Winter General Meeting

January 28-February 2, 1962

STATLER-HILTON AND GOVERNOR CLINTON HOTELS AND THE COLISEUM, NEW YORK, N. Y.

SCHEDULE OF LOCALLY SPONSORED EVENTS

Sunday—January 28

2:00 PM—Registration—Mezzanine
4:00 PM—Informal Tea—Statler Ballroom

Monday—January 29

2:00 PM—General Session
4:00 PM—Ladies' Get Acquainted Tea

Tuesday—January 30

8:30 AM—James Forrestal Research Center Trip
9:00 AM—Radio City Music Hall Trip.
10:00 AM—I. B. M. Corp. Trip
10:30 AM—Ladies' Helena Rubinstein Penthouse Trip
12:30 PM—General Motors Linden Plant Trip
1:00 PM—N. Y. Times Trip
2:00 PM—N. B. C. Color Television Facilities Trip
6:30 PM—Ladies' Dinner
6:30 PM—Smoker

Wednesday—January 31

9:00 AM—Ladies' United Engineering Center Trip
9:00 AM—Con Edison's Astoria Generating Station Trip
9:30 AM—Men's United Engineering Center Trip
9:30 AM—United Nations General Assembly Trip
12:30 PM—Anaconda Wire & Cable Co. Trip
12:45 PM—Bell Telephone Labs. Trip
1:00 PM—United Engineering Center Trip
1:00 PM—N. Y. Times Trip

Thursday—February 1

8:00 AM—Brookhaven National Laboratory Trip
9:00 AM—Con Edison's Astoria Generating Station Trip
9:30 AM—New York Stock Exchange Trip
12:30 PM—Ladies' Luncheon and Fashion Show
1:30 PM—Holophane Light and & 3:30 PM Vision Institute
2:00 PM—I. B. M. Corp. Trip
2:00 PM—Steamship Leonardo Da Vinci Trip
7:15 PM—Dinner Dance

Friday—February 2

No Trips Scheduled

Every year lately about 5000 AIEE members, families, and guests attend the Winter General Meeting. They come for many reasons all of which are valid in 1962. But in 1962 there are three big extra reasons:

1) The first ELECTRICAL ENGINEERING EXPOSITION with 100 selected educational presentations of the newest. (See special folder enclosed.)
2) The new United Engineering Center will be open for inspection. Come see what you built.
3) The proposed amalgamation of AIEE with IRE will undoubtedly be the subject of discussion formal and informal. Don't miss the latest gossip.

These extras justify the expectation that the meeting will set a new peak in technical information content, collateral interest, and enthusiasm.

This year again the full facilities of the Statler-Hilton will be commanded, with overflows at the Governor Clinton and the new United Engineering Center as well as in specially segregated meeting rooms at the Coliseum. As always, the social activities at the Winter General Meeting will be outstanding; and New York City's shops and theaters hold perennial attraction to visitors.

GENERAL SESSION: At this session the Institute's Edison Medal will be awarded to Dr. William B. Kouwenhoven of the Engineering School at the Johns Hopkins University for his inspiring leadership in education, for his contributions in the fields of electrical insulation, electrical measurements, and electrical science applied to medicine, and especially for his investigations of the effects of electricity on the human body with the successful development of countershock for the cure of fibrillation of the heart. A feature of the meeting will be the presentation of an honorary membership to Philip Sporn, Past President, Member of Executive Committee and Chairman of System Development Committee, American Electric Power Corporation. The AIEE Prize Paper Awards will also be presented at this time. President W. H. Chase will open the session with his report to the members of the Institute and the Nominating Committee will give their report of the officers selected to fill several positions in the Institute for the year 1962-63. Mr. T. Keith Glennan, President, Case Institute of Technology, will give the principal address.

INFORMAL TEA: This social gathering before the formal program begins has been enjoyed by more and more persons each year. This year, the informal tea will be held Sunday afternoon, January 28, at 4-6 p.m. in the Ballroom of the Statler-Hilton Hotel. There will be no charge.

From 2 p.m., the **registration** facilities will be open for those who wish to avoid the Monday morning rush.

REGISTRATION: The registration fee for members will be $6.00 and for nonmembers $10.00. There will be a $2.00 fee for each lady guest. No fee will be charged for students.

HOTEL RESERVATIONS: Blocks of rooms have been set aside at both convention hotels, the Statler-Hilton and Governor Clinton Hotels, for members and guests attending the meeting. Letters of request for reservations should be sent to the hotel of your choice, specifically referring to the AIEE meeting. Please do not write to more than one hotel. If your request cannot be filled, the hotel will automatically refer your request to the Hotel Accommodations Committee whose duty it is to obtain a similar reservation at another nearby hotel. The hotel will confirm directly to you.

Because of the crowded conditions in New York hotels, it is suggested that your reservation be made for arrival on Sunday, January 28, 1962, thereby avoiding delays in registration or unavailability of rooms in the early morning of subsequent days.

Rooms have been allotted for our use by the following hotels at the daily rates indicated:

STATLER-HILTON HOTEL (meeting headquarters)—7th Avenue, 32nd to 33rd Streets

Single room	$ 8 to $15.50
Double Room	11 to 18.50
Twin Bedroom	15 to 25.00

HOTEL GOVERNOR CLINTON (also used for meetings)—7th Avenue, 31st Street

Single Room	$ 8 to $14
Double Room	10 to 16
Twin Bedroom	12 to 18

All rooms have private bath and the rates quoted are subject to a 5% New York City hotel room tax.

SMOKER: One of the social highlights of the Winter General Meeting will be the Smoker on Tuesday evening, January 30, in the Grand Ballroom of the Hotel Statler. Here will be found good food, good fellowship, and top quality entertainment.

Requests for tickets should be sent in at at early date. The price of the ticket will be $11.50 and requests should be addressed to the "AIEE Smoker Committee" at 345 East 47th St., New York 17, N. Y., and accompanied by checks made payable to "Special Account, Secretary, AIEE."

DINNER-DANCE: The Dinner-Dance will be held Thursday evening, February 1, in the Hotel Statler. Dress will be formal. Write soon for reservations for tables for 10. The price this year is $14 per ticket and requests should be sent to "AIEE Dinner-Dance Committee" at 345 East 47th St., New York 17, N. Y., accompanied by checks made payable to "Special Account, Secretary, AIEE."

AIEE WINTER GENERAL MEETING

INSPECTION TRIPS:

Radio City Music Hall, New York, N. Y. (Tuesday morning, January 30th). This ever popular trip has been scheduled again. Spectacular stage shows distinguished by unique lighting effects have made the Radio City Music Hall an outstanding attraction for visitors from all over the world. Members will see the backstage facilities as well as unusual features, such as revolving sectionalized stage, elevating orchestra pit, motorized curtains, and the multitude of electric and mechanical controls which are required for the special stage and lighting effects.

No women or children permitted.

International Business Machines Corporation, New York, N. Y. (Tuesday morning, January 30th and Thursday afternoon, February 1st). The International Business Machines Corporation will show their Data Processing System on which they will demonstrate a typical business application. Following the demonstration there will be a discussion along with a filmstrip on this system.

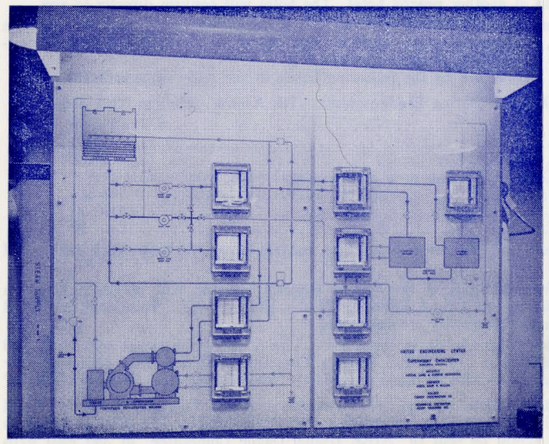
In addition, there will be a specific demonstration on the RAMAC 305 with a large unique type of storage on magnetic disks.

The James Forrestal Research Center, Princeton, N. J. (Tuesday, January 30th). The Princeton-Pennsylvania proton accelerator or synchrotron rated at 3,000,000 electron-volts presently under construction contains an 80-foot diameter magnet. It will have an energy equal to the Brookhaven cosmotron and one-half that of the bevatron at California. However, it is designed to produce at least fifty times the proton current available from existing accelerators.

The Model "C" stellarator also near completion will be America's largest facility for the study of hot ionized gases. It is sponsored by the U. S. Atomic Energy Commission.

Three motor-generator sets equipped with ninety-ton flywheels will deliver 200-megawatt pulses of power, two seconds in duration for the use of the magnetic confining coils. Direct-current and radio-frequency heating pulses will be used, the latter at a level of 50 megawatts. The reaction chamber and coils weigh 280,000 pounds and rest on a 365,000-pound stainless steel base designed to withstand pulse forces of 3,000,000 pounds. It is hoped that the information obtained with the "C" stellarator and similar devices will eventually lead to the design of a control thermo-nuclear reactor which will permanently solve the earth's energy supply problem.

Adults only.



Master Refrigeration Control Panel, United Engineering Center

No citizens of Iron Curtain Nations.

Advance registration.

Bus leaves Statler-Hilton at 8:30 A.M., returns at 5:30 P.M.

General Motors, Linden, N. J. (Tuesday afternoon, January 30th). Here, at its Linden Plant, General Motors assembles Buick, Oldsmobile and Pontiac automobiles. On a two shift operation, this plant turns out approximately 154,000 cars per year, employing an average of 4,500 men and women. Payroll, service and material purchase from local suppliers, amount to approximately thirty million dollars a year. An average of 1,200 freight cars of material are received each month.

One of six similar units of GM's Buick-Oldsmobile-Pontiac Assembly Division, this plant officially began production in April 1937. During World War 11, it produced fighter airplanes for the U. S. Navy.

The five main structures—manufacturing, administration, personnel and cushion buildings and the power house—enclose almost 1,375,000 square feet of floor space. The plant occupies a site of more than 85 acres on U. S. Highway No. 1.

This is an assembly point—not a fabricating plant. Here, the thousands of parts, metal stampings, and sub-assemblies manufactured in other GM and independent plants are brought together—each at exactly the right time and place on the assembly line—to produce nearly 45 different automobile models. These parts converge on Linden, not to be stockpiled for future use but, in many cases, to be moved directly from freight car to assembly line.

Adults only.

NBC Color Television Theatre and Studio, New York, N. Y. (Tuesday afternoon, January 30th). This is an opportunity to learn of the complexities of color operations. Staff engineers will tell of the over-all features and demonstrate the techniques and equipment unique to color. The control equipment and auxiliary lighting will be accessible for examination. A color camera and viewer will be in operation so visitors can see how they would look if participating in a program.

The New York Times, New York, N. Y. (Tuesday afternoon, Wednesday afternoon, January 30th and 31st). A visit to the midtown Manhattan home of what is probably the most widely read newspaper in the world, will include a view of various devices in the communications room that make it possible to have news transmitted from all over the world. Visitors will see how the news is edited as well as the mechanical operations that are required before the finished paper is put on the street.

In the composing room, type-setting machines are used to get the copy in a form necessary to create a "mat" which is sent to the pressroom. The automatic plate casting machines as well as the presses themselves are found in the stereotype department. The presses can print 375,000 48-page papers an hour.

Anaconda Wire and Cable Company, Hastings-On-Hudson, N. Y. (Wednesday afternoon, January 31st). The new EHV Cable Research laboratory contains the finest equipment for the development of high-voltage and extra-high-voltage cables, joints, and terminals. Major apparatus includes 750,000-volt a-c cascade transformer set; 150,000-watt-second 3,000,000-volt impulse generator and unique assembly of equipment to conduct simultaneous cyclic-loading overvoltage aging tests on 150-foot lengths of full sized commercial

Continued on page 15

TECHNICAL PROGRAM

ADVANCE COPIES OF PAPERS

Members may obtain preprints of numbered papers at the uniform price of 50¢ each ($1.00 each to nonmembers), by sending enclosed order forms and remittance to the AIEE Order Department, 345 East 47th Street, New York 17, N. Y. Mail orders (particularly from out-of-town members) are advisable, inasmuch as an adequate supply of each paper at the meeting cannot be assured. Coupon books in $10 denominations are available to those who wish to avoid remittance, by check or otherwise. The Transactions Papers will also be published in the bimonthly publications.
Note: Unnumbered Conference Papers (CP.*) may be available at or after the meeting, if copies are provided by the author. They are not intended for publication in the Transactions and are not presently scheduled for reproduction in any form by the Institute.

Note: The TRANSACTIONS papers will be printed in the bimonthly publications as follows:

I COMMUNICATION AND ELECTRONICS.
II APPLICATIONS AND INDUSTRY.
III POWER APPARATUS AND SYSTEMS.

Monday, January 29th

10:00 a.m.—Production and Application of Light

CP.* Distribution Photometry and Automation. J. S. Franklin, P. M. Garrett; General Electric Co.

CP.* Do Higher Footcandles Mean Higher Heat Loads? R. S. Wissoker, Day-Brite Lighting, Inc.

CP.* Special Circuits for Fluorescent Lamps. P. R. Herrick, General Electric Co.

10:00 a.m.—Broadcasting

10:00 a.m.—Logical Design

62-11 I A Map Approach to the Solution of a Class of Boolean Functional Equations. K. K. Maitra, General Dynamics Electronics.

CP.* Design of N-Valued Logic Networks. H. B. Baskin, IBM Corp.

62-122 I A Four-Megacycle, 18-Bit, Checked Binary Counter. M. E. Homan, IBM Corp.

62-123 I The Automation of Backwiring Design and Topological Layout—Part II: Topological Layout. R. R. Brown, G. F. Putnam, Minneapolis-Honeywell Regulator Co.

10:00 a.m.—Control System Applications

CP62-70. A High-Performance Elevator Control System with Unique Velocity and Position Transducers. K. A. Oplinger, L. A. Bobula, A. O. Lund, W. M. Ostrander; Westinghouse Electric Corp.

CP62-71. UNIDAP: Universal Digital Autopilot. T. E. Conover, W. F. Collision; The Martin Co.

CP62-250. Effect of Servomechanism Characteristics on Accuracy of Contouring Around a Corner. H. E. Vigour, General Electric Co.

CP62-72. An Experimental Study of Multiple Controllers for a Single Process. W. L. Green, Sandia Corp.; C. H. Weaver, Auburn University.

CP62-73. A Study of Contactor Servomechanisms With Positive Hysteresis. W. H. Golden, APGC—Air Force Systems Command; C. H. Weaver, Auburn University.

10:00 a.m.—Industrial Control

62-176 II Improved Starting Process Alternative to Conventional Star-Delta Switching of A-C Motors. M. N. Abdel-Hamid, University of Cairo.

62-177 II Stepless Starting of Wound Rotor Induction Motors. P. L. Alger, Rensselaer Polytechnic Institute; Jalaluddin, Engineering College at Aligarh, UP India.

62-22 II Wide-Range Reversible Voltage Controllers for Polyphase Induction Motors. N. Zagalsky, W. Shepherd; University of Manitoba.

CP62-175. An AC Hoist Control With DC Characteristics. D. I. Bohn, Ashville, N. C.; O. Jensen, I-T-E Circuit Breaker Co.

CP.* Speed Regulation by Digital Methods. R. R. Potts, Reliance Electric & Engineering Co.

10:00 a.m.—Corrosion and Cathodic Protection

62-66 II Cathodic Protection of Transmission and Distribution Underground Cables. E. R. Beeman, D. E. Knauss; Florida Power Corp. (Re-presented for Discussion only.)

CP.* Underground Corrosion Program of Rural Electrification Administration. O. W. Zastrow, Rural Electrification Administration.

CP.* A Study by Polarization Techniques of the Corrosion of Aluminum and Steel Underground for Sixteen Months. W. J. Schwerdtfeger, National Bureau of Standards.

10:00 a.m.—General Systems

62-101 III Fault Analysis by Modified α, β, and *o* Components—I. T. Hsiao, Ann Arbor, Michigan.

62-102 III Fault Analysis by Modified α, β, and *o* Components—II. T. Hsiao, Ann Arbor, Michigan.

62-103 III A New Approach to the Transient Stability Problem. N. Dharma Rao, Indian Institute of Science.

62-104 III New Method for Locating Transmission Line Ground Faults. M. J. Lantz, Bonneville Power Administration.

10:00 a.m.—Extra High Voltage and Radio Noise

CP.* Project EHV—The Value of Research. D. D. MacCarthy, J. W. Yetter; General Electric Co.

CP.* Results From the First Year of Operation of Project EHV. P. A. Abetti, J. J. LaForest, C. B. Lindh, D. D. MacCarthy; General Electric Co.

62-99 III Bibliography on Extra-High-Voltage Systems—First Supplement. P. A. Abetti, General Electric Co.

CP62-251. Radio Noise Aging Characteristics of Small Aluminum Conductors. J. J. LaForest, E. A. Whepley; General Electric Co.

62-106 III Radio Noise From High-Voltage Transmission Lines—AIEE Committee Report Radio Noise Subcommittee. H. L. Rorden, Chairman

10:00 a.m.—Electrostatic Processes

CP.* Ionization of a Gas by Radiation From a Discharge. G. W. Penney, Carnegie Institute of Technology.

CP62-253. Dust Space-Charge in Electrical Precipitators. P. Cooperman, Fairleigh Dickinson University.

CP.* Some Effects of Varying Parameters on Prebreakdown Pulsed Discharges. T. I. Agnew, FEMCO, Inc., and G. W. Penney, Carnegie Inst. of Technology.

CP.* Electron Injection and Storage in Solid Dielectrics. K. A. Wright, J. G. Trump, Massachusetts Inst. of Technology; A. S. Denholm, Goodrich-High Voltage Astronautics, Inc.

61-184 I Contact Potentials and the Adhesion of Dust. G. W. Penney, E. H. Klingler; Carnegie Inst. of Technology. (Re-presented for Discussion only.)

10:00 a.m.—Basic Sciences—I

CP62-131. Topological Representations of Electromagnetic Wave Propagation. F. J. Lupo, New York University.

62-133 I Irradiation of Small Sphere Gaps for Voltage Measurement. D. F. Binns, Royal Technical College; D. R. Hardy, Brush Electrical Engrg. Co., Ltd.

CP62-134. Small Angle Notation for Large Angle Vectors. F. B. Hall, V. E. Finnegan; Argonne National Laboratory.

CP.* Sumarea Determination of the Capitance of a Finite Circular Cone. T. J. Higgins, F. Kreigler; University of Wisconsin.

CP.* The Use of Functions of Matrices in the Transient Analysis of Linear Conservative Electrical Circuits. L. A. Pipes, University of California.

10:00 a.m.—Magnetic Amplifiers

62-5 I Comparison of Directly and Indirectly Measured Control Characteristics of Magnetic Amplifiers With External Feedback. W. A. Geyger, U. S. Naval Ordnance Laboratory.

62-195 I Charge Control of Magnetic Amplifiers—Part I: Dynamic Properties of Square Hysteresis Loop Ferromagnetics. A. Góral, Warsaw Technical University.

CP62-196. Charge Control of Magnetic Amplifiers—Part II: The Performance of Self-Saturating Magnetic Amplifiers. A. Góral, Warsaw Technical University.

62-197 I A High-Gain Push-Pull Magnetic Amplifier With Limited Circulating Currents. I. M. Horowitz, Hughes Research Labs. (Re-presented for Discussion only.)

10:00 a.m.—Transformers

62-10 III Auxiliary Cooling of Power Transformers. D. L. Levine, Commonwealth Edison Co.

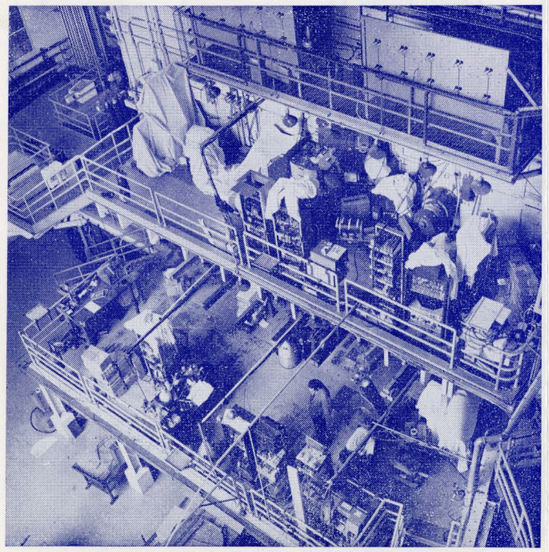
62-178 III Short-Circuit Testing of Distribution Transformers. M. F. Beavers, C. M. Adams, J. E. Holcomb; General Electric Co.

62-14 III Time Constant and Overload Behavior of Oil Filled Transformers. H. Reber, Line Material Industries, McGraw-Edison Co.

62-234 III Change of Time Constant With Transformer Load. L. C. Whitman, General Electric Co.

10:00 a.m.—Digital Computer Workshop

CP.* Structure of a Digital Computer. D. P. Herrman, Jr., Royal McBee Corp.



West Face of the Brookhaven Reactor

CP.* A Simple Approach to Programming a Digital Computer. W. E. Eccles, Purdue University.

2:00 p.m.—General Session

See Details on Page 1.

7:30 p.m.—Feedback Control Systems

Tuesday, January 30th

9:00 a.m.—Section Representatives

9:00 a.m.—Multivariable Control Systems—I

62-74 II Synthesis of Linear Multivariable Systems. R. W. Brockett, M. D. Mesarovic, Case Inst. of Technology.

62-75 II Design and Synthesis Methods for a Class of Multivariable Feedback Control Systems. E. V. Bohn, The University of British Columbia.

62-87 II Application of the Matrix Methods to the Optimum Synthesis of Multivariable Systems Subject to Constraints. K. S. Narenda, R. M. Goldwyn; Harvard University.

CP.* Critique: S. S. L. Chang, New York University.

9:00 a.m.—Setting the Climate for Engineering Achievement

Moderator: S. W. Herwald, Westinghouse Electric Corp.
K. B. McEachron, Jr., Case Inst. of Technology
J. W. Townsend, Jr., National Aeronautics and Space Administration
H. R. Huntley, American Tel. & Tel. Co. (Retired)
J. F. Young, General Electric Co.
R. N. Wagner, Aluminum Company of America
G. W. Clothier, Allis-Chalmers Mfg. Co.
R. R. Everitt, Mitre Corp.

9:00 a.m.—Safety

62-283 III The Development of a Portable Defibrillator. W. B. Kouwenhoven and G. G. Knickerbocker, The Johns Hopkins University.

9:00 a.m.—Marine Transportation

62-4 II N. S. Savannah—Electrical System in First Merchant Nuclear Reactor System. E. A. Geary, New York Shipbuilding Corp.

CP62-38. Indication and Location of Grounds in Shipboard AC Electrical Systems. O. T. Estes, R. E. Rountree; U. S. Coast Guard.

62-6 II Voltage Regulation of D-C Power Supply with Suddenly Applied Load. H. H. Hansen, Westinghouse Electric Corp.

9:00 a.m.—Symposium on Heavy Current Bus Design for Electrochemical Plants

L. T. Guess, Aluminum Company of America
W. S. Miller, Diamond Alkali Co.
F. V. Calvert, Calvert Co.
W. D. Whinery, The Tide Co.
J. S. Banas, Delta Star Elec. Division of H. K. Porter Co.
G. A. Peterman, The Anaconda Co.

9:00 a.m.—Instrumentation for Survival

CP.* Area Monitoring. R. Graveson, Health and Safety Laboratory.

CP.* Personnel Monitoring. E. L. Zebroski, General Electric Co.

CP.* Food and Water Monitoring. H. J. L. Rechen, U. S. Public Health Service.

CP.* Review of Disaster Instruments. R. J. Magill, Nuclear-Chicago.

CP.* Instrument Applications to Guides for Personal Survival. R. J. Catlin, Westinghouse Testing Reactor.

9:00 a.m.—Towers, Poles & Conductors

61-1045 III A Study of Use of Aluminum Guyed Towers for Extra High Voltage Transmission Systems. L. H. J. Cook, Ingledow Kidd & Associates, Ltd. and B. Cooper, International Power and Engineering Consultants, Ltd.

CP62-107. Sag and Tension Calculations By The Nomographic Method. R. H. Sarikas, Illinois Power Co.

CP62-121. Ontario Hydro Live-Line Vibration Recorder For Transmission Conductors. A. T. Edwards, J. M. Boyd; Hydro-Electric Power Commission of Ontario.

CP.* Transient Suspension Forces Caused By Broken Transmission Line Conductors. O. I. Elgerd, University of Florida.

CP62-62. Experiments With Galloping Spans. J. J. Ratkowski, Commonwealth Edison Co.

9:00 a.m.—Transformers

62-105 III The Effect of Temperature and Thermal Aging on the Electrical Characteristics of Film-Type Wire Insulations in Transformer Oil. M. F. Beavers, G. F. Lipsey; General Electric Co.

62-235 III A New Transformer Insulation. B. D. Brummet, F. S. Sadler; Thomas A. Edison Research Lab., Div. of McGraw-Edison Co.

CP62-266. 460 and 650 KV Autotransformers for Penelec and Project EHV. J. P. Geibel, C. B. Lindh, A. Rowe; General Electric Co.

62-36 III Bibliography on the Surge Performance of Transformers and Rotating Machines—First Supplement. P. A. Abetti, General Electric Co.

62-236 III Numerical Evaluation of Natural Frequencies in Power Transformer Windings. I. Johansen, H. Riege; The Technical University of Norway.

9:00 a.m.—Relays

62-20 III A Mathematical Basis for a Protective Relay with Conic Pickup Characteristics. J. E. Skuderna, U. S. Bureau of Reclamation.

62-29 III Bibliography of Relay Literature 1959-1960. AIEE Bibliography and Publicity Sub. of the AIEE Relays Committee; R. W. Hirtler, Chairman.

62-28 III Evaluation of Transfer-Trip Relaying Using Power Line Carrier. AIEE Working Group, Relay Protection Sub. of the AIEE Relays Committee; C. L. Wagner, Chairman.

62-119 III Carrier Current Transfer Trip Relaying Field Tests and Operation Experience. D. G. Wohlgemuth, D. A. Gillies, R. E. Dietrich; Bonneville Power Administration.

9:00 a.m.—Millimeter Wave Generation—I

CP.* The Role of Slow-Wave Circuits. C. K. Birdsall, University of California.

CP.* Millimeter Wave Generation. G. Convert, Compagnie Generale de Telegraphie Sans Fils.

CP.* The Application of Megavolt Electronics Techniques to the Generation of Ultramicrowaves. M. D. Sirikis, University of Illinois.

CP.* Operation of an R-F Structure in a Higher Order Mode for Millimeter Wave Generation. M. I. Antoniou, The Bendix Corp.

CP.* Extended Interaction Circuit Oscillators for Millimeter Wave Generation. A. J. Prommer, Litton Industries.

9:00 a.m.—Computer Systems and Devices

CP.* Significant Developments and Trends in the Computing Devices Field During 1961. Computing Devices Committee, R. M. Kalb (Editor).

CP62-124. Magnetic Hysteresis Function Generator. S. Ohteru, Waseda University.

62-125 I Transductors as Supplementary Devices to Direct-Current Network Analysers. S. Stricker, E. Elath; Israel Institute of Technology.

CP62-126. Control Equipment Used With a Digital Computer for Automated Production of Deposited Carbon Resistors. R. C. Ward, Western Electric Co., Inc.

9:00 a.m.—Industrial and Semiconductor Power Rectifiers

CP62-222. A Filter for Silicon Controlled Rectifier Commutation and Harmonic Attenuation in High Power Inverters. R. R. Ott, Electro Mechanical Research (formerly with Westinghouse Electric Corp.).

CP.* High Frequency Power Conversion. P. W. Clarke, Bell Telephone Labs., Inc.

61-731 II Development of a Metal Anode Ignitron Switch Tube. G. H. Reiling, General Electric Co.

CP62-162. Short Circuit Currents in Power Rectifier Systems. J. Schaefer, Sipplingen, Bodensee, Germany (formerly with ITE Circuit Breaker Co.). To be presented by J. Zerbock.

CP.* I.E.C. Committee Report. L. W. Morton, General Electric Co.

9:00 a.m.—Electric Space Heating & Heat Pumps

62-17 II An Introduction to the Assessment of Line Voltage Thermostat Performance for Electric Heating Applications. W. K. Roots, Mears Controls, Inc.

CP62-16. Modulation Circuits for the Line-Voltage Control of Electric Heating by Anticipated Thermostats. W. K. Roots, Mears Controls, Inc.

CP.* Temperature Control Systems for Electrically Heated Schools. R. M. Plettner, Barber-Colman Co.

CP.* Residential Light Flicker. V. H. Eargle, General Electric Co.

CP.* Electric Space Heating with Infrared Energy. W. R. Stephens, General Electric Co.

9:00 a.m.—Aluminum Conduit and Fittings

Panel discussion on Aluminum Conduit and Fittings with particular emphasis on the effect of copper content on corrosion resistance in various environments.

R. P. Northup, Crouse Hinds Co.
H. Esch, Kaiser Aluminum & Chemical Co.
R. L. Horst, Aluminum Co. of America
R. G. Rudrow, Atlas Chemical Industries, Inc.
R. S. Dalrymple, Reynolds Metals Co.
J. R. Beale, Aluminum Co. of Canada
H. M. Tomlinson, Jr., Celanese Corp.

9:00 a.m.—Insulated Conductors

CP62-54. An Accelerated Screening Test For Polyethylene High-Voltage Insulation. D. W. Kitchin, O. S. Pratt; Simplex Wire & Cable Co.

62-55 III Influence of Sorbed Water and Temperature on Tan 8 and Dielectric Constant of Oil-Impregnated Paper Insulation. R. B. Blodgett, The Okonite Co.

62-9 III Radial Oil Flow and Pressure Differences in Cable Insulations. N. Klein, International Rectifier Corp. (on Sabbatical Leave from the Israel Inst. of Technology), D. Schieber, Israel Armed Forces.

62 56 III Electric Stresses in Cables. W. A. Del Mar, Phelps Dodge Copper Products Co.

2:00 p.m.—Section Representatives

2:00 p.m.—Solid State Devices

62-200 I Advances in Alloyed Silicon Power Transistors. T. C. New, Westinghouse Electric Corp. (Re-presented for Discussion only.)

62-201 I The Epitaxial Transistor. M. J. Bentivegna, L. L. Lehner, P. D. Lynch; Motorola, Inc. (Re-presented for Discussion only.)

CP62-202. Charge-Step Derived Transfer Functions for the Junction Transistor. C. J. Bader, Burroughs Corp.

CP62-204. Partial Shading of Silicon Solar Cell Converter Panels. W. Luft, International Rectifier Corp.

CP.* Applications of the Photoconductor. C. G. Keeney, Sylvania Electric.

2:00 p.m.—Marine Transportation

62-52 II Reliable Shipboard Alternating Current Power Systems—Some Considerations. L. E. Sutton, Gibbs & Cox, Inc.

62-53 II Determination of Shipboard Electrical Short-Circuit Currents. W. A. Hall, General Electric Co.

Carrier Air Conditioning Machinery Room, United Engineering Center

CP.* Application of Overcurrent Protective Devices in Shipboard. P. L. Camp, I-T-E Circuit Breaker Co.

2:00 p.m.—Multivariable Control Systems—II

62-8 II Linear Multivariable Control System Design With Root Loci. E. Kinnen, D. S. Liu; University of Minnesota.

62-34 II Computer Solutions of Algebraic Equations. A. N. Landyshev, California State Polytechnic College.

CP62-76. Multi-Parameter Self Adaptation Using Auxiliary Models. K. W. Han, G. J. Thaler; U. S. Naval Postgraduate School.

CP.* Coupling in Cruciform Missile Control Systems. W. K. Waymeyer, T. H. Young; Douglas Aircraft Co.

CP.* Critique: P. Dorato, Polytechnic Institute of Brooklyn and P. Spink, Westinghouse Air Arm Division.

2:00 p.m.—Fundamental Electrical Standards

62-43 I A Voltage Divider Standard. L. C. Fryer, Leeds & Northrup Co.

CP62-254. Resonant Capacitance-Inductance Transfer Using the Ratio Transformer Bridge. D. L. Hillhouse, General Electric Co.

62-42 I The Development of the Current Comparator, A High Accuracy Alternating-Current Ratio Measuring Device. P. N. Miljanic, N. L. Kusters, W. J. M. Moore; National Research Council.

CP62-290. The Use of Active Devices in Precision Bridges. H. P. Hall, R. G. Fulks; General Radio Co.

62-69 I Audio Voltage Calibrating Standard. K. J. Koep, Daystrom, Inc.; G. B. Ruble, Rutgers University.

2:00 p.m.—Switching Surges

62-108 III Phase-To-Phase Switching Surges on Line Energization. I. B. Johnson, D. D. Wilson, General Electric Co.; R. F. Silva, University of Connecticut (formerly with General Electric Co.).

62-109 III Switching Surge and Dynamic Voltage Study of Arizona Public Service Company 345 KV Proposed Transmission System Utilizing Miniature Analyzer Techniques. W. H. Croft, R. H. Hartley, Arizona Public Service Co.; R. L. Linden, D. D. Wilson, General Electric Co.

62-110 III Switching Surges and Arrester and Gap Performance During 220 KV Line-Dropping Tests. W. N. Rothenbuhler, Southern California Edison Co.; D. D. Wilson, General Electric Co.

62-111 III Effect of Preceding Bias Voltage on Switching Surge Operation of Spill Gaps and Lightning Arresters. A. Klopfenstein, Southern California Edison Co.; E. York, Los Angeles Dept. of Water and Power; J. W. Kalb, The Ohio Brass Co.

2:00 p.m.—Transformers

CP62-237. Gas Generation During Interruption Under Oil. A. H. Baguhn, R. E. Reinhard, L. Oakes; Allis-Chalmers Mfg. Co.

CP62-238. Thermal and Electrical Evaluation of Aluminum and Copper Bolted Joints. D. Myers, Jr., General Electric Co.

CP.* New Processes for Joining Aluminum in Transformers. H. H. Caldwell, Jr., J. R. Terrill; Aluminum Co. of America.

CP62-239. A New Current Sensing Device. L. B. Stein, Jr., Sigma Instruments, Inc.

2:00 p.m.—Hydro-Thermal Electric Systems

62-32 III General Time-Dependent Equations for Short-Range Optimization of Hydro-Thermal Electric Systems. A. Arismunandar, Illinois Inst. of Technology; F. Noakes, University of British Columbia.

62-100 III Optimum Operation of a Hydro-Thermal System. J. H. Drake, R. B. Mayall, H. Wood, Southern California Edison Co.; L. K. Kirchmayer, General Electric Co.

CP.* Hydro-Thermal Economic Scheduling—Part V. B. Bernholtz, L. J. Graham; Hydro-Electric Power Commission of Ontario.

2:00 p.m.—Millimeter Wave Generation—II

CP.* A Survey of Research in Millimeter Wave Generation. G. Wade, Raytheon Co.

Panel Discussion on Millimeter Wave Generation

Moderator—J. E. Rowe, University of Michigan
M. R. Currie, Hughes Research Labs.
M. W. Muller, Varian Associates
R. Kompfner, Bell Telephone Labs., Inc.
G. E. Weibel, General Telephone & Electronics Lab.

2:00 p.m.—Problem Solving Procedure With Problem-Oriented Computer Languages

CP.* The Programming Hierarchy. I. Flores, Polytechnic Institute of Brooklyn.

CP.* How to Use Cobol, A Problem Oriented Data-Processing Language. G. M. Hopper, Remington Rand.

CP.* Using Decision Tables for Product Engineering. B. Grad, IBM Corp.

CP.* A Program Sympathetic Computer. E. L. Glaser, J. P. Anderson; Burroughs Corp.

2:00 p.m.—Semiconductor Rectifier

CP62-41. Three-Phase Transformer-Rectifier Power Converters. D. S. Toffolo, U. S. Naval Research Lab.

CP.* Computer Power Supplies Utilizing SCR Conversion Techniques. T. W. Macie, E. F. Chandler; General Electric Co.

CP.* Solid State Switching and Control Circuit Utilizing the Very Low Current Silicon Controlled Rectifier. D. R. Grafham, General Electric Co.

CP.* Effect of Operating Stress on Silicon Rectifier Reliability. W. R. Comstock, B. W. Jalbert; General Electric Co.

CP.* Digital Computer Calculation of Rectifier and SCR Ratings. C. D. Mohler, General Electric Co.

2:00 p.m.—Heavy Current Metering for Electrochemical Plants

CP.* A New Technique for Measuring Rectifier Output Currents. F. Bingham, W. Chumakov; ITE.

CP.* A Type 19A D-C Current Transmitter. A. E. Paine, Foxboro Co.

CP.* D. C. Metering, C. H. Elliott, Kaiser Aluminum Chemical Co.

CP.* Acyclic Generator Design and Its Application to Electrochemical Processes. F. L. Kaestle, R. J. Burnett; General Electric Co.

2:00 p.m.—Insulated Conductors & Research

CP62-57. Experience with Connectors on Aluminum Underground Cable. E. L. Abel, Burndy Corp.; R. M. Bishop, Alabama Power Co.

CP62-58. Oil-Filled Pipe-Type Cable With Aluminum Conductors Installed in the City of Edmonton. R. J. Lemieux, Northern Electric Co., Ltd.; C. Z. Monaghan, City of Edmonton Electric Light & Power Distribution System.

62-59 III Long Cable Lines—A.C. With Reactor Compensation or D.C. J. J. Dougherty, C. S. Schifreen, Philadelphia Electric Co.

62-60 III New Resins for Electrical Applications. F. R. Eirich, H. F. Mark; Polytechnic Inst. of Brooklyn. (Re-presented for Discussion only.)

2:00 p.m.—Electric Space Heating & Heat Pumps

CP.* Economics of Insulation for Electrically Heated Homes. A. W. Johnson, National Mineral Wool Insulation Association; R. L. Boyd, Jr., Edwin L. Wiegand Co.

CP62-280. A Study of Electric Heating in the Air Conditioning Research Residence No. 4. J. H. Healy, B. W. Hryekewicz; University of Illinois.

CP62-39. Energy Demands for Electric House Heating. G. A. Erickson, R. R. Leonard, Wood Conversion Co.; R. C. Jordan, University of Minnesota.

CP62-40. Some New Aspects of Electric Heating by Means of Heat Pumps with Supplemental Heat Storage. C. W. Bary, J. F. Paquette, Jr.; Philadelphia Electric Co.

Wednesday, January 31st

9:00 a.m.—Telegraph Systems

62-219 I Telex in the U.S.A. P. R. Easterlin, Western Union Telegraph Co.

CP.* Teleprinter Margin and Margin Measurements. H. H. Wüsteney, Siemens & Halske, A.G.

CP.* Recent Advances in Printing Telegraph Apparatus During 1961. W. Y. Lang, Bell Telephone Labs., Inc.

CP.* Advancements in the Facsimile Art During 1961. W. H. Bliss, RCA Labs.

62-220 I Selective Control for Conventional Teletypewriter and High Speed Data Systems. C. J. Colombo, Canadian Pacific Railway Co. (Re-presented for Discussion only)

CP62-249. An Ultra-high Speed Microfilm Facsimile System. D. Shaler, Hogan Faximile Corp.

9:00 a.m.—Communication Switching—I

CP62-273. A New Voice Communication System for Air Traffic Control. T. E. Allen, Laboratory for Electronics (formerly with Bell Telephone Labs., Inc.).

CP.* Logic Circuits with Repeating Coils and Rectifiers for a TDM System. A Darré, Siemens & Halske, A.G.

CP.* Automatized Speechpath Finding & Through-Connection in Electronically Controlled Switching Systems. D. Voegtlen, Siemens & Halske, A.G.

61-1041 I The New Line Concentrator 1A. W. Whitney, Bell Telephone Labs., Inc. (Re-presented for Discussion only)

9:00 a.m.—Telemetering

62-271 I Long-Range Outlook for Oceanographic Telemetering. J. M. Snodgrass, University of California.

CP.* Pipe Line Telemetering. F. V. Long, Texas Eastern Transmission Corp.

CP62-279. A New Solid State Digital Telemetering and Control System. L. Moore, Moore Associates.

CP62-172. Digital Telemetering and Control for an Irrigation System Using Multiaperture Magnetic Logic. S. M. Chalmers, Salt River Project; L. Norde, Motorola, Inc.

CP62-278. Solid State Digital Telemetry for Remote Control. J. A. Arnold, R. J. Grosch; Gulton Industries, Inc.

9:00 a.m.—Linear Control System

62-98 II On the Identification of Linear Systems. G. G. Lendaris, General Motors Corp. (formerly with the University of California).

62-77 II On Minimizing Integrals of Absolute Deviations in Linear Control Systems. M. Aoki, University of California.

62-78 II A New Graphical Method for Feedback Control System Compensation Design. C. C. Hsu, University of Washington.

62-79 II A Computer Oriented Iterative Design of Linear Control Systems Subject to Open and Closed Loop Specifications. J. Zaborszky, Washington University; R. G. Marsh, National Rejectors, Inc.

9:00 a.m.—Process Automation in the Primary Metals Industry

CP.* Use of Statistics for Economic Evaluation of Gauge Controls. J. C. Price, M. Cuoco; General Electric Co.

CP.* Mill Schedule Optimization for Automatically Controlled Rolling Mills. V. S. R. Naidu, T. H. Bloodworth; Allis-Chalmers Mfg. Co.

CP.* Evaluation of Advanced Electrical Systems in the Primary Metals Industry. J. A. McCarthy, Westinghouse Electric Corp.

CP.* Digital Techniques Approach to Flying Shear Control. I. Epstein, Clark Controller Co.

9:00 a.m.—Industrial & Commercial Power Systems

62-173 II Induction-Motor Model for Industrial Power System Computations. A. R. Kelly, Esso Research & Engineering Co.

62-61 II Report on Reliability of Electrical Equipment in Industrial Plants. W. H. Dickinson, Esso Research & Engineering Co.

CP62-174. Rates for Electric Service. S. W. John, Commonwealth Services, Inc.

CP62-25. A Practical Wiring System for Hazardous and Corrosive Locations. S. E. Wenzel, R. D. Evans; E. I. du Pont de Nemours & Co., Inc.

9:00 a.m.—Distribution Systems

62-113 III Economic Application of Tapless Distribution Transformers on a Major Utility System. C. G. Brown, General Electric Co.; R. D'Agostino, Southern California Edison Co.

62-289 III Monte-Carlo Simulation of Residential Transformer Loads. D. N. Reps, Westinghouse Electric Corp.

CP62-114. Effect of Demand Interval Upon Indicated Peak Demand. R. H. Sarikas, Illinois Power Co.

9:00 a.m.—Generation Scheduling for Economic Dispatch

CP62-211. Economic Dispatch Computing for Simplified Power Systems. C. E. Bailey, H. B. Smith; Niagara Mohawk Power Corp.

CP62-218. The Average Cost Approach to Generator Scheduling. C. Bachovzeff, Bibby Foundry Ltd.; J. Corrigan, Arthur Andersen & Co.; W. Frishemeier, Gulf Oil Corp.; A. P. Hayward, Duquesne Light Co.

62-212 III Power Generation Scheduling by Integer Programming—Part I: Development of Theory. L. L. Garver, General Electric Co.

62-213 III A Note on Incremental Loss Computation. J. E. Van Ness, Northwestern University.

9:00 a.m.—Induction Machinery

62-179 III Line Frequency Magnetic Vibration of A-C Machines. R. C. Robinson, Westinghouse Electric Corp.

62-13 III An Approach to Induction Motor Synthesis. W. H. Middendorf, University of Cincinnati.

62-180 III Derating the Polyphase Induction Motors Operated With Unbalanced Line Voltages. M. M. Berndt, Midwest Universities

Research Association; N. L. Schmitz, The University of Wisconsin.

62-27 III Equivalent Drag Cup Resistance. B. L. Fuller, P. H. Trickey; Wright Machinery Co., div. of Sperry Rand Corp.

9:00 a.m.—Tutorial Session on Non-Thermionic Electron Emitters

CP.* Recent Progress in Field Emission. W. P. Dyke, F. M. Charbonnier; Linfield Research Inst.

CP.* New Applications of Photo Cathodes and Associated Problems. W. M. Feist, Raytheon Co.

CP.* P-N Junction Emitters. J. L. Moll, Stanford University.

CP.* Tunnel Emission. C. E. Horton, General Electric Co.; C. A. Mead, California Inst. of Technology.

CP.* The Magnesium Oxide Type Cold Cathode. Present Status and Aspects of Further Advancement. D. Dobischek, U. S. Army Signal Lab.

CP.* Electronic Flashtubes. H. E. Edgerton, J. H. Goncz, Edgerton, Germeshausen & Grier, Inc.

9:00 a.m.—Implications of Gigacycle Computing Systems—C.C.S.—I

The papers in this symposium will be available as special publication S-136.

S-136 An Introduction to Gigacycle Computers. D. Hogan, Department of Defense.

S-136 Gigahertz Computer Circuitry. G. L. Hollander, Hollander Associates.

S-136 Applications of Gigacycle Computers. L. Fein, Palo Alto, California.

9:00 a.m.—Solid State Devices

CP.* Thin-Film Amplifiers. A. Yang, Air Force Cambridge Research Center.

CP.* Optical Masers. R. J. Collins, Bell Telephone Labs., Inc.

CP.* Status Report on Photoelectric Converters. R. Riel, Westinghouse Electric Corp.

CP.* Status Report on Magnetic Thin Films. A. K. Rapp, Philco Research Center.

9:00 a.m.—Symposium—Classification of Hazardous Areas

Chairman: R. F. Shumar, Dow Chemicals Co.

Speakers: S. P. Axe, Atlantic Refining Co.
J. J. Duggan, Union Carbide Chemicals Co.
E. L. Sutton, Rohm & Haas Co.
M. E. Woodworth, National Fire Protection Association
C. F. Hedlund, Associated Factory Mutual Fire Insurance Co.

9:00 a.m.—Corona—I

CP.* Definitions of Terms Related to Corona. Working Group on Corona Definitions, J. C. Devins, Chairman.

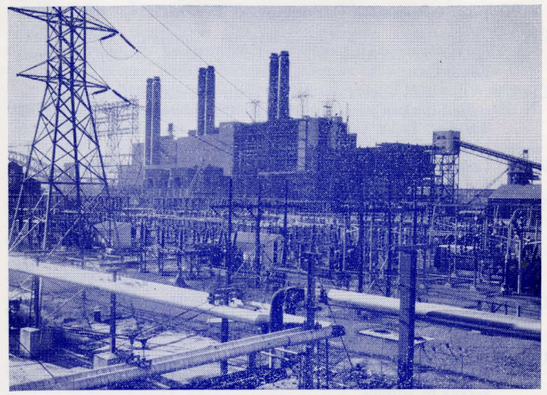
CP62-261. Introduction to Corona in Insulating Materials and Apparatus. AIEE Joint Working Group on Corona Measurements, H. S. Endicott, Chairman.

CP62-248. A Review of Methods Used in Corona Measurements on Insulation Systems. E. B. Curdts, James G. Biddle Co.

CP62-260. Corona Pulse Detection Circuits and Their Calibration. T. W. Dakin, Westinghouse Electric Corp.

2:00 p.m.—Data Communication

CP.* Design and Performance of a Magnetic Tape Data Terminal. C. N. Batsel, R. E. Montijo, J. P. Reed, W. Saeger; Radio Corp. of America.



Consolidated Edison Astoria Generating Station

CP.* Data Communication Coordination in an RCA Magnetic Tape Terminal. R. E. Montijo, W. Saeger, R. J. Sibthorp, E. F. Wesley; Radio Corp. of America.

CP.* Data System Performance as Evaluated by Eye Patterns. D. L. Favin, T. C. Anderson; Bell Telephone Labs., Inc.

CP.* A Fast-Response Data Communication System for Airline Reservations. S. Levine, E. A. Avakian; Teleregister Corp.

CP.* Design of an Automatic, Single-Channel ARQ Terminal. J. J. O'Donnell, C. D. Hughes; Radio Corp. of America.

62-141 I An AM Vestigial Sideband Data Transmission Set Using Synchronous Detection for Serial Transmission Up to 3000 Bits Per Second. F. K. Becker, J. R. Davey, B. R. Saltzberg; Bell Telephone Labs., Inc. (Re-presented for Discussion only)

62-142 I A Multifrequency Data Set for Parallel Transmission Up to 20 Characters Per Second. B. R. Saltzberg, R. Sokoler; Bell Telephone Labs., Inc. (Re-presented for Discussion only)

62-143 I PM Data Sets for Serial Transmission at 2000 and 2400 Bits Per Second. P. A. Baker, Bell Telephone Labs., Inc. (Re-presented for Discussion only)

62-144 I Recording and Visual Analysis of "Noise" Errors. A. E. Johanson, Bell Telephone Labs., Inc. (Re-presented for Discussion only)

62-146 I Some Error Characteristics of a Data Communication System. R. L. Townsend, Bell Telephone Labs., Inc. (Re-presented for Discussion only)

2:00 p.m.—Communication Switching—II

CP.* New Read-Out System for Toll Ticketing Equipment. D. A. Brewin, General Dynamics/Telecommunication.

CP62-232. Traffic-Controlled Routing of Toll Calls in Strowger Automatic Toll Ticketing Systems. I. V. Coleman, Automatic Electric Labs., Inc.

CP62-233. Automatic Ticketing of Person-To-Person Calls in a Step-By-Step Telephone Exchange. R. B. King, Automatic Electric Labs., Inc.

CP.* Circuit Design Manipulation in Solving Toll Switching Problems. F. A. Stallworthy, J. G. Brown; Associated Electrical Industries Export, Ltd.

2:00 p.m.—Professional Integrity

CP.* Professional Integrity in Engineering. J. F. Young, General Electric Co.

CP.* Codes of Ethics for Students. R. W. Van Houten, Newark College of Engineering.

CP.* Problems in Professional Ethics for Engineers. N. A. Christensen, Cornell University.

2:00 p.m.—Secondary Batteries

CP.* Storage Battery Requirements for Communications Satellites. D. Feldman, M. K. Zinn; Bell Telephone Labs., Inc.

CP.* Thermionic Space Power Generation. D. L. Purdy, Valley Forge Space Technology Center.

CP.* Sealed Secondary Batteries: Nickel-Cadmium and Silver Zinc for Space Power. R. Shair, Gulton Industries, Inc.

CP.* Fuel Cells—A Realistic Approach. M. Shaw, The Electric Autolite Co.

CP.* Reliable Power Packages for Switchgear Tripping Control and Emergency Diesel Engine Starting. W. H. Taylor, The Electric Autolite Co.

2:00 p.m.—Nonlinear Control Systems

62-80 II A New Procedure for Plotting Phase Plane Trajectories. G. P. Szegö, Purdue University.

62-3 II A Graphical Method of Evaluating the Describing Function. B. L. Deekshatulu, Indian Inst. of Science.

CP.* Critique: S. S. L. Chang, New York University; W. Sollecito, General Electric Co.

2:00 p.m.—Advanced Electrical Systems for the Primary Metals Industry

CP.* Application of Computer to Primary Rolling Mill. A. W. Smith, Westinghouse Electric Corp.

CP.* Silicon Controlled Rectifier Excitation Systems for Metal Rolling Mill Drives. J. B. Feltner, C. R. Moody; General Electric Co.

CP.* Data Logging and Control of Bulk Material Handling. L. M. Wilson, Consolidated Systems Corp.

CP.* Automation of Hot Strip Mill Downcoilers. R. M. Bosshardt, Reliance Electric and Engineering Co.

2:00 p.m.—Industrial & Commercial Power Systems

CP.* An Approach to the Economic Evaluation of Electrical Power Generation in Continuous Process Plants. T. D. Higgins, Union Carbide Chemicals Co.

CP.* Application of Industrial Capacitors to Ferro-Alloy Plants. D. H. Rowley, Union Carbide Metals Co.

62-147 III Excitation Systems for Small Industrial and Commercial Generators. D. H. Miller, A. S. Rubenstein; General Electric Co.

61-1047 II How to Select Overcurrent Relay Characteristics. D. V. Fawcett, Canadian Westinghouse Co., Ltd. (Re-presented for Discussion only)

2:00 p.m.—Design & Performance of H.V. Lines

61-1104 III Basic Parameters in Determining the Insulation Requirements of Transmission Lines. J. M. Clayton, Westinghouse Electric Corp.

62-115 III Probability Method for Determining Insulation of EHV Lines. W. H. McCreary, National Energy Board of Ottawa, Canada (formerly with Hydro-Electric Power Commission of Ontario); G. R. Tebo, Hydro-Electric Power Commission of Ontario.

CP.* Prediction of Lightning Outage Performance of Extra-High-Voltage Lines by Nanosecond Models and Monte Carlo Computer Calculations. J. G. Anderson, General Electric Co.; J. P. Barron, Dallas Power and Light Co.; M. R. Boess, Arizona Public Service Co.; P. J. Wallace, Texas Power and Light Co.

62-116 III Performance of 161-KV and 115-KV Transmission Lines. F. Chambers, C. P. Almon, Jr.; Tennessee Valley Authority.

CP62-284. Fault and Load Current Testing of a Bundle Conductor Spacer. R. L. Retallack, American Electric Power Service Corp., T. R. Fry, C. A. Popeck, A. B. Chance Co.

2:00 p.m.—Economic Turbine Operation Considering Valve Losses

CP.* Economic Operation at Valve Cracking Points. F. H. Light, J. A. Gille; Philadelphia Electric Co.

62-112 III Economic System Operation Considering Valve Throttling Losses—Part I: Method of Computing Valve Loop Heat Rates on Multi-Valve Turbines. H. H. Happ, W. B. Ille; General Electric Co.; R. H. Reisinger, Baltimore Gas and Electric Co.

62-129 III Economic System Operation Considering Valve Throttling Losses—Part II: Distribution of System Loads By the Method of Dynamic Programming. R. J. Ringlee, General Electric Co.; D. D. Williams, Baltimore Gas and Electric Co.

2:00 p.m.—Symposium on High Temperature Induction Motors

CP.* Economic Evaluation and Trends of Hi-Temp Motors. J. V. Picozzi, General Electric Co.

CP62-183. The Relationship Between High Temperature Operation and the Performance Guarantees of Induction Motors. J. F. Heidbreder, R. C. Robinson, E. F. Merrill; Westinghouse Electric Corp.

CP.* Comparison of American and European National Standards for Polyphase Induction Machines. S. F. Henderson, Westinghouse Electric Corp.

CP.* Performance of Reduced Frame Size Motors. J. F. Dexter, Dow Corning Corp.; J. G. Frase, Westinghouse Electric Corp.

CP.* Opportunities from Hi-Temp Insulation in Induction Motor Design. W. J. Martiny, General Electric Co.

2:00 p.m.—Microwave and Gas Tubes

CP.* The Coaxitron, An Integral-Circuited Super-Power UHF Amplifier Tube. F. S. Keith, W. N. Parker, C. L. Rintz; Radio Corp. of America.

CP.* Long Term Frequency Stability for a Reflex Klystron Without the Use of External Cavities. G. B. Gucker, Bell Telephone Labs., Inc.

CP.* A New Method for the Design of Pierce Gun Electrodes. G. Kent, Syracuse University.

CP.* A Traveling-Wave Tube for a Communication Satellite. G. Novak, B. Kleinman; Radio Corp. of America.

CP.* Ignitron Discharge Growth During High Current Pulses. D. B. Cummings, University of California.

CP62-154. Experimental Study of the Ignited Mode in Cesium Thermionic Converters. S. Kitrilakis, Thermon Electron Engineering Corp.; E. N. Carabateas, Massachusetts Inst. of Technology.

62-265 I Super-Power Ultra-High-Frequency Amplifier Tube Developments. R. E. Reed, A. C. Tunis; Radio Corp. of America. (Re-presented for Discussion only)

62-264 I Design of High-Power Modulator Tubes. W. E. Harbaugh. Radio Corp. of America. (Re-presented for Discussion only)

2:00 p.m.—Components and Circuits for Gigacycle Systems—G.C.S.—II

The papers in this symposium will be available as special publication S-136.

S-136 Piecewise-Linear Switching Analysis of a Bistable Tunnel-Diode Logic Circuit. W. T. Rhoades, Hughes Aircraft Co.

S-136 Transformer-Coupled Tunnel Diode NOR Circuits. J. S. Cubert, T. M. LoCasale; Sperry Rand Corp.

S-136 Generation of a High-Speed Clock Using a Travelling Wave Oscillator. J. A. Fraunfelder, Sperry Rand Corp.

S-136 Logical Design and Implementation in a Pumped Tunnel Diode-Transistor Logic System. S. B. Akers, E. P. Stabler; General Electric Co.

2:00 p.m.—Solid State Devices

CP.* Status of Thermoelectric Power-Generation Devices. N. F. Schuh, Westinghouse Electric Corp.

CP.* Status of Thermoelectric Materials for Power Generation. P. H. Egli, U. S. Naval Research Lab.

CP.* Integrated Circuits and Molecular Electronics. H. W. Henkels, Westinghouse Electric Corp.

CP.* Thin Film Microcuitry. O. L. Meyer, N. Doctor; DOFL.

2:00 p.m.—Electronic Transformers

2:00 p.m.—The Impact of Digital Computers on Engineering—A Report

CP.* The Impact on Engineering Teaching By Use of a Student Oriented Language. R. E. Machol, Conductron Corp.

CP.* The Impact on Dynamical Studies—A Report on Use of DYANA. D. E. Hart, General Motors Technical Center.

CP.* The Impact on Power Systems Analysis and Management. G. Stagg, American Electric Power Service Corp.; A. El Abiad, Purdue University.

2:00 p.m.—Corona—II

CP62-262. The Micro-Scanner—A Device for Detecting and Marking Corona-Producing Defects in Cable. D. Eigen, J. S. Geary, The Okonite Co.

62-156 I Ionization of a Gas By Radiation From a Discharge. G. W. Penney, R. E. Voshall; Carnegie Institute of Technology.

62-157 III Wet Surface Tracking of Insulation—A Differential Test With Controlled Short Discharges to a Water Electrode. L. Mandelcorn, T. W. Dakin; Westinghouse Electric Corp.

CP.* Required Characteristics of Electrical Insulating Oils Can Now Be Specified. F. C. Doble, Doble Engineering Co.

2:00 p.m.—Space Communications

7:30 p.m.—Forum of Technical Committee Chairmen

7:30 p.m.—Is Today's Theory of Optimal Control Adequate for Today's Problems in Industrial Systems Design?

Panel Discussion:
G. K. L. Chien, IBM Corp.
R. O. Decker, Westinghouse Electric Corp.
W. M. Gaines, General Electric Corp.
J. M. Ham, University of Toronto
T. J. Higgins, University of Wisconsin
R. E. Kalman, RIAS
W. Kipiniak, American Cyanamid Corp.

Thursday, February 1st

9:00 a.m.—Space Communications

9:00 a.m.—Communication Theory and Communication Switching Systems

CP.* Communication System Optimization—Part I. R. Kalaba, The Rand Corp.

CP.* Communication System Optimization—Part II. M. Juncosa, The Rand Corp.

CP.* Markov Chains and Communication Networks. D. Epstein, W. Litchman; ITT Communication Systems, Inc.

62-65 I Some Traffic Characteristics of Communications Networks With Automatic Alternate Routing. J. H. Weber, Bell Telephone Labs., Inc.

CP62-255. An Appraisal of Pocketed Calls in Common Control Switching. I. Molnar, General Telephone and Electronics Labs., Inc.

9:00 a.m.—Solid State Electronic Devices and Their Utilization

CP.* Esaki Diodes: Their Uses and Limitations. R. Pucel, Raytheon Co.

CP.* Cryotrons and Their Uses in Digital Computers. J. P. Beesley.

CP.* Microwave and Optimcal Masers. R. A. McFarlane, Bell Telephone Labs., Inc.

CP.* Passive Thin Film Components. H. W. Katz, General Electric Co.

9:00 a.m.—Land Transportation—I

CP62-12. Application of a Severity Rating Analysis of Railroad Operating Variables to Brush Grade Selection. K. R. Matz, National Carbon Co.

CP62-256. A Functional Evaluation Method for Traction Field Coils. T. Orbeck, Westinghouse Electric Corp.

CP62-270. Operating Experience with Epoxy Resins in Insulation Systems of Traction Rotating Apparatus. J. J. Kuscharsey, W. E. Kelley; Pennsylvania Railroad Co.

9:00 a.m.—Adaptive Control Systems—I

CP62-82. A Learning System Using Statistical Decision Functions. K. S. Fu, Purdue University.

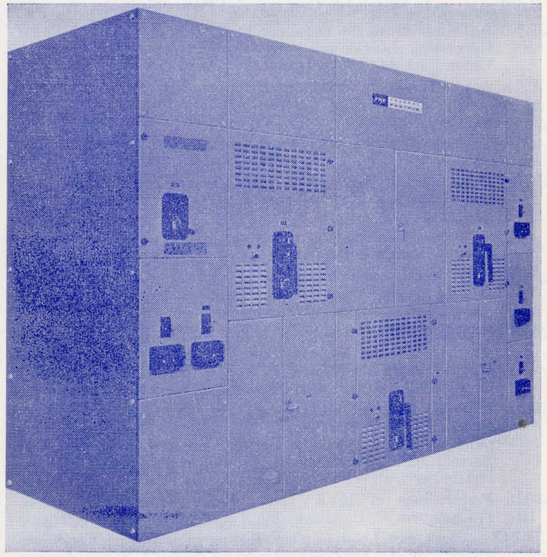
62-35 II An Adaptive Control System With Sinusoidal Parameter Perturbation. R. B. Lackey, The Ohio State University.

CP.* Critique: J. Aseltine, Aerospace Corp.; J. Zaborsky, Washington University.

9:00 a.m.—Biomedical Engineering Techniques—I

CP.* The Automatic Detection of Abnormal Cardiovascular Sounds by Zero Crossing Analysis Technique. M. H. Paul, J. E. Jacobs, E. T. Kozol; Northwestern University.

CP.* Constraints of an Electromagnetochemical Theory of Rapid Biological Transients. V. W. Bolie, Iowa State University.



Federal Pacific Control Center, United Engineering Center

CP.* Application of the Capacitance Pickup in Heart Sound Research. D. Groom, Y. T. Sihvonen, W. W. Francis, Medical College of South Carolina.

62-63 I Recent Advances in Heart-Lung Bypass Systems. G. C. Riggle, J. M. F. DeBroske; National Institutes of Health. (Re-presented for Discussion only)

9:00 a.m.—Recording & Controlling Instrumentation

9:00 a.m.—Substations and Transmission & Distribution

CP.* Performance Specifications for Connectors for Aluminum Conductors. F. E. Sanford, Commonwealth Associates.

CP62-263. Experiences with Tinned-Bronze Clamp Connectors on Aluminum Conductors. R. W. Shaw, L. C. Earp, C. S. Roadhouse, H. C. Sampers; Omaha Public Power District.

CP62-245. 34.5 KV Complements 4.8-KV Distribution. C. M. Short, City of Los Angeles Dept. of Water and Power.

9:00 a.m.—Turbine Generators

62-184 III Diagonal-Flow Ventilation of Gap-Pickup Rotors for Large Turbine Generators. N. Schmitt, D. M. Willyoung, R. L. Winchester; General Electric Co.

62-185 III Local Rotor Winding Temperature Measurements for Large Turbine Generator Fields. H. W. Kudlacik, D. M. Willyoung; General Electric Co.

62-186 III Harmonic Power in Non-Salient Pole Synchronous Machinery. P. I. Nippes, Elliott Co., a div. of Carrier Corp.

62-187 III Current Sheets Equivalent to End Winding Currents of Turbine Generator Stator and Rotor. J. A. Tegopoulos, Westinghouse Electric Corp.

62-188 III Flux Impinging on the Endplate of Turbine Generators. J. A. Tegopoulos, Westinghouse Electric Corp.

9:00 a.m.—New Electron Tubes and Techniques

62-155 I Fast Heating Thermionic Cathodes. E. G. Dorgelo, Amperex Electronic Corp.

CP.* Elements of VHF Receivers for Direct Operation from 26 Volts. T. E. Gausman, B. B. Scott; Sylvania Electric Products, Inc.

CP.* A Ceramic Voltage Reference Tube for Severe Environments. D. D. Mickey, General Electric Co.

CP.* Application Notes on a New 50,000 Micromho Planar Ceramic Triode. J. W. Rush, General Electric Co.

CP.* Memory Tubes for Television Standards Conversion. M. M. Bonvalot, Courtan; Compagnie Generale de Telegraphie Sans Fils.

CP62-268. Experiences With a Simple Titanium Ion Pump. M. J. Pawelko, Amperex Electronic Corp.

9:00 a.m.—Modern Circuit Techniques—I

CP.* Precise Frequency Synthesis Using Non-Precise Tuning Components. T. W. Butler, Jr., University of Michigan.

CP62-149. Gain and Sensitivity as Design Criteria for Iterative Transistor Amplifiers. S. S. Shamis, A. Chertok; New York University.

CP.* The Thermotron as a Low Drift DC Amplifier. J. W. Higginbotham, The Martin Co.

CP.* A Comb Filter for Use in Tracking Satellites. R. L. Vitek, U. S. Army Ordnance Ballistic Research Labs.

CP.* An Optical Correlation Device. J. N. Packard, The Martin Co.

62-148 I The Dynamic Behavior of Negative-Resistance Devices. C. O. Harbourt, The University of Texas. (Re-presented for Dission only)

9:00 a.m.—Organization of Gigacycle Computing Systems —G.C.S.—III

The papers in this symposium will be available as special publication S-136.

S-136 The Organization of a Multi-List Type Associative Memory. N. S. Prywes, H. J. Gray; University of Pennsylvania.

S-136 Problems in the Logical Organization of a Kilomegacycle Computer. P. Warburton, Radio Corp. of America.

S-136 Guides for the Organization of Computing Systems Using Multiplexed Equipment. W. C. Carter; IBM Corp.

S-136 Considerations in the Design of a Computer With High Logic-To-Memory Speed Ratio. L. Bloom, M. Cohen, S. Porter; The National Cash Register Co.

9:00 a.m.—Thermal Evaluation—I

Symposium and Discussion—The Problem of Limits in Thermal Aging Tests of Electrical Insulation.

Presentations of the various philosophies of the temperature classifications of insulating materials.

9:00 a.m.—Engineering of Large Systems— I. System Engineering in Different Fields

CP.* Generation and Optimization of Aerospace Systems. D. R. S. McColl, Aerospace Corp.

CP.* Systems Engineering A Large Chemical Plant Complex. T. J. Williams, Monsanto Chemical Co.

CP.* System Engineering for Automation of a Large Power Plant. W. L. Chadwick, Southern California Edison Co.

CP.* An Airline Reservation and Communication System. Samuel Levine, Teleregister Corp.

9:00 a.m.—Switchgear—I

CP62-33. Measuring Transient Current in a Short-Circuit Laboratory. J. S. Withers, Bussman Mfg. Co.

62-240 III Assembled Switchgear Designed by Computer Paper No. I—Design to Application Specification. H. B. Wortman, M. H. Waller; Westinghouse Electric Corp.

62-241 III Assembled Switchgear Designed by Computer—II. A General Computer Method for Translating Functional and Descriptive Input Into Parts Lists. H. B. Wortman, M. H. Waller, H. K. Gallimore, R. H. Davis; Westinghouse Electric Corp.

CP.* An Extruded Polephase Bus. H. G. Frostick, R. E. Goers, U. S. Steel Corp.

9:00 a.m.—Heavy Current Buses for Generator Loads

62-171 III Minimizing the Magnetic Field Surrounding Isolated Phase Bus By Electrically Continuous Enclosures. W. F. Skeats, N. Swerdlow; General Electric Co.

62-242 III Isolated Phase Metal-Enclosed Conductors for Large Electric Generators. R. H. Albright, A. Conangla, A. C. Bates, J. B. Owens; I-T-E Circuit Breaker Co.

CP62-282. The High Current Generator Bus. G. E. Buchanan, J. S. Banas, H. K. Porter Co., Inc.

CP62-26. Design of High Current Buses for Generator Leads. E. W. Whitmer; Ebasco Services, Inc.

62-170 III Recent Developments in Starting Cross-Compound Turbine-Generator Units. L. R. Stuve, P. E. Benner; General Electric Co. (Re-presented for Discussion only)

2:00 p.m.—Radio Communications—I

CP62-44. Parametric Amplifiers for Microwave Communications Systems. J. N. Ratti, Collins Radio Co.

62-45 I Interference Considerations for 6 GC Microwave Systems. B. R. Hallford, Collins Radio Co.

62-47 I An Optimum Self-Synchronized Communication System. S. S. L. Chang, B. Harris; New York University.

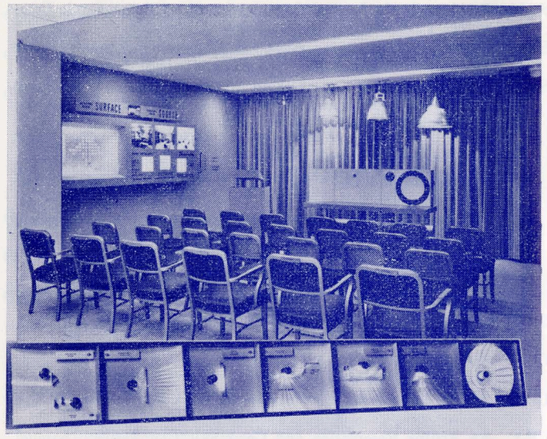
2:00 p.m.—Wire Communication and Switching Systems

CP62-224. Application of "Touch-Tone Calling" in the Bell System. M. L. Benson, American Tel. & Tel. Co.; F. L. Crutchfield, H. F. Hopkins, Bell Telephone Labs., Inc.

CP62-225. Central Office and PBX Arrangements for "Touch-Tone" Calling. D. J. Gagne, C. J. Schulz; Bell Telephone Labs., Inc.

CP62-226. Signaling System and Receiver for "Touch-Tone" Calling. R. N. Battista, C. G. Morrison, D. H. Nash; Bell Telephone Labs., Inc.

AIEE WINTER GENERAL MEETING



The Holophane Light and Vision Institute

CP62-227. A "Touch-Tone" Caller for Station Sets. J. H. Ham, F. West; Bell Telephone Labs., Inc.

2:00 p.m.—Current Trends in Undergraduate Electrical Engineering Education

CP.* Circuits and Networks. M. E. Van Valkenburg, University of Illinois.

CP.* Electromagnetic Fields. R. E. Collin, Case Inst. of Technology.

CP.* Electronics. E. O. Pederson, University of California.

2:00 p.m.—Land Transportation—II

62-130 II Automatic Safety and Vigilance Control System for Railroad Locomotives and Motor Coaches. B. Steiner, Oerlikon Engineering Co.

CP62-274. Aids for Calculating Freight Train Performance by Digital Computer. J. E. Hogan, The Pennsylvania Railroad Co.

CP62-269. Rectifier Type Locomotive for Pennsylvania Railroad. J. W. Horine, Pennsylvania Railroad; D. R. McLeod, General Electric Co.

2:00 p.m.—Adaptive Control Systems—II

CP62-84. The Identification of Linear System Parameters. R. B. Kerr, Princeton University.

CP62-96. General Method of Computing System Parameters with an Application to Adaptive Control. B. J. Miller, North American Aviation, Inc.

62-97 II Stability Analysis of a Rapidly-Adapting Control System. J. H. Noland, University of South Carolina.

CP.* Critique: J. Gibson, Purdue University; L. F. Kazda, University of Michigan.

2:00 p.m.—Indicating & Integrating Instruments

2:00 p.m.—Substations and Switchgear

62-246 III High and Extra High Voltage Substation Design and Economic Comparisons. G. E. Hertig, I-T-E Circuit Breaker Co.

CP62-285. The Design and Testing of Air Switches Above 345 KV. A. Turgeon, I-T-E Circuit Breaker (Canada) Ltd.

CP.* Installation, Operation and Maintenance of 220 KV Oilless Circuit Breakers in Southern California Edison Company Substations. R. S. Melville, L. W. Wood; Southern California Edison Co.

62-153 III Considerations in Establishing a Standard of Mechanical Loads on Oil Circuit Breaker Bushings. W. E. Harper, Allis Chalmers Mfg. Co., E. F. Huston, Ohio Brass Co.

2:00 p.m.—Direct Current Machinery

62-193 III Commutator Design. V. B. Honsinger, Allis-Chalmers Mfg. Co.; W. H. Middendorf, University of Cincinnati.

62-189 III Theory of the Sparking During Commutation on Dynamos. R. Holm, Stackpole Carbon Co.

62-190 III Commutation. E. I. Shobert II, Stackpole Carbon Co.

CP62-191. Explanation of the Torque in a Dynamo. R. Holm, Stackpole Carbon Co.

CP.* A Status Report on the Printed Motor. R. P. Burr, Circuit Research Co.

2:00 p.m.—Electronics

2:00 p.m.—Modern Circuit Techniques—II

CP.* Electronically Tunable UHF Tunnel Diode Oscillator. F. G. Haneman, G. W. Thomson; Airborne Instruments Laboratory.

CP.* Tunnel Diode Autodyne Converter. E. Gottlieb, General Electric Co.

CP.* An 8 mc Transistorized Limiter-Amplifier with Minimum Phase Shift Variation. S. P. Stranddorf, General Electric Co.

CP.* Low Loss Frequency Multipliers of Higher Order and Power in the UHF Range—An Analysis for Their Design Using Nonlinear Capacitors. J. C. Martin, Clemson A and M College.

CP62-152. Extensions of Broadband Coupling to Cathode Follower Voltage Amplifiers. S. Plotkin, Hoffman Electronics Corp.; N. E. Nahi, University of Southern California.

62-150 I Suppressed Carrier Modulation With Tunnel Diodes. B. Rabinovici, J. Klapper, S. Kallus; Radio Corp. of America. (Re-presented for Discussion only)

2:00 p.m.—General Considerations in Gigacycle Computer Systems—G.C.S.—IV

The papers in this symposium will be available as special publication S-136.

S-136 Ultrahigh-Speed Memory Design Considerations. W. W. Davis, E. L. Krieger; Sperry Rand Corp.

S-136 Reliability in Non-Repairable KMC Digital Computers. J. Tooley, Texas Instruments, Inc.

S-136 Automatic Utilization of Hierarchial Memories. J. P. Anderson, E. L. Glaser; Burroughs Corp.

S-136 Some Considerations in Kilomegacycle Computer Design. D. R. Crosby, Radio Corp. of America.

2:00 p.m.—Thermal Evaluation—II

Symposium and Discussion—The Problem of Limits in Thermal Aging Tests of Electrical Insulation.

2:00 p.m.—Large Systems Engineering Symposium

CP.* Formulations. D. P. Eckman, Case Institute of Technology.

CP.* Modeling and Simulation in Systems Engineering. H. Chestnut, General Electric Co.

CP.* Optimization Techniques Applied to Electric Utility Industry. L. K. Kirchmayer, General Electric Co.

CP.* Management Planning and Control Systems. D. G. Malcolm, Operations Research, Inc.

CP.* Evaluation and Reliability. S. W. Herwald, Westinghouse Electric Corp.

2:00 p.m.—Load Control and Load Flow Calculations

CP62-247. Application of an On-Line Digital Computer for Dispatch and Control of the Detroit Edison System. D. G. Blodgett, A. K. Falk, Detroit Edison Co.; T W. Hissey, W. B. Schultz, Leeds and Northrop.

TECHNICAL PROGRAM

62-221 III System Frequency Stability in the Pacific Northwest. A. R. Benson, D. G. Wohlgemuth, Bonneville Power Administration.

62-194 III Automatic Evaluation of Power System Performance—Effects of Line and Transformer Outages. A. H. El-Abiad, American Electric Power Service Corp. and Purdue University; G. W. Stagg, American Electric Power Service Corp.

62-214 III Power Flow Solution By Impedance Matrix Iterative Method. H. E. Brown, C. E. Person, Commonwealth Edison Co.; G. K. Carter, H. H. Happ, General Electric Co.

2:00 p.m.—Excitation Systems

CP.* The Rotating Transformer Exciter for Variable-Speed Variable-Frequency Brushless Synchronous Alternators. K. M. Sparrow, The Lima Electric Motor Co.

CP.* The Induction Frequency Converter Saturable Reactor (FCE-SR) as an Exciter-Regulator for a Brushless A-C Generator. K. M. Sparrow, The Lima Electric Motor Co.

62-165 III A Harmonic Excitation System for Turbine Generators. L. R. Roche, Elliott Co., a div. of Carrier Corp.

62-166 III Status of the High Temperature Gas-Cooled Reactor. T. G. LeClair, General Dynamics (Re-presented for Discussion only)

2:00 p.m.—Biomedical Engineering Techniques—II

CP.* Pre-natal Diagnosis of Congenital Cardiac Malformation: Criteria. S. D. Larks, Marquette University.

CP.* An Improved Method of Automatically Computing Dilution Curves. C. F. Hepner, J. E. Jacobs, H. U. Wessel, P. Kezdi; Northwestern University.

CP62-64. Pattern Recognition By Random Lines. D. Rubenstein, General Electric Co.

CP.* Analog Computer Simulation of Heart Action. J. McLeod, Convair.

2:00 p.m.—Switchgear—II

62-244 III Some Fundamental Aspects of Recovery Voltages. J. Zaborszky, Washington University; J. W. Rittenhouse, Hi-Voltage Equipment Co.

62-276 III Fundamental Aspects of Some Switching Overvoltages on Power Systems. J. Zaborszky, Washington University and J. W. Rittenhouse, Hi-Voltage Equipment Co.

62-243 III A 2 Cycle 138-KV 10,000,000 KVA Air-Blast Circuit Breaker Design Considerations and Field Tests at Phillip Sporn Station. O. Naef, J. E. Beehler, American Electric Power Service Corp.; R. B. Shores, J. W. Beatty, General Electric Co.

62-15 III Observations on the Development of Arc Interrupters of Small Physical Volume for Industrial Circuit Breakers with Large Interrupting Ratings. W. K. Roots, Mears Controls, Inc.

Friday, February 2nd

9:00 a.m.—Wire Communications—I

62-37 I Spectrum Generator for Transmission Testing of Wire Facilities. D. L. Favin, F. J. Danik; Bell Telephone Labs., Inc.

62-7 I Minutemen Communication Cable Tests. E. A. Havens, J. H. Wolff, Radio Corp. of America.

CP62-228. Transmission Characteristics of Aluminum Conductors in Open Wire Communications Circuits. F. J. Trebby, Kaiser Aluminum & Chemical Corp.

62-229 I Figure 8 Thermoplastic Insulated and Jacketed Telephone Cables. V. W. Pehrson, L. Jachimowicz, General Cable Corp.; R. E. Potter, General Telephone Co. of the Southeast; H. Pulliam, General Telephone & Electronics Corp.

62-230 I Plug-In Units for Long Lines Circuits. P. J. Read, Northern Electric Co., Ltd.

9:00 a.m.—Radio Communications—II

CP62-48. Radio Wave Communications in the Arctic. N. C. Gerson, U. S. Naval Committee for the IGY.

CP62-267. Portable Use of Short Haul Carrier Over Microwave. J. F. Kiener, R. E. Bloor; Ohio Bell Tel. Co.

62-49 I Protection of Service in a Microwave Radio System. R. A. Heine, L. B. Johnson; Lenkurt Electric Co., Inc.

CP62-50. The RF/7 Transistorized 6 Gc Microwave System. I. T. Corbell, General Electric Co.

62-51 I Multiplexing Using Quasi-Orthogonal Binary Functions. W. J. Judge, Magnavox Research Labs.

9:00 a.m.—System Planning

62-68 III Load Forecasting on the TVA System—Part I: Substation Loads. W. R. New, Tennessee Valley Authority.

62-215 III A Computer Program for Automatic Transmission Planning. J. L. Whysong, H. E. Brown, Commonwealth Edison Co.; R. Uram, University of Pittsburgh; C. W. King, C. A. DeSalvo, Westinghouse Electric Corp.

CP62-217. Regulation Studies for Columbia River Hydroelectric Power Planning. J. S. Clubb, W. F. Tinney, H. H. Kasai, J. L. Bloodworth; Bonneville Power Administration.

CP62-277. The Spurious Solution in Load Flow Calculations. J. K. Delson, The North Zealand Electricity & Tramway Co. Ltd.

9:00 a.m.—Land Transportation—III

CP62-2. Electrification—Devil or Angel? L. B. Curtis, The Pennsylvania Railroad Co.

CP62-159. New Design of Current Collection Pantograph. A. Scheidecker, Etablissements L. Faiveley.

CP.* Trends in European Pantograph Design. G. Moehring, August Stemmann OHG; J. Schwalm, Ringsdorff Werke.

9:00 a.m.—Control Components & Performance Measurement

CP62-86. Single Phasing as Determined by Control Circuit Impedance. M. G. Rekoff, Jr., Agricultural and Mechanical College of Texas; N. L. Schmitz, University of Wisconsin.

CP.* Progress in Gyroscope Specifications and Terminology, 1962, Aerospace Industries Association. C. Janoff, Bell Aerosystems.

CP62-88. Twin-T Compensation Using Root Locus Methods. J. B. Slaughter, A. B. Rosenstein; University of California.

CP62-89. Multiloop Control System Study of a Gas Turbine Compressor and Power Unit—Part I: Analytical Investigation. J. R. Shull, G. A. Russell; AiResearch Mfg. Co. of Arizona.

CP62-90. Open Loop Performance Measurements of Precision A.C. Motor-Tachometer Generators. H. Sabath, Servomechanisms, Inc.

9:00 a.m.—Ground Resistance and Potential Gradient Measurements

CP62-205. Earth Potential Distributions Associated With Power Grounding Structures. D. W. Bodle, Bell Telephone Labs., Inc.

CP62-206. Proving the Adequacy of Station Grounds. A. Elek, The Hydro-Electric Power Commission of Ontario.

CP62-207. Ground Impedance Component Measurement. C. A. Duke, L. E. Smith, Tennessee Valley Authority.

Panel Discussion on the Measurement of Ground Resistance and Potential Gradients in the Earth.

Moderators: D. W. Bodle, Bell Telephone Labs., Inc.
E. B. Curdts, James G. Biddle Co.
C. A. Duke, Tennessee Valley Authority
A. Elek, Hydro-Electric Power Commission of Ontario

9:00 a.m.—Switchgear—III

CP62-67. Research and Development Leading to the High-Power Vacuum Interrupter—An Historical Review. J. D. Cobine, General Electric Co.

62-151 III Development of Power Vacuum Interrupters. T. H. Lee, A. Greenwood, D. W. Crouch, C. H. Titus; General Electric Co.

62-161 III **Design of Vacuum Interrupters to Eliminate Abnormal Overvoltages.** T. H. Lee, A. Greenwood, G. Polinko, Jr.; General Electric Co.

62-120 III Heavy Duty Vacuum Recloser. A. L. Streater, R. H. Miller, J. C. Sofianek; General Electric Co.

9:00 a.m.—Hydroelectric Power

62-167 III Dynamic Response of a Hydroelectric Plant. R. Oldenburger, Purdue University; J. Donelson, Jr., Tennessee Valley Authority.

62-168 III Bersimis II Powerhouse-Plant Arrangement—Description of Apparatus. G. E. Ransom; Asselin, Benoit, Boucher, Ducharme, LaPointe, Consulting Engineers.

62-1 III Modern Control of Large Hydroelectrical Generating Stations. R. H. Bruck, U. S. Army North Pacific Corps of Engineers.

62-24 III Electrical Features of Ontario Hydro's Modern Supervisory Controlled Hydraulic Generating Stations. J. W. Ellis, The Hydro-Electric Power Commission of Ontario.

62-169 III Speed Regulation Tests on a Hydro Station Supplying an Isolated Load. L. M. Hovey, L. A. Bateman; Manitoba Hydro.

9:00 a.m.—Electronics

9:00 a.m.—Modern Circuit Techniques—III

62-19 I Low-Loss Materials for Printed Microwave Applications. T. D. Schlabach, R. J. Colardeau; Bell Telephone Labs., Inc.

CP.* Broadband-Stable-Hybrid Coupled Parametric Amplifier. D. Sabih, Hughes Aircraft Co.

CP.* Broadband Parametric Amplifiers by Simple Experimental Techniques. B. B. Bossard, R. Pettai; Radio Corp. of America.

CP.* A Baseband Diode Limiter. R. V. Garver, J. A. Rosado, Diamond Ordnance Fuze Lab.

CP.* Operation of Tunnel Diode Converters at L and S Band. A. Brandli, A. Garfein; General Electric Co.

9:00 a.m.—Computer Input-Output Devices

CP.* A Development Study of the Print Mechanism on the IBM 1403 Chain Printer. B. J. Greenblott, IBM Corp.

CP62-127. Digital Circuit Techniques for Speech Analysis. G. L. Clapper, IBM Corp.

CP62-128. High-Accuracy Analog-To-Digital Converter. R. Gross, J. Jagy, J. Scutt; Ford Instrument Co.

9:00 a.m.—Electrical Insulation

CP.* Effect of Elongation of Enameled Magnet Wire on Thermal Endurance. Working Group on Thermal Evaluation of Magnet Wire of the Subcommittee on Thermal Stability of the AIEE Committee on Electrical Insulation. Prepared for the Group by: W. W. Pendleton, Anaconda Wire & Cable Co.

CP.* AIEE Publication #1—Suggested Division Into Two Parts—Materials and Insulation Systems. H. L. Saums, Anaconda Wire & Cable Co.

CP.* Selection of Suitable Resins for High Voltage Insulation Systems. L. V. Bucklew, National Electric Coil Division of McGraw-Edison Co.

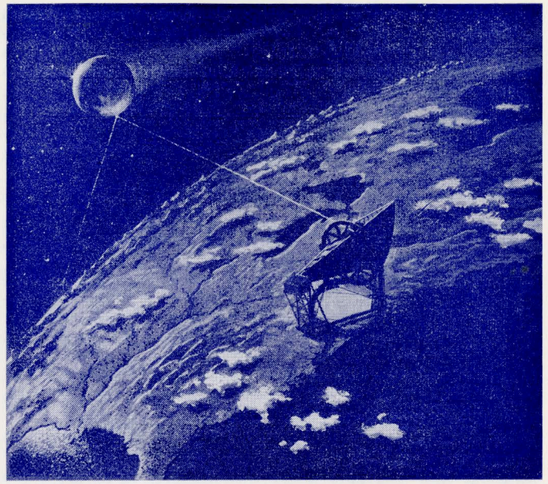
CP62-158. The Importance of Low Dissipation Factor Insulation in Metal-Clad Switchgear. L. L. Mankoff, W. J. Donaldson; General Electric Co.

9:00 a.m.—Rotating Machinery

CP.* Noise Test on Electric Motors in Various Environments. R. B. Edmiston, Westinghouse Electric Corp.

62-117 III Equivalent Circuits for Cylindrical-Rotor, Reluctance and Salient-Rotor Synchronous Machines. G. R. Slemon, University of Toronto.

62-118 III The Torque Tensor of the General Machine. Yao-Nan Yu, The University of British Columbia.



BTL Telephone Transmission Via Space Satellite

CP.* **Potting Compound for Canned Motor Pumps.** M. E. Nelson, D. F. Christensen, Dow Corning Corp.; F. A. Yeoman, D. R. Nixon, Westinghouse Electric Corp.

CP62-192. **A-C and D-C Methods for the Evaluation and Maintenance Testing of High-Voltage Insulation in Electrical Machines.** A. Wichmann, Siemens-Schuckertwerke AG.

2:00 p.m.—Wire Communications—II

CP62-231. Design Considerations for High Density Multiplex Equipment. R. B. Anderson, M. L. Stephens; Lenkurt Electric Co., Inc.

CP.* A Completely Transistorized Coaxial Cable System for 960 Channels. A. W. Newman, D. W. Sparks; General Electric Co.

61-1071 I The Application of Carrier Systems to Exchange Trunk Plant in Canada. A. Curran, T. G. Fellows, Northern Electric Co., Ltd. (Re-presented for Discussion only)

2:00 p.m.—Land Transportation—IV

CP62-258. Winter Aspects of Electric Railroad Operation. P. H. Hatch, R. P. Turnbull; Long Island Railroad.

CP62-272. Equipment for Rapid Transit. W. C. Wheeler, St. Louis Car Co.

CP62-160. Rapid Transit Train Control. C. A. Butts, Chicago Transit Authority.

2:00 p.m.—Discrete Data Control Systems

CP62-91. Oscillations in Nonlinear Sampled-Data Systems. M. A. Pai, University of California.

CP62-92. Analog Simulation of a Relay Servomechanism With Variable Width Transition. H. R. Weed, F. C. Weimer, The Ohio State University; R. J. Lahr, IBM Research Center.

CP62-94. Modern Synthesis of Computer Control Systems. J. T. Tou, Northwestern University; P. D. Joseph, Space Technology Labs., Inc.

CP62-95. An Extension of the Optimum Design Through Digital Compensation for Linear Multivariable Sampled Data Control Systems. M. Sobral, Jr., University of Illinois.

2:00 p.m.—Electrical Measurements

62-18 I The Impedance of a Coil Placed on a Conducting Plane. T. J. Russell, The Bendix Corp.; V. E. Schuster, Motorola, Inc.; D. L. Waidelich, University of New South Wales.

CP62-208. A Special Shielded Resistor for High Voltage D-C Measurements. J. H. Park, National Bureau of Standards.

62-23 I The Effect of Winding Potentials on Current Transformer Errors. N. L. Kusters, W. J. M. Moore; National Research Council.

CP62-209. A Clamp-On Current Transducer for A-C and D-C Measurements Using Hall Probes. H. Hollitscher, Canadian General Electric Co., Ltd.

62-210 I A New Transducer and Its Application to Power Measurements By Hook-On Transformers. A. J. Corson, J. P. Ultcht; General Electric Co.

2:00 p.m.—Basic Sciences—II

CP62-135. Electromechanical Energy Conversion in Double Cylindrical Structures. R. M. Saunders, University of California.

62-136 I The Misapplication of Graph Theory to Electrical Networks. G. Kron, General Electric Co.

CP62-137. Electrode Erosion and Gas Evolution of Vacuum Arcs. E. E. Burger, retired, formerly with General Electric Co.; J. D. Cobine, T. A. Vanderslice, General Electric Co.

CP62-138. Electrode Materials and Their Stability Characteristics in the Vacuum Arc. G. A. Farral, J. M. Lafferty, J. D. Cobine, General Electric Co.

CP62-139. Recovery Characteristics of Vacuum Arcs. J. D. Cobine, G. A. Farrall, General Electric Co.

62-140 I The Performance of a Magnetohydrodynamic Re-Entry Vehicle Channel. M. J. Brunner, General Electric Co. (Re-presented for Discussion only)

2:00 p.m.—Protective Devices

62-199 III Lightning Protection of Rotating Machines Directly Connected to Overhead Lines. R. W. Powell, A. R. Hileman, M. Maxwell; Westinghouse Electric Corp.

62-198 III The Surge Performance of Cable Connected Pad Mounted Distribution Transformers. H. R. Armstrong, M. D. Charneski, R. T. Curto; Detroit Edison Co.

62-275 III Records of Cougnard Deionisers. Working Group on Service Records of Cougnard Deionisers of the Lightning Protective Devices Sub. of the AIEE Protective Devices Committee.

2:00 p.m.—Foreign Practices

62-163 III Power Development in the U.S.S.R. F. L. Lawton, Aluminum Labs, Ltd.

CP62-259. The Present Stand of Pumped Storage in Europe. H. K. Happoldt, E. Wiedemann, Brown, Boveri Co. Ltd.; O. J. Hartmann, Motors-Columbus, Ltd.

CP62-257. Developments in Large Turbo Type Generators. P. Richardson, C. A. Parsons & Co., Ltd.

CP62-164. Prediction of Long Range Power Generation Requirements in Foreign Countries. G. B. Scheer, Kaiser Engineers.

CP.* Trends in Power Station Switchgear Practice in Great Britain. R. P. E. Tabb, The English Electric Co., Ltd.

2:00 p.m.—Modern Circuit Techniques—IV

CP.* Characterization of Semiconductor Diodes for Switching Circuit Design. G. H. Goldstick, The National Cash Register Co.

CP.* Properties and Applications of Transistor Logging Circuits. H. W. Abbott, V. P. Mathis; General Electric Co.

CP.* The Unsymmetrical Flip-Flop, Advantages and Design. P. W. Becker, General Electric Co.

CP.* Switching of Large Inductive Currents with Silicon Power Transistors in a High Power Inverter. R. A. Colclasser, Westinghouse Electric Corp.

CP.* Avalanche Transistor Circuits for Generating Rectangular Pulses. D. J. Hamilton, P. G. Griffith, F. H. Shaver; The University of Arizona.

Continued from page 2

400,000-volt cable. Building is constructed as a high Faraday cage and is equipped with radiant heating integrated with the shielding system and atmospheric control.

Astoria Generating Station, Consolidated Edison Company of New York, Inc., New York, N. Y. (Wednesday morning, January 31st and Thursday morning, February 1st). Astoria station is the largest generating plant on Con Edison's system with a gross capability of 1,185,000 kilowatts. The plant which is located on the East River in Queens to the north of the Triboro Bridge will become the largest steam driven plant in the world in the spring of 1962 when a fifth unit will go into operation bringing its gross capability to 1,585,000 kilowatts.

Astoria is equipped to burn coal, oil, or natural gas. Of particular interest are the damper and nozzle arrangements to compensate for the station's relatively short stacks (because of nearby LaGuardia Airport), the 3-section DeLong prefabricated coal dock, and the most modern of air pollution control equipment.

The electric station is part of a 312-acre complex of utility facilities which includes a major distribution point for natural gas from the Gulf Coast used by Con Edison and other gas utilities in the metropolitan area, extensive standby and peak-load gas manufacturing facilities, the North Queens bulk-power electric switching station, a fuel oil tank farm, and Con Edison's 2,000,000-ton capacity coal storage yard.

No Cameras. Men and Teenage Boys only.

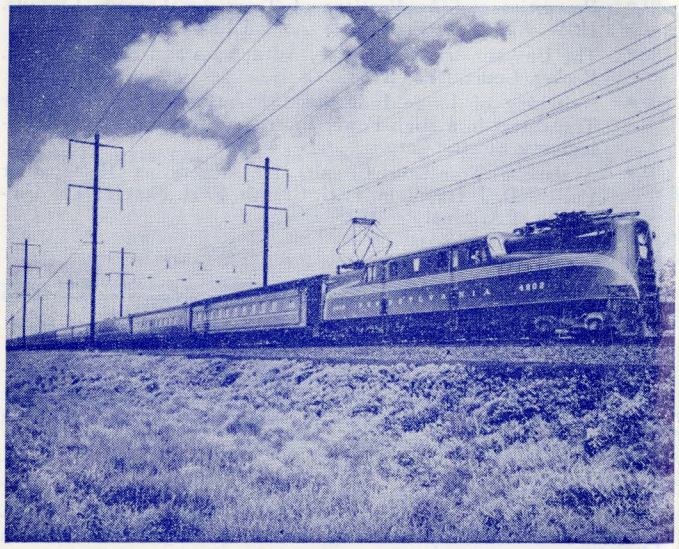
United Nations General Assembly Building, New York, N. Y. (Wednesday morning, January 31st). The guided tour will take slightly over 1 hour, covering various special facilities and functions of this building and descriptions of special details. Includes a trip through the Visitors' Gallery of the General Assembly Hall, if the Assembly is in session. (Present U.N. schedule lists committee sessions only, and admission tickets at no charge will be available for optional group attendance about 2 p.m.) Arrangements may be made for group luncheon (not included in tickets) in the Delegates Dining Room. The lunch is recommended but optional.

Bell Telephone Laboratories, Murray Hill, N. J. (Wednesday afternoon, January 31st). The group will assemble in the Arnold Auditorium at 2 p.m. There will be a talk by K. G. Van Wynen, Public Relations Supervisor, describing the Laboratories, their place in the Bell System, and their operations in research and development. Following this, there will be a lecture on satellite communications.

Small groups will visit a cross section of different laboratories to present a broad picture of the scope of science covered by the Laboratories.

Adults only.

United Engineering Center, New York, N. Y. (Wednesday, January 31st—Two trips, morning and afternoon). The headquarters of the AIEE, sixteen other engineering organizations, the Engineering Societies Library, several meeting rooms and an exhibition hall (not yet equipped) are located in the new United Engineering Center on United Nations Plaza at 47th Street.



Pennsylvania's Broadway Limited

The electric service for the entire building is supplied from the utility network at 255/460 volts through a main switchboard of coordinated-fuse circuit breakers having a minimum interrupting capacity of 100,000 amperes, three phase. Distribution of electric energy through the building is accomplished by conduit and wire horizontally in basement areas to the principal distribution centers and by vertical buses in the office tower and to the motor control centers on the 19th and 20th floors. The bus risers consist of two 2,000 ampere low-impedance risers used to feed lighting and power on each floor through dry-type transformers and three-phase, 4-wire panelboards. Bus risers, transformers and panelboards are located in electric closets on each floor. Bus plugs are equipped with current-limiting fuses to provide selective short-circuit protection. A double underfloor duct system is provided in all office spaces to permit maximum flexibility in initial as well as future office arrangements. The power section of the underfloor duct is fed by the 120/208 volt panelboard in the electric closets.

In addition to the electric facilities, the tour will include the cooling, heating, and elevator controls and the two and a half floors occupied by the AIEE staff.

A special separate tour has been arranged for the ladies.

The Holophane Light and Vision Institute, New York, N. Y. (Thursday afternoon, February 1st). This lighting "clinic" is a permanently established center for the demonstration of fundamental principles of seeing and lighting, both for individuals and groups. At formal lectures about 40 people can be accommodated comfortably. It is also in constant use as a laboratory where original research is carried on.

The demonstrations show how the eye sees, how lighting levels are determined, how colors for working spaces should be chosen, how light is controlled by optical constructions—reflectors, refractors. Visitors will be able to see the effects of shadow, diffusion, and contrast on various visual tasks, the effect of intensity on speed of seeing, and many other interesting and useful effects that they will be able to apply to their own lighting problems.

Refreshments will be served at the conclusion of the visit.

Brookhaven National Laboratory, Upton, New York (Thursday, February 1st). The facilities of this location are operated by Associated Universities, Inc., under contract with the Atomic Energy Commission, and constitute the Northeastern Center for nuclear research and development in the fields of physics, chemistry, biology, medicine and engineering. Among the important facilities which our members will see are the research reactor, "hot" chemistry laboratory and particle accelerators. A complete tour has been arranged and competent guides, engineers and scientists will be on hand to explain fully the extensive facilities and exhibits which have been erected at this vast site.

No citizens of Iron Curtain nations.

Advance registration.

Bus leaves Statler-Hilton at 8:00 a.m., returns at 5:30 p.m.

The New York Stock Exchange (Thursday morning, February 1st). With its vast trading floor, is located in a building on the corner of Broad and Wall Streets just a short subway ride downtown from the Hotel Statler.

This Exchange is the nation's largest securities market. Six hundred and seventy-seven member brokerage firms daily buy and sell for thousands of people the stocks and bonds of America's leading corporations.

A guided tour is planned that will allow you to see first hand, and have clearly explained, how transactions are made and will include a visit to the gallery overlooking the bustling trading floor while in action. This tour is a definite "must" in New York City.

Steamship Leonardo Da Vinci (Thursday afternoon, February 1st). The Leonardo Da Vinci, flagship of the Italian Line, made her first transatlantic voyage to New York in July 1960. She is 761 feet in length, 92 feet in breadth, displaces 33,500 tons and has an average speed of 23 knots. The ship uses radar, stabilizers and has a water distilling plant capable of producing 184,000 gallons daily. She accommodates 1300 passengers in three classes, has five tiled swimming pools and is air conditioned throughout. The inspection trip will include visits to the passenger spaces, swimming pools, salons, and public rooms. A small group will be shown through the engineering spaces of the ship.

LADIES' ENTERTAINMENT: An interesting week of events has been planned by the Ladies' Entertainment Committee for the ladies attending the 1962 Winter General Meeting in the Statler-Hilton Hotel, New York.

A Coffee Hour is planned for each morning, Monday thru Friday. On Monday afternoon, a get-acquainted tea has been arranged at Penn Top of the Statler. A tour of Helena Rubinstein's Penthouse is scheduled for Tuesday morning, and in the evening there will be cocktails and dinner with entertainment at Penn Top of the Statler. A trip will be made to the United Nations Building Wednesday morning with a stop at the new Engineering Building. There will be an opportunity to have luncheon in the Delegates Dining Room at United Nations for those who wish. On Thursday, there will be a luncheon and fashion show at the Empire Room of the Waldorf Hotel. The Coffee Hour on Friday morning will close the activities of the week.

ETA KAPPA NU: Clarence J. Baldwin, Jr. has been named Outstanding Young Electrical Engineer of 1961 by Eta Kappa Nu Association. Honorable mention citations go to Dr. Wilbert L. Shevel and Howard A. Zollinger.

Formal presentation of the awards will be made at a 25th anniversary banquet on January 29, 1962 at 6:00 P.M. in Governor Clinton Hotel, Seventh Avenue and 32nd Street, New York City. Dr. C. G. Suits will be the principal speaker. This traditional function is not restricted to Eta Kappa Nu members. Ladies are welcome.

Reservations ($6.50 each) may be sent to Mr. William Levidow, Bell Telephone Laboratories, Inc., Whippany, New Jersey. Tickets will be held for pick-up at door.

WINTER GENERAL MEETING COMMITTEE: Members of the 1962 Winter General Meeting Committee are: R. W. Gillette, chairman; W. G. Vieth, vice-chairman; J. J. Anderson, secretary; R. T. Weil, Jr., AIEE vice-president for District 3 and budget co-ordinator; D. E. Trucksees, representative, Technical Operations Department; J. J. O'Connor, chairman, Public Relations Committee; J. C. Hoyt, General Session; R. E. Briesmeister, hotel accommodations; F. C. Reed, Jr., registration; W. McConnachie, inspection trips; T. W. Bartlett, monitors; J. G. Derse, smoker; J. E. Bevan, dinner-dance; and Mrs. R. W. Gillette, ladies' events.

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