committee

QUEENS ROOM

1:30 P.M.—4:30 P.M.

Planning and Coordination

DISPLAY ROOM 227

Education Committee

DISPLAY ROOM 203

Wire Communication Systems Committee

FRIDAY, JUNE 26th

COLONIAL ROOM

9:00 A.M.—NOON

Board of Directors

EVERGREEN-PACIFIC ROOM

12:00 NOON—2:00 P.M.

Luncheon—Board of Directors

COLONIAL ROOM

2:00 P.M.—5:00 P.M.

Board of Directors

*Admiralty Room is located in the Roosevelt Hotel at 7th and Pine, 5 blocks from headquarters.

**Green Room is located in the Mayflower Hotel, 4th & Olive Way, 5 blocks from headquarters.

***Regatta Room is located in the Town & Country Club, at 1421 8th Ave., four blocks from headquarters.

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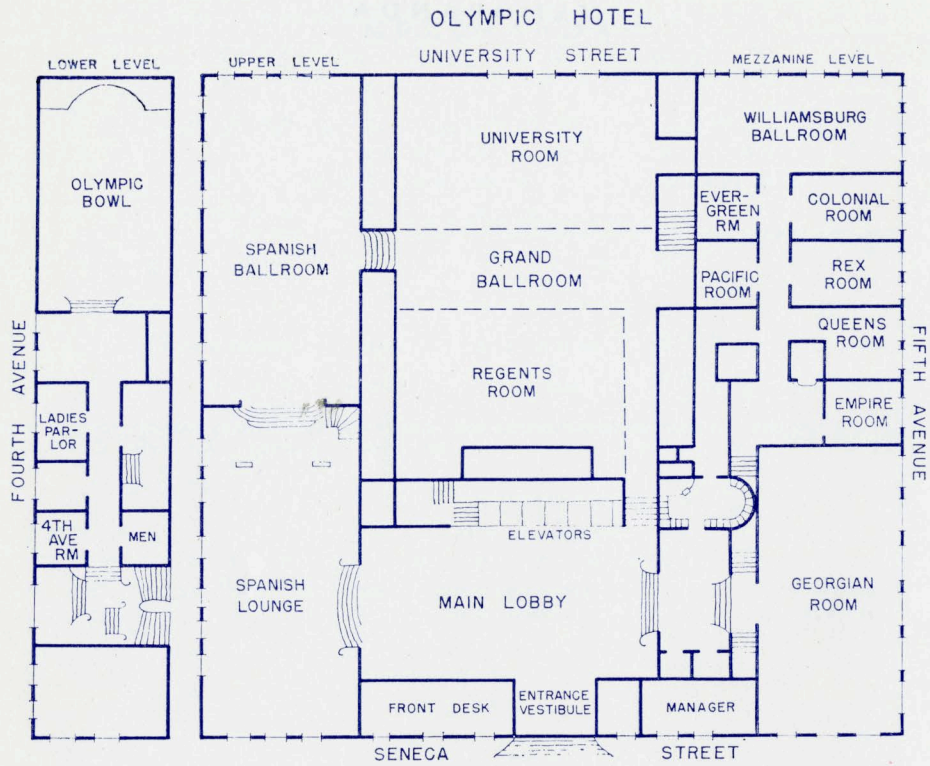
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E.	14	Soule, G. B.	10	Spaven, W. J.	5	Spiridonovic, S.	15	Staff, V. E.	24	<table border="0" style="width: 100%;"> <tr><td>Steffin, L. E.</td><td style="text-align: right;">Page 11</td></tr> <tr><td>Steidel, Jr., R. F.</td><td style="text-align: right;">24</td></tr> <tr><td>Steinback, E. W.</td><td style="text-align: right;">10</td></tr> <tr><td>Stem, J. M.</td><td style="text-align: right;">14</td></tr> <tr><td>Stineman, R. W.</td><td style="text-align: right;">14</td></tr> <tr><td>Stone, L. N.</td><td style="text-align: right;">6, 11, 19</td></tr> <tr><td>Stout, T. M.</td><td style="text-align: right;">21</td></tr> <tr><td>Stratton, L. J.</td><td style="text-align: right;">16</td></tr> <tr><td>Street, Jr., G.</td><td style="text-align: right;">14</td></tr> <tr><td>Strickler, M. D.</td><td style="text-align: right;">8</td></tr> <tr><td>Strom, A. 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MEMORANDA

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MEMORANDA





**MAP OF CENTRAL BUSINESS DISTRICT
SEATTLE, WASH.**





Mount Rainier
Photographed by Josef Scaylea