



Winter General Meeting

January 31-February 5, 1960

STATLER-HILTON AND SHERATON-ATLANTIC HOTELS

NEW YORK, N. Y.

SCHEDULE OF LOCALLY SPONSORED EVENTS

Sunday—January 31

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

Monday—February 1

- 2:00 PM—General Session
- 4:00 PM—Ladies Get Acquainted Tea
- 6:00 PM—Eta Kappa Nu Dinner

Tuesday—February 2

- 7:30 AM—Canadian Breakfast
- 9:00 AM—Radio City Music Hall Trip
- 9:30 AM—Ladies Guggenheim Museum Tour
- 9:30 AM—United Nations General Assembly Bldg. Trip
- 12:30 PM—Anaconda Research Lab. Trip
- 12:45 PM—Bell Tel. Labs., Murray Hill Trip
- 1:30 PM—Con. Ed. Astoria Gen. Sta. Trip
- 2:30 PM—Rambusch Decorating Co. Trip
- 7:00 P.M.—Smoker—Hotel Statler
- 7:00 PM—Ladies Dinner

Wednesday—February 3

- 8:15 AM—Okonite Co. Trip
- 8:45 AM—P.S.E. & G. Co. Bergen Gen. Sta. Trip
- 9:30 AM—Underwriters Labs. Trip
- 1:30 PM—Holograph Light & Vision Institute Trip
- 1:30 PM—SS Argentina Tour
- 2:00 PM—IBM Trip
- 3:15 PM—New York Times Trip
- 7:30 PM—International Telecommunications Union Reports**

Thursday—February 4

- 8:00 AM—Brookhaven National Lab. Trip
- 12:15 PM—Con. Ed. Indian Point Gen. Sta. Trip
- 12:30 PM—Fairchild Camera & Instr. Corp. Trip
- 12:30 PM—N. Y. International Airport Trip
- 1:15 PM—Ford Motor Co., Mahwah, N. J. Trip
- PM—Dinner Dance—Hotel Statler

Friday—February 5

No Trips Scheduled

The A.I.E.E. Winter General Meeting to be held at the Statler-Hilton (Meeting headquarters) and the Sheraton-Atlantic Hotels, New York, New York, January 31 to February 5, 1960 will feature one of the largest technical programs in the history of the Institute. The social activities, for which the Winter General Meeting is well known, will again be outstanding. A group of varied and interesting inspection trips has been arranged, closely allied with the technical sessions.

GENERAL SESSION: The featured speaker at the General Session on Monday afternoon, February 1st will be Charles E. Eble, President, Consolidated Edison Company of New York, Inc. During this session the Institute's Edison Medal will be awarded to James F. Fairman, Vice President of the Consolidated Edison Company of New York, Inc., for outstanding performance in improving the design of large electric power systems; for farsighted leadership in Atomic Power Development; and for unremitting efforts to improve the engineering profession. A feature of the meeting will be the presentation of the 1959 John Scott Award to D. A. Lyon, Associate Member, of Woodbridge, Connecticut for his invention of the method of producing the first optical coatings for the reduction of light reflection. The A.I.E.E. Prize Paper Awards will also be presented at this time. President J. H. Foote will open the session with his report to the members of the Institute. The 1960 Nominating Committee will report.

REGISTRATION FEES: The Board of Directors has found it necessary to establish a new schedule of registration fees for our General Meetings. 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. There will be no partial registration. No fee will be charged for students.

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 31, from 4 p.m. to 6 p.m. in the Ballroom of the Statler. 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. Register on your way to the tea.

HOTEL RESERVATIONS: Blocks of rooms have been set aside at the Statler and Atlantic (formerly McAlpin) and nearby hotels for members and guests attending the meeting.

Requests for reservations should be sent to the following hotels at the daily rates indicated:

HOTEL STATLER-HILTON (Meeting headquarters), 7th Ave., 32nd St. to 33rd St.

Single Room	\$ 8.00 to \$15.00
Double Room	11.00 to 20.00
Twin Bedroom	15.00 to 25.00

HOTEL SHERATON-ATLANTIC (formerly McAlpin), Broadway and 34th St. (also used for meetings)

Single Room	\$ 8.50 to \$14.00
Double Room	12.00 to 17.00
Twin Bedroom	14.00 to 18.00

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

A request for reservations should be made to only one hotel and specific reference to the AIEE meeting should be made. If the request cannot be filled, the hotel will automatically refer it to the Hotel Accommodations Committee whose duty it is to obtain a similar reservation at another nearby hotel. The hotel will confirm each request directly to the persons attending the meeting. Because of crowded conditions in New York hotels, it is suggested that your reservation be made for arrival on Sunday to avoid delays in registration and the unavailability of rooms in the early morning of subsequent days.

SMOKER: One of the social highlights of the Winter General Meeting will be the Smoker on Tuesday evening, February 2, in the grand ballroom of the Hotel Statler. Here will be found good food, good fellowship and top quality entertainment.

The seating capacity has been reduced from previous years to permit a greater amount of comfort and better average enjoyment by the guests. For this reason it is strongly recommended that requests for tickets be sent in at an early date. The price of the ticket will be \$11.50 and requests should be addressed to "AIEE Smoker Committee" at 33 W. 39th St., New York 18, N. Y. and accompanied by checks made payable to "Special Account, Secretary, AIEE."

DINNER-DANCE: The Dinner-Dance will be held Thursday evening, February 4, in the Hotel Statler. Dress will be formal. Write soon for reservations. Tables for 10. The price this year is \$13.50 per ticket and requests should be sent to "AIEE Dinner-Dance Committee" at 33 W 39th St., New York 18, N. Y., accompanied by checks made payable to "Special Account, Secretary, AIEE."

THEATER TICKETS: Write to Mrs. Dorothy Zeikel, Leblang's Theater Tickets, Inc. 224 West 47th Street, New York, New York, and mention AIEE.

INSPECTION TRIPS: A program of inspection trips of both technical and general interest has been arranged for those attending the Winter General Meeting. Since the number of persons who may be accommodated on each of these trips is limited, members who are interested are urged to make arrangements and obtain full details at the Inspection Trips desk immediately after registering. Tickets are required for all trips.

INTERNATIONAL TELECOMMUNICATIONS UNION REPORTS—WEDNESDAY 7:30 PM

AIEE WINTER GENERAL MEETING

Anaconda Wire and Cable Company, Hastings on the Hudson, New York (Tuesday afternoon). The new EHV Cable Research Laboratory contains the finest of 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 over-voltage aging tests on 150-foot lengths of full-sized commercial 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. (See ELECTRICAL ENGINEERING, June 1959, pp 624-30.)

Astoria Generating Station, Consolidated Edison Company of New York, Inc., New York, New York (Tuesday afternoon). Astoria station, newest and most efficient of Con Edison's twelve steam electric generating plants, is on the tidal East River in the Borough of Queens.

Ground was broken for the station in May 1951 at the height of the Korean War. Of the six generating units called for by its ultimate design, three are now in operation. Two of these are of 180 mw capacity (October 1953, March 1954) and the third (September 1958) has a nameplate rating of 335 mw. Construction of a fourth unit of 340 mw is scheduled for completion in December 1960.

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 three-section DeLong prefabricated coal dock, and the most modern of air pollution control equipment.

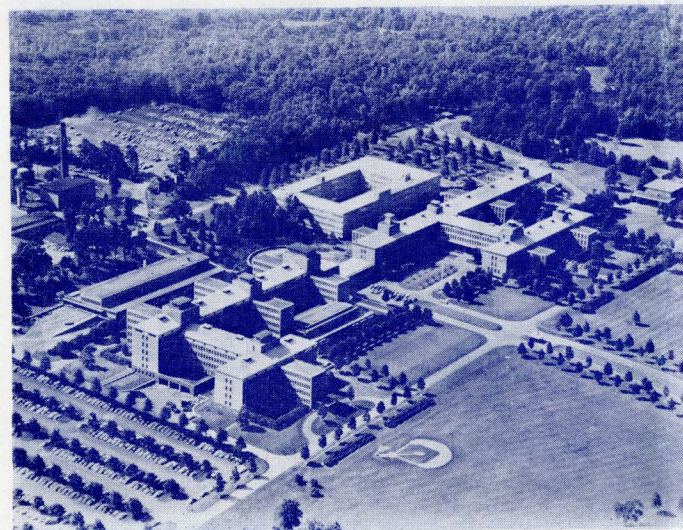
The electric station is part of a 312-acre complex of utility facilities which includes a major distribution point for natural gas from the Gulf Coast used by Con Edison and other gas utilities in the metropolitan area, extensive standby and peak-load gas manufacturing facilities, the North Queens bulk-power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

Bell Telephone Laboratories, Murray Hill, New Jersey (Tuesday afternoon). The group will assemble in the Arnold Auditorium. There will be a talk by A. R. Brooks, Publication Manager, New Jersey, describing the Laboratories, their place in the Bell System and their operations in Research and Development. Following this, there will be a lecture on one of the new developments in the transmission field.

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

Bus leaves Statler at 12:45, returns at 5:15. Reservations \$2.00.

Bergen Generating Station, Public Service Electric and Gas Company, Ridgefield, New Jersey (Wednesday morning). Public Service Electric and Gas Company's new Bergen Generating Station is one of the Company's chain of eight generating stations now in service or under construction. The initial two 290,000-kilowatt units are the largest single units in the Company's generating



Bell Telephone Laboratories, Murray Hill, N. J.

system and bring the total generating capacity of the system to more than 3,150,000 kilowatts.

The new generating units are the first of their type in the world. Each unit consists of two shafts, rotating at 3,600 revolutions per minute, with identical electric generators on each shaft. The most important feature of the design is the virtual duplication of the two parallel turbine-generator shafts, effecting economics in manufacturing, installation and maintenance costs.

The mammoth boilers, each producing 1,900,000 pounds of steam per hour at 1,100 degrees Fahrenheit and 2,350 pounds per square inch pressure, consume 4,000 tons of pulverized coal per day. This means that year in and year out the equivalent of an eighty-car train of coal will have to be received, dumped, crushed and pulverized every day.

The output of the generators is stepped up from 18,000 to 132,000 volts by two 340,000-kva transformers, and then sent across the New Jersey Turnpike to Bergen Switching Station. From there it is sent out over the transmission system.

Brookhaven National Laboratory, Upton, Long Island, New York (All day Thursday). The facilities at 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 exhibits which our members will see are the atomic pile, and the cosmotron. A complete tour has been arranged in great detail, 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.

Bus leaves Statler at 8:00, returns at 5:30. Reservation \$6.00.

Fairchild Camera and Instrument Corporation, Syosset, Long Island, New York (Thursday afternoon). The Defense Products Division of Fairchild Camera and Instrument Corporation is engaged in the design and production of systems, sub-systems, test instrumentation, reconnaissance cameras and processing equipment, specialized engineering, research and development in the fields of reconnaissance, missiles, satellites, drones, data gathering, processing and transmission, radar, infra-red and nucleonics.

Tour will include a briefing on engineering work in progress by engineering executive and visits to selected areas including the environmental test laboratories, manufacturing and assembly areas and the Division's new Physical Chemistry Laboratory where basic research is being conducted in chemical physics and new methods for recording images.

Ford Motors Company, Mahwah, New Jersey (Thursday afternoon). The Mahwah Plant, one of 16 assembly plants operated by the Ford Division of Ford Motor Company, started operations on July 16, 1955 as the largest automobile and truck assembly plant in the world.

A one-story building, 2,115 feet long and 792 feet wide, provides 1,714,050 square feet of manufacturing space and a 10,800 square foot quality control laboratory. (In all, 40 acres under one roof.) Fronting the plant structure is a two-story administration building, 301 feet long by 58 feet wide, containing office space for the plant's management organization.

Engines, bodies, frames, wheels, and other car and truck components are assembled and brought together on a network of conveyors that would be more than 11 miles long, if stretched out in a continuous line.

Three major operations are handled within the plant. 1—Passenger car production system; 2—Truck production system; and 3—Export boxing and shipping operations.

In this "stadium" of industrial skills—large enough for 35 football games to be played simultaneously—burn 31,500 eight-foot light tubes. Seven spray booths and 26 ovens are required to meet production needs. The plant is capable of turning out 1,080 cars and trucks when operating on a two-shift 16-hour day.

No cameras are permitted.

The Holophane Light and Vision Institute, New York, New York (Wednesday afternoon). 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 level is 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 con-

Continued to page 15

TECHNICAL PROGRAM

ADVANCED 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 form and remittance to the AIEE Order Department, 33 West 39th Street, New York 18, 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.

10:00 a.m.—Switching Surges and Transients

- 60-92 III Switching Surges on Energizing a Transformer Terminated Line. I. B. Johnson, A. J. Schultz; General Electric Co.
- 360 CP.* Switching Surges—Part I—A Report by an AIEE Working Group, I. B. Johnson, General Electric Co.
- 279 CP.* Selection of Switching Surge Reference Wave or Waves for Use in Future Standardization. P. L. Bellaschi, Portland, Ore.
- 60-184 III Determination of Transient Recovery Voltages on the Detroit Edison System. A. K. Falk, Detroit Edison Co.; H. L. Smith, B. L. Lloyd, Westinghouse Electric Corp.

10:00 a.m.—Electrical Grounding As Related to Underground Corrosion and Cathodic Protection

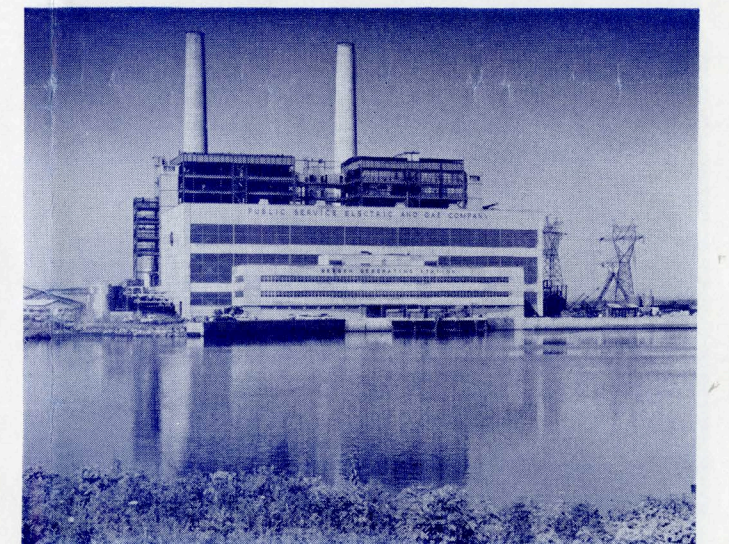
- 60-4 II The Effect of Electrical Grounding Systems on Underground Corrosion and Cathodic Protection. B. Husock, Harco Corp.
- 398 CP.* Power System and Equipment Grounding in Conformance with Cathodic Protection Practices. R. G. Medley, K. R. Gosnell; Union Carbide Chemicals Co.
- 60-210 II Grounding, Bonding and Cathodic Protection of Pipe Line Pumping Stations. F. Armstrong, G. M. Jeffares, W. T. Robinson, Jr.; Plantation Pipe Line Co.
- 408 CP.* Corrosion Considerations Connected with Grounding Metallic Sheath Communication Cables. A. F. Minor, American Tel. & Tel. Co. and V. V. Pike, Bell Telephone Labs.

10:00 a.m.—Solid Dielectrics

- 428 CP.* Irradiated "Teflon" FEP—Fluorocarbon Resin in a New High Temperature Insulation. J. C. Reed, E. I. duPont de Nemours & Co., Inc.
- 378 CP.* Insulation System for Naval Shipboard Motors Intermittently Submersed. C. B. Hackney, Allis-Chalmers Mfg. Co.; H. P. Walker, U.S. Navy Bureau of Ships.
- 476 CP.* A New Technique Improving Electrical and Physical Properties of Inorganic Insulation. C. H. Vondracek, E. J. Croop, J. D. Merry, Westinghouse Electric Corp.
- CP60-85 The Determination of the Toxicity of Gases. D. Lester, Yale University.

10:00 a.m.—Control Computers I: Application Analysis for Control Computer Selection

- CP60-214. Chemical Process Selection for Computer Control. C. R. Hall, E. I. duPont de Nemours & Co., Inc.
- 60-247. An Approach to Dynamic Optimizing Control of the Continuous Process. J. F. Sandelien, Case Institute of Technology.
- CP60-119 A Generalized Chemical Processing Model for the Investigation of Computer Control Processes. T. J. Williams, R. E. Otto; Monsanto Chemical Co.



Public Service Bergen Generating Station
Gottcho-Schleisner, Inc.

Monday, February 1

10:00 a.m.—Infrared Devices

- 389 CP.* Infrared Detection System. R. F. Maxwell, Jr.; Westinghouse Electric Corp.
- 328 CP.* An Image Converter for Thermal Radiation. M. Garbuny, T. P. Vogl, J. R. Hansen; Westinghouse Research Labs.
- 427 CP.* Copper-Doped Germanium as a Target Material for an Infrared Camera Tube. R. W. Redington, P. J. van Heerden; General Electric Co.
- 402 The 7427—A New Photoconductive Cell. D. D. Mickey, T. A. Soileau; General Electric Co.

10:00 a.m.—Electronics

- 417 CP.* Analysis and Synthesis with the "Complete" Equivalent Circuit for the Wide-Band Transformer. T. R. O'Meara, Hughes Aircraft Co.
- 59-120 I Electronic Transformer Design by Digital Computers. L. F. Deise, W. Etchison & R. Lee, Westinghouse Electric Corp. (Re-presented for Discussion only)
- 412 CP.* Tentative Proposed Standard for Low Power Wide-Band Transformer. P. R. Munk, Bell Telephone Labs.
- 388 CP.* Tentative Proposed Standard for Electronic Power Transformers. S. T. Maunder, General Electric Co.

10:00 a.m.—Land Transportation

- 60-25 II Train Performance Calculated by Digital Computer-Supplemental Programs. J. E. Hogan, The Pennsylvania Railroad Co.
- 60-47 II A Digital Computer Simulation of Single Track Railroad Operation. R. T. Coupal, L. L. Garver, W. R. Smith; General Railway Signal Co.
- 397 CP.* Semi-Conductor Locomotive Excitation Control Developments. T. T. Means, W. B. Zelina General Electric Co.

10:00 a.m.—Storage Batteries

- 330 CP.* Characteristics of Nickel-Cadmium Sealed Cells. M. Golben, Gould National Batteries, Inc.
- 322 CP.* Characteristics of Nickel-Cadmium Batteries. A. Fleischer, T. A. Edison Division McGraw-Edison Co.
- 341 CP.* Aircraft Storage Batteries. W. J. Hamer, National Bureau of Standards.
- CP.* Storage Batteries for Military Vehicles. Power Sourced Division U.S. Army Signal R & D Laboratory.
- 458 A Constant Voltage Battery Charger. C. Leet, Electric Storage Battery Co.; W. Zug, Electric Products Co.
- 60-51 II Lead-Acid Storage Batteries in Telephone Service. R. C. Shair, Gulton Industries, Inc. (formerly with Bell Telephone Labs., Inc.) (Re-presented for Discussion only)

361

CP.* The Utilization of Digital Computers in Control Loops. L. F. Jones, Westinghouse Electric Corp.

10:00 a.m.—Power System Engineering

294

CP.* Short Range Peak Load Prediction for System Planning. W. L. Carey, Portland General Electric Co.

335

CP.* The Use of Labor Force Statistics in Estimating Electric Energy Loads. J. G. Gruetter, Bonneville Power Administration.

454

CP.* Principles of Economic Dispatching for Electric Power System Operators. H. B. Smith, Niagara Mohawk Power Corp.

447

CP.* A Digital Solution of Economic Dispatch and Interchange Billing. F. J. Sherman, W. B. Tegen; Boston Edison Co.

2:00 p.m.—General Session

Presiding: Professor R. T. Weil, Jr., General Chairman.
Address: President J. H. Foote.
Report of the Nominating Committee.
Presentation of the Institute Prize Paper Awards:
Presentation of the John Scott Award to Dr. Dean A. Lyon.
Presentation of the Edison Medal to Past President James F. Fairman.
Address: C. E. Eble, President, Consolidated Edison.

Tuesday, February 2

9:00 a.m.—New Electron Tube Developments

358

CP.* A New Look at Tube Design. E. R. Jervis, Arinc Research Corp.

291

CP.* High Purity Nickel Cathode Alloys. R. E. Caffrey, Bell Telephone Labs., Inc.

CP.* White Noise and Swept Frequency Vibration Testing as Applied to Vacuum Tubes. H. C. Pleak, Sylvania Electronic Tubes.

415

CP.* X-ray Image Intensification With a Large Diameter Image Intensifier Tube. W. F. Niklas, The Rauland Corp.

401

CP.* Ionization Gauge for Measuring Pressures Up to the Millimeter Range. R. J. Melling, Westinghouse Electric Corp.

60-73 Tubes or Transistors A Realistic Assessment. R. E. Moe, I General Electric Co. (Re-presented for Discussion only)

60-74 Shall an Electron Tube or a Semiconductor Device Be Used? I E. E. Scheneman, S. K. Waldorf (deceased); Westinghouse Electric Corp. (Re-presented for Discussion only)

9:00 a.m.—Planning-For-Growth

CP60-137 How Economics Affects System Planning. C. M. Stairs, Canadian General Electric Co., Ltd.



Centrifuge Testing, Fairchild Camera, Syosset, N. Y.

60-138. Using the Digital Computer in Industrial Power System II Design. R. F. Cook, A. D. Patton; Westinghouse Electric Corp.
CP.* How Planning for Growth Paid off. E. C. Siddons, American Cyanamid Co.

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

60-61. An Analytical Method of Developing Pole Locations of Certain Types of Feedback Amplifiers. R. L. Gamblin, International Business Machines Corp. (formerly with Princeton University)

60-105. Rapid Determination of Approximate Closed Loop Poles of Feed-Back Control Systems. S. K. Basu, University College of Technology.

60-29 Design for Minimum Probabilistic Error of Continuous Linear Control Systems Subject to Constraints. J. Zaborsky, Washington University and McDonnell Aircraft Corp.; J. W. Diesel, McDonnell Aircraft Corp.

60-62 Comparison of Vibratory and Rotating-Wheel Gyroscopic Rate Indicators. G. C. Newton, Jr., Massachusetts Institute of Technology.

60-63 Analysis of Load Transfer Oscillations in Parallel Aircraft AC Electric Power Systems. H. A. Kahle, Jack & Heintz, Inc.

CP60-258. Investigation of the Relative Merits of the Transient Speed Performance of Tachometer—Regulated and of Voltage—Regulated D.C. Drives for both Compensated and Uncompensated Motors. H. L. Steinmetz, Allis-Chalmers Mfg. Co. and T. I. Higgins, University of Wisconsin.

60-106 The Selection of Electric Winder Drives for the Paper Industry. M. H. Fisher, Westinghouse Electric Corp. (Re-presented for Discussion only).

59-837 Modified Optimum Nonlinear Control. T. Mitsumaki, Hitachi Ltd. (Re-presented for Discussion only)

59-1296 Optimization of the Adaptive Function by Z—Transform Method. S. S. L. Chang, New York University (Re-presented for Discussion only)

9:00 a.m.—Industrial Power Rectifiers

CP.* Progress in High-Power Rectifier Technology. A. Hansen, P. J. Collieran, G. B. Farnsworth, C. E. Rettig; General Electric Co.

CP.* Voltage Control of Silicon Rectifier Units. C. S. Hague, K. F. Friedrich, Westinghouse Electric Corp.

60-34. Forward Voltage Drop and Power Loss in Silicon Rectifiers. II W. Luft, International Rectifier Corp.

60-35. Mechanical Rectifier Definitions. Mechanical Rectifier Subcommittee of the Industrial Power Rectifier Committee; I. K. Dortort, Chairman.

CP.* Excitation Requirements for Controlled Semiconductor Rectifiers. A. Schmidt, Jr., E. E. Moyer; Acm Electric Co.

9:00 a.m.—Land Transportation

60-48. The Pennsylvania Railroad Class GG-1 Electric Locomotives. II J. W. Horine, Pennsylvania Railroad Co.; H. S. Ogden, General Electric Co.

CP60-49 Experiences of the Sorocabana Railway With Electrification 1943-1958. E. D. de Toledo, Sorocabana Railway.

CP60-23 Economic Trends Make Railroad Electrification Inevitable. L. B. Curtis, The Pennsylvania Railroad Co.

60-50 Virginian Railway Motor-Generator Electric Locomotive Maintenance Costs. T. F. Perkinson, General Electric Co.

9:00 a.m.—Communication Switching Systems—I

59-1028. The Numerical-Graphical Method in the Design of Multiterminal Switching Circuits. A. H. Scheinman, Bell Telephone Labs., Inc.

CP60-232. Answering Signal Detector for Private Automatic Branch Exchanges. H. F. Herbig, R. W. Blanchard; ITT Labs.

60-233. A 240-Line Fully Electronic Telephone Switchboard. G. I Goudet, Laboratoire Central de Telecommunications.

9:00 a.m.—Extra High Voltages

60-185 A Proposal for International Standardization of EHV Transmission Voltages. P. Sporn, H. P. St. Clair; American Electric Power Service Corp.

Note: The following five papers are available in one pamphlet under the number 60-186 at \$2.00 per copy.
CP.* Project EHV—Technical Plan. P. A. Abetti, P. D. Davis, J. H. Hagenguth, General Electric Co.
CP.* Project EHV—Insulation Design. J. G. Anderson, J. H. Hagenguth, I. B. Johnson, A. J. Schultz; General Electric Co.

403

* Project EHV—North Station and Portal-Type Towers. S. Minneci, A. H. Powell; General Electric Co.; R. E. Larson, Aluminum Co. of America; G. E. Fortney, S. D. Alpert, Stone & Webster Engineering Corp.

376

CP.* Project EHV—Conductors, Insulators and Conductor Accessories. J. J. LaForest, J. Kaminski, Jr., General Electric Co.; R. E. Larson, Aluminum Co. of America.

60-186 III

Project EHV—Preliminary Corona Investigations; The Effect of Harmonics on Corona Losses. A. H. Foley, F. Olsen; General Electric Co.

9:00 a.m.—Rotating Machinery & Relays

60-32 Survey of Induction Motor Protection. AIEE Subcommittee on Motor Protection of the Relays Committee, H. C. Barnes Chairman.

CP60-225. Thermal Relationships in an Induction Motor Under Normal and Abnormal Operation. W. J. Martiny, R. M. McCoy, General Electric Co. and H. B. Margolis, American Electric Power Service Corp.

486

CP.* Signal Flow Graphs and Equivalent Circuits of Asynchronous Motors. Yoa-Nan Yu, Villanova University.

CP60-165 Equivalent Circuits and Performance Calculations of Canned Motors. P. D. Agarwal, University of Massachusetts.

60-166 The Pull-In Criterion for Reluctance Motors. J. F. H. Douglas, III Marquette University.

9:00 a.m.—Switchgear

Note: The following two papers are \$1.00 each.

60-151 Proposed American Standard Definitions Pertaining to Alternating-Current Power Circuit Breakers—C37.3 and Proposed Revision of American Standard C37.4—Rating Structure for Alternating-Current Power Circuit Breakers. AIEE New Working Group on Methods of Rating Power Circuit Breakers, J. H. Vivian, Chairman.

60-152 Proposed Revision of American Standard C37.5 American Standard Methods for Determining the Values of a Sinusoidal Current Wave and a Normal Frequency Recovery Voltage and Proposed Revision of American Standard C37.9 Test Procedure for Power Circuit Breakers. AIEE New Working Group on Methods of Rating Power Circuit Breakers, J. H. Vivian, Chairman.

60-152 Proposed Revision of American Standard C37.5 American Standard Methods for Determining the Values of a Sinusoidal Current Wave and a Normal Frequency Recovery Voltage and Proposed Revision of American Standard C37.9 Test Procedure for Power Circuit Breakers. AIEE New Working Group on Methods of Rating Power Circuit Breakers, J. H. Vivian, Chairman.

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60-152 Proposed Revision of American Standard C37.5 American Standard Methods for Determining the Values of a Sinusoidal Current Wave and a Normal Frequency Recovery Voltage and Proposed Revision of American Standard C37.9 Test Procedure for Power Circuit Breakers. AIEE New Working Group on Methods of Rating Power Circuit Breakers, J. H. Vivian, Chairman.

9:00 a.m.—Section Representatives

9:00 a.m.—Magnetic Amplifiers and Solid State Devices

410

CP.* A New Power Amplifier Using a Single Controlled Rectifier and a Saturable Transformer. R. E. Morgan, General Electric Co.

408

CP.* Solid State Firing Circuits for Trinisitors. B. Mokrytzki, Westinghouse Electric Corp.

321

CP.* Controlled Rectifier Frequency Multipliers Using Inverter Principles. C. W. Flairty, J. D. Harnden, Jr.; General Electric Co.

60-96 Recent Developments on Magnetic-Coupled Multivibrators. I W. A. Geyger, U.S. Naval Ordnance Lab.

9:00 a.m.—Liquid Dielectrics

446

CP.* A Survey of the 1959 International Symposium on Conduction and Breakdown in Liquid Dielectrics. A. H. Sharbaugh, P. K. Watson, General Electric Co.

276

CP.* Parameters for Predicting Gassing of Oils Under Electric Stress. S. C. Bartlett, Sun Oil Co.; R. D. Blodgett, The Okonite Co.

318

CP.* Electrical Stability of Insulating Oils. E. Eich, Anaconda Wire & Cable Co.; G. Feick, W. F. Olds, Arthur D. Little Co.

CP60-84 A Bubble Theory for Electric Breakdown of Liquid Dielectrics. K. C. Kao, English Electric Co. Ltd.

9:00 a.m.—Control Computers II: Comparison of Incremental (DDA) and Whole-Number (GPC) Arithmetic Computers

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Introduction to D. D. A. E. Braun, Genesys Corp.
CP60-120 The Relative Merits of Incremental and Conventional Digital Computers in Real-Time Control. S. M. Shackell, Stevens Inst. of Technology (Deceased); J. G. Tryon, University of Alaska (formerly with Bell Telephone Labs., Inc.)

CP60-121. A Comparison of Whole Value and Incremental Digital Techniques by the Use of Patch Panel Logic. R. W. Waller, F. E. Brinckerhoff; Computer Control Co., Inc.

CP60-122 A Comparison of Digital Differential Analyzer and General Purpose Equipment in Guidance Systems. M. M. Dickinson, International Business Machines Corp.

CP.* General Electric Variable Increment Computer. G. T. Sendzuk, General Electric Co.

9:00 a.m.—Safety

60-3 Temporary Paralysis following "Freezing" to a Wire. C. F. Dalziel, University of California.

60-171 Field Treatment in Electric Shock Cases—II. W. B. Kouwenhoven, G. G. Knickerbocker, W. R. Milnor, J. R. Jude; The Johns Hopkins University.

CP60-40 Threshold 60-Cycle Fibrillating Currents. C. F. Dalziel, University of California.

9:00 a.m.—Electronics

CP.* The Effects of Transformer Parameters on Surge Voltage Transients in Rectifier Circuits. P. E. Kolk, RCA.

CP60-231. Ultra High Temperature (500C) Electronic Transformers Part I—Design Considerations. J. F. Rippin, Jr., H. B. Harms, G. Walters; General Electric Co.

CP60-230. Ultra High Temperature (500C) Electronic Transformers Part II—Design Optimization. G. Walters, General Electric Co.

CP.* Alumina Power as a Potting Material for Electronic Power Transformers. L. W. Kirkwood, R. S. Key; Bell Telephone Labs., Inc.

2:00 p.m.—Ceramic Electron Tubes and Other Developments

CP.* A New, Rugged, Ceramic Pencil Tube for Class C Service. C. Gurwacz, Radio Corp. of America.

CP.* A Small, Rugged Ceramic Tube For Low-Level Amplifier Use. J. M. Connelly, General Electric Co.

CP.* A Ceramic Hot Cathode Gas Rectifier For Use In High Temperature Applications. W. J. Kearns, General Electric Co.

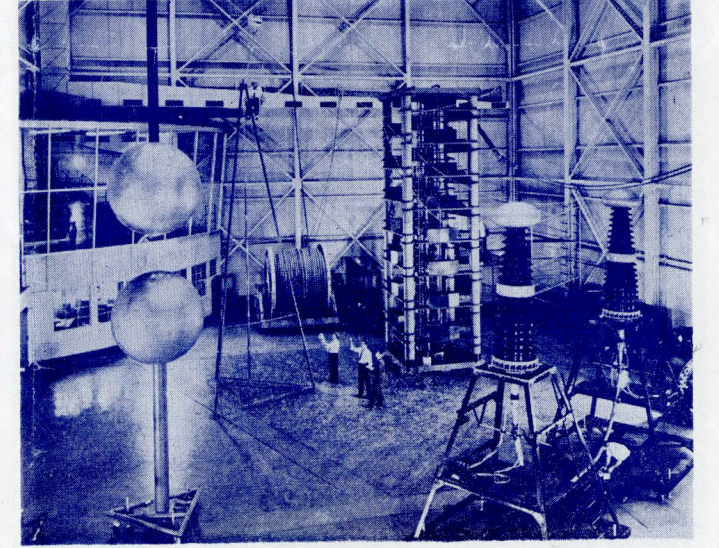
CP.* Rare Earth Hydride Reservoirs. N. L. Yeaman, J. E. Crendon, S. Schneider; U.S. Army Signal Research and Develop. Lab.

CP.* Design Considerations for Modulators and Converters Using a New Miniature Beam-Deflection Tube. M. B. Knight, J. T. Maguire; Radio Corp. of America.

CP60-75 A New Ceramic Triode for VHF Applications. J. D. Campbell, General Electric Co. (Re-presented for Discussion only)

2:00 p.m.—Planning-For-Growth

60-12 Determination of Ground Fault Current on Common Alternating Current Grounded Neutral Systems in Standard Steel or Aluminum Conduit. J. A. Gienger, O. C. Davidson, R. W. Brendel; Eastman Kodak Co.



Anaconda's EHV Cable Research Laboratory

- 60-83. Arcing Fault Protection for Low Voltage Power Distribution II Systems. R. H. Kaufman, J. C. Page; General Electric Co.
 CP60-139 Fused Interrupter Switchgear. A. W. Maas, I-T-E Circuit Breaker Co.
 60-140 A New Welder Busway Distribution System. L. E. Fisher, II General Electric Co.; R. W. Dailey, Chrysler Corp. (Re-presented for Discussion only)

2:00 p.m.—Reliability and the Systems Concept: Panel Discussion

- CP.* E. J. Nucci—Dept. of Defense.
 CP.* F. Thompson—BuAer, Dept. of the Navy.
 CP.* A. J. Finocchi—I. T. and T. Labs.
 CP.* D. Graham—Princeton University and Systems Technology, Inc.

2:00 p.m.—Industrial Power Rectifiers

- CP60-211. Effective Value of Direct Voltage Ripple. E. J. Diebold, Perkin Engineering Corp.
 60-36. Transient Decay of Current Through Paralleled Mercury ARC and Silicon Rectifiers. W. R. Hodgson, Westinghouse Electric Corp.
 CP60-212. Start-up and Initial Operation of a Large High-Voltage Germanium Rectifier Equipment. T. C. Ward, G. Choma; Diamond Alkali Co.
 60-39. Series Capacitors Applied to Power Rectifiers. L. J. Hibbard, II T. J. Bliss; Westinghouse Electric Corp.
 60-14. Report of Field Tests on Aluminum Pot Line Rectifier Systems. C. A. Langlois, Reynolds Metals Co.; V. N. Stewart, R. P. Stratford, General Electric Co. (Re-presented for Discussion only)

2:00 p.m.—Land Transportation

- CP60-221. High-Performance Rapid-Transit Cars for the Hudson and Manhattan Railroad. S. V. Smith, Pennsylvania Railroad Co.; W. C. Wheeler, St. Louis Car Co.; W. H. Wood, General Electric Co.
 CP60-222. Bi-Level Central Powered Passenger Equipment, Chicago and North Western Railroad, J. L. Swarner, Pullman-Standard.
 CP60-223. Loading of Transportation Rectifier Substations. L. De Koranyi, General Electric Co.

2:00 p.m.—Communication Switching Systems II

- 60-126. A Wired-Memory Translator with Shared Access. F. P. Pace, I Airborne Instruments Lab.; B. Ostendorf, Stamford, Conn. (Both authors formerly with Bell Telephone Labs., Inc.) Paper presented by W. M. Bacon, Bell Telephone Labs., Inc.
 CP60-234. Transmission Problems in Time Division Switching Networks for Automatic Telephony. G. Svala, North Electric Co. (formerly with Telefonaktiebolaget L. M. Ericsson).
 CP.* Communication Networks for Digital Information. J. Unk, Hilversum, Netherlands.



Holophane Light and Vision Institute

2:00 p.m.—Distribution Systems

- 60-248. Economic Analysis of Distribution Systems. H. E. Campbell, III R. C. Ender, M. W. Gangel, V. C. Talley, General Electric Co.
 60-177. Distribution System Planning Through Optimized Design I—III Distribution Transformers and Secondaries. R. F. Lawrence, D. N. Reps, A. D. Patton; Westinghouse Electric Corp.
 60-178. Distribution System Planning Through Optimized Design II—III Comparative Economics of System Voltages. R. F. Lawrence, D. N. Reps, A. D. Patton; Westinghouse Electric Corp.
 CP60-188. Comparative Studies on the Use of Sub-Transmission Versus Distribution Voltages to Serve Customers' Transformer Stations. D. T. Michael; The Cincinnati Gas & Electric Co.
 60-187. The Economic Application of Capacitors to Distribution III Feeders. M. Maxwell, Westinghouse Electric Corp.

2:00 p.m.—Rotating Machinery

- 60-21. An Analysis of Solid Rotor Machines—III Finite Length Effects. A. J. Wood, Hughes Aircraft Co. (formerly with General Electric Co.); C. Concordia, General Electric Co.
 60-22. An Analysis of Solid Rotor Machines—IV An Approximate Non-Linear Analysis. A. J. Wood, Hughes Aircraft Co. (formerly with General Electric Co.); C. Concordia, General Electric Co.
 60-127. A New Brushless D-C Excited Rotating Field Synchronous III Motor. G. M. Rosenberry, Jr., General Electric Co.
 60-257. Voltage Harmonics of Salient-Pole Generators Under Balanced Three-Phase Loads, Part II. D. Ginsberg, U.S. Army Engineering and Development Labs.; A. L. Jokl, Continental Motors Corp.
 CP60-167. Unbalanced Loading of Turbine Generators. R. L. Winchester, General Electric Co.
 CP60-226. Test Report on Harmonic Excitation of AC Generators. F. I. Biggs, P. I. Nippes, Elliott Co.

2:00 p.m.—Switchgear

- Note: The following paper is \$1.00 per copy.
 60-153. Proposed American Standard C37.10 Application Guide for Alternating Current Power Breakers. AIEE Working Group on Methods of Rating Power Circuit Breaker, J. H. Vivian, Chairman.
 CP60-246. Field Tests on 115KV Vacuum Interrupter Switch. V. O. Rowan, W. Watson. The Hydro-Electric Power Commission of Ontario.

2:00 p.m.—Section Representatives

2:00 p.m.—Magnetic Amplifiers

- 60-91. Rectifier Unlocking from a Generalized Analysis of Self-Saturating Magnetic Amplifiers. H. C. Bourne, University of California; D. Nitzan, Stanford Research Inst.
 60-66. Symmetrical Frequency Multiplier Circuits. G. W. Dick, Bell I Telephone Labs. (formerly with University of Toronto)
 56-730. Instabilities of Push-Pull Magnetic Amplifiers Feeding the I Field of an Electrical Machine. H. F. Storm, General Electric Co. (Re-presented for Discussion only)
 60-143. An Analysis of the Operation of the Magnetic Second-Harmonic Modulator. B. W. Jalbert, General Electric Co. (Re-presented for Discussion only)
 CP60-144. 1958 Magnetic Amplifier Bibliography. AIEE Magnetic Amplifier Applications Subcommittee of the Magnetic Amplifiers Committee, D. Katz, Chairman.

2:00 p.m.—Control Computers III

- CP60-123. Machine Tool Director; A Special-Purpose Computer for Use in Numerical Control Systems. W. W. Knight, W. W. Straub; General Electric Co.
 CP.* Statistical Data Reduction and Control Systems. E. J. Schubert Monitor Systems, Inc.
 CP.* UDOFT Computer Description. W. Humphreys, Jr., J. Warge; Sylvania Electronic Systems.
 CP60-215. The LN3000 Computer Control System. K. G. Harple and R. G. Lex, Leeds & Northrup Co.
 CP.* External Communication Consideration for an In-line Computer. G. Daniels, Panellit, Inc.
 60-10. A Two-Channel Data Link for Combined Analog-Digital Simulation. J. L. Greenstein, Convair. (Re-presented for Discussion only).

9:00 p.m.—Thermal Endurance

36. Factors Affecting the Aging Characteristics of Various Wire III Coating Materials in Transformer Oil. G. F. Lipsey, P. W. Juneau, Jr.; General Electric Co.
 60-87. Thermal Life of Varnished Glass Cloth. C. J. Straka, E. W. III Lindsay; Westinghouse Electric Corp.
 CP60-88. Study of Thermal Deterioration of Magnet Wires by Mass-Spectrometer Method. Y. Saito, T. Hino; The Tokyo Institute of Technology.
 CP.* A Study of Normality of Distribution of Thermal Life Test Data. J. L. Cantwell, General Electric Co.

2:00 p.m.—Electrostatic Processes

- CP.* Charging of Non-Spherical Particles in a Corona Discharge. G. W. Penney, P. L. Smith, Carnegie Institute of Technology.
 CP60-218. Electrostatic Propulsion Concepts for Space Vehicles. A. J. Gale, High Voltage Engineering Corp.
 60-102. Current-Voltage Relationships. J. B. Thomas, T. R. Williams; I Princeton University.
 CP.* Turbulent Gas Flow and Electrical Precipitation. P. Cooperman, University of Pittsburgh.
 60-103. Sparkover as Influenced by Surface Conditions in DC Corona. I G. W. Penney, S. E. Craig; Carnegie Institute of Technology. (Re-presented for Discussion only.)
 60-33. Potentials in DC Corona Fields. G. W. Penney, Carnegie I Institute of Technology; R. E. Matick, International Business Machines Corp. (formerly with Carnegie Institute of Technology (Re-presented for Discussion only)
 59-234. Power Relationships and Temperature Dependence in the I D-C Corona Field. J. B. Thomas, T. R. Williams, T. Suzuki; Princeton University (Re-presented for Discussion only)
 60-2. A Theory for Space-Charge Limited Currents with Application I to Electrical Precipitation. P. Cooperman, University of Pittsburgh (Re-presented for Discussion only)
 59-223. Saturable Reactor Control of Full-Wave and Bi-Phase Rectifiers. I J. B. Thomas, Princeton University; J. W. Drenning, Koppers Co., Inc. (Re-presented for Discussion only)

2:00 p.m.—Nucleonics

- CP60-148. Safety Aspects of a Pressurized Water Nuclear Reactor Power Plant and Associated Instrumentation and Control Requirements. C. F. Obermesser, Westinghouse Electric Corp.
 CP60-149. Preliminary Investigation of Constant Cold Leg Temperature Control. J. M. Gallagher, Jr., Westinghouse Electric Corp.
 CP.* Critical Assembly Work for Enrico Fermi Reactor. R. L. McVean, Detroit Edison Co.
 CP.* Principles of the Power Supply of 12.5 Bev. Proton Synchrotron at the Argonne National Laboratory. G. O. Calabrese, Argonne National Laboratory.
 60-150. Design of an Eddy-Current Brake for a Sodium-Cooled Nuclear Power Reactor. R. S. Baker, Atomics International.

Wednesday, February 3

9:00 a.m.—Microwave Tubes

- CP.* Suppression and Limiting of Undesired Signals in Traveling-Wave Tubes. H. J. Wolkstein, Radio Corp. of America.
 CP.* An X-Band Periodic-Focused Traveling-Wave Tube Limiter Chain. R. McMurrugh, G. Novak, W. Caton; Radio Corp. of America.
 CP.* Experiments on a Series of S-Band Crestatrons. J. E. Rowe, G. T. Konrad, H. W. Krage; University of Michigan.
 CP.* 1000 to 2000 Megacycle Electrically Tunable Magnatron. M. Weinstein, General Electric Co.
 CP.* A Dual-Mode Pre-TR Tube. G. Klein, M. G. Bates; Westinghouse Electric Corp.
 60-76. Voltage Transients Due to ARC Extinction. H. C. Steiner, I R. W. Strecker; General Electric Co. (Re-presented for Discussion only)
 60-77. The "Empretron," A Mercury Pool Arc Tube Allowing Operation I at Repetition Rates in the Kilocycle Range. K. G. Hernqvist, F. H. Norman; RCA Labs. (Re-presented for Discussion only)

9:00 a.m.—Ideas for Solving Control Systems: Panel Discussion

Moderator—L. F. Kazda, University of Michigan

9:00 a.m.—Chemical and Petroleum Industries

- 60-38. Application of Accepted Cable Heating Principles to Unequally Loaded Underground Duct. R. D. Chamlee, D. E. McCall; C. F. Braun and Co. (Re-presented for Discussion only)
 CP.* New Trends and Wiring Methods in the Chemical Industry. O. E. Lundelius, H. E. Wilson; Brown and Root, Inc.
 60-52. The Application of Static Switching to the Control of Two II 7500-HP Oil-Fired Combustion Turbines. P. T. Carmack, Union Carbide International Co.; E. M. Smith, General Electric Co.
 CP.* New Developments for Hazardous Locations, Class I and Class II. R. W. Scott, Crouse-Hinds Co.
 60-16. Characteristics of Centrifugal Pumps & Compressors Which II Affect The Motor Driver Under Transient Conditions. H. A. Wiegand, Ingersoll Rand Co.; L. B. Eddy, Universal Oil Products Co. (Re-presented for Discussion only)

9:00 a.m.—Indicating & Integrating Instruments

- 60-135. Thermal Voltage Converters for Accurate Voltage Measurements to 30 Megacycles Per Second. F. L. Hermach, E. S. I Williams; National Bureau of Standards.
 CP60-219. Transistorized Footage Counter with Printout for the Paper Industry. S. Salowe, W. J. Schmidt; Westinghouse Electric Corp.
 60-64. A New Impulse Metering System. C. J. Snyder, C. A. Booker; I Westinghouse Electric Corp.
 CP60-136. An Astatic AC-DC Comparator with Wide Frequency Range. J. Pawlat, J. Wolloch; C. P. Goerz Co.



Gooding—Slade Test Train at Okonite

9:00 a.m.—Marine Transportation

- 60-145. Neutral Grounding as Applied to Marine Alternating Current Systems. R. J. McSweeney, W. A. Hall; Gibbs & Cox, Inc.
- 60-146. Advantages of Underground Marine Electrical Systems. A. M. Bruning, E. W. Lusby; Westinghouse Electric Corp.
- CP60-147. S. S. Brasil & Argentina Electrical Installation. H. E. Senger, Moore-McCormack Lines, Inc. (To Be Presented on Board the S.S. Argentina at 2.00 p.m.)

9:00 a.m.—Communication Theory

- CP.* Burst Correcting Codes. D. W. Hagelbarger, Bell Telephone Labs., Inc.
- CP.* A New Group of Codes for Correction of Dependent Errors in Data Transmission. C. M. Melas, International Business Machines Corp.
- 60-142. Radio Communication with Orthogonal Time Functions. H. F. Harmuth, Stromberg-Carlson Co.
- CP60-213. Null-Zone Envelope Detection in Binary Systems. J. J. Metzner, K. C. Morgan; New York University.
- 59-1076. On the Transmission of Information by Orthogonal Time Functions. H. F. Harmuth, Radio Communications Lab. (Re-presented for Discussion only)

9:00 a.m.—Industrial Telemetry Techniques

- CP.* A Current Balance Telemetry Transmitter for Pilot Wire Applications. T. Barabutes, Westinghouse Electric Corp.
- CP.* Principles of Multiplexing. W. J. Mayo-Wells, National Bureau of Standards.
- 60-245. Development and Application of Time-Division Multiplexing Telemetry Equipment for Data Transmission on an Electric Power System. C. P. Almon, Jr., and J. Donelson, Jr.; Tennessee Valley Authority.
- CP60-261. A New Pulse Duration Telemetry System for Industry. J. R. Casserly, L. Johnsen, D. E. Woodbridge; Applied Science Corp. Princeton.

9:00 a.m.—Towers, Poles and Conductors

- 60-53. Economics of Single and Bundle Conductors for Extra-High Voltage Transmission. P. A. Abetti, C. B. Lindh, H. O. Simmons; General Electric Co.
- 60-189. The Effect of Tighter Conductor Tensions on Transmission Line Costs. E. Fritz, Potomac Electric Power Co.
- 60-239. Broken Wire Assumptions—AIEE Report of Transmission and Distribution Committee prepared by Towers, Poles and Conductors Subcommittee. E. Fritz, Chairman.
- 60-190. An Analysis of Galloping Electric Transmission Lines. W. N. McDaniel, Baltimore Gas & Electric Co.
- CP60-72. Design of Chute-des Passes 345 KV Transmission Line. H. B. White, Aluminum Co. of Canada, Ltd.

9:00 a.m.—Rotating Machinery

- 60-125. Impulse Testing of Rotating A-C Machines. AIEE ASA C-50 III Subcommittee, J. B. McClure, Chairman.



N. Y. Times Teletype Room

- CP60-168. A Generalized Procedure for Fault Location in 2 Pole Lap Wound DC Armatures Using A Standard Surge Capacitor. F. A. Scheda, J. J. Riley; Westinghouse Electric Corp.
- CP.* Plyseal. H. E. Mazanek, T. J. Gair; General Electric Co.
- CP.* Experience with DC Testing of Machine Windings. E. Westgaard, Technical University of Norway; J. Sletbak, Norwegian Research Inst. of Electricity Supply.
- CP.* Puncture Hazard Involved in DC Testing of Large Synchronous Machines. L. G. Virsberg, ASEA Research Labs.
- 58-1391. Accelerated Voltage Endurance Tests. R. G. Rhudy, H. E. Mazanek; General Electric Co. (Re-presented for Discussion only)

9:00 a.m.—Switchgear—Substations

- CP.* Use of Rod Gaps for Substation Protection. T. F. Watson, R. Hiatt; Commonwealth Associates.
- 60-205. Insulation Coordination of Circuit Breakers During Operation. A. L. Streator, W. R. Wilson; General Electric Co.
- CP60-228. Power Circuit Breaker Insulation Coordination. O. Naef, American Electric Power Service Corp., C. E. Asbury, Commonwealth Associates.
- CP60-262. Automatic Line Transfer Equipment for Supervisory Systems with Direct Wire Interconnecting Channels. L. E. Monacci, Consolidated Edison Co. of New York; W. Hodges, A. R. Christman, General Electric Co.

9:00 a.m.—Relays

- 60-163. Transistorized Phase Comparison Relaying Principles and Circuits. C. G. Dewey, M. E. Hodges; General Electric Co.
- 60-252. Transistorized Phase Comparison Relaying Application & Tests. S. H. Horowitz, American Electric Power Service Corp.; A. J. McConnell, General Electric Co.; H. T. Seeley, General Electric Co.
- CP.* The Use of Semiconductors in Control Circuits. R. E. Dietrich, Bonneville Power Administration.

9:00 a.m.—Radiation Effects Symposium

- CP.* Calculation of Absorbed Dose from Electron Irradiation. C. H. Cheek, V. J. Linnenbom; U. S. Naval Research Lab.
- CP.* Radiation Effects and Electronic Components. E. R. Pfaff, Admiral Corp.
- CP.* Dosimetry. W. Metscher, Wright Air Development Center.

9:00 a.m.—Approaches to the Solution of Computer Problems

- 60-128. Automation of Computer Panel Wiring. G. W. Altman, L. A. DeCampo, C. R. Warburton; International Business Machines Corp.
- 60-129. The Magnetic Analog, With Spiral Search Coils. A. D. Moore, University of Michigan.
- CP.* Universal Modulus (Matrix Logic VI). E. J. Schubert, Monitor Systems, Inc. (formerly with Burroughs Corp.).
- CP.* Automatic Multiprogram Operating System. C. H. Gaudette, Y. C. Lo; Minneapolis-Honeywell.
- CP60-216. Automatic Program Checkout. A New Approach. R. P. Sell, Minneapolis-Honeywell Regulator Co.

2:00 p.m.—Thermionic Energy Converters

- CP.* Construction of a Thermionic Energy Converter. F. H. Corregan, H. G. Hernqvist, RCA Labs.; F. G. Block, G. Y. Eastman, J. R. Fendley, E. J. Hills, Radio Corp. of America.
- CP.* The Los Alamos Plasma Thermocouple. D. J. Roehling, University of California.
- CP.* State of the Art of the High-Vacuum Thermionic Converter. E. A. Baum, General Electric Co.
- CP.* Recent Progress in the Development of Nuclear Powered Thermionic Converter Power Systems. J. Barnard, General Electric Co.
- CP.* Effects of Anode Emission in Vacuum Thermionic Power Converters. A. E. Dugan, Lockheed Missiles and Space Division.
- CP.* The Effect of Staging on the Performance of Thermionic Converters. G. N. Hatsopoulos, Massachusetts Institute of Technology.
- CP.* Potentialities of Cascaded Thermionic-Solid State Converters. W. J. van der Grinten, General Electric Co.

2:00 p.m.—Chemical and Petroleum Industries

- 60-55. Evaluation of Alternative Power Distribution Systems for Refinery Process Units. W. H. Dickinson, Esso Research & Engineering Co. (Re-presented for Discussion only).
- CP.* Wire and Cable for Chemical Plants. F. S. Deck, E. I. DuPont de Nemours & Co., Inc.
- CP60-56. The General-Purpose Analog Computer. E. A. Clarke, Humble Oil & Refining Co.

2:00 p.m.—Special Instruments and Measurements

- 60-1. Bibliography on Ground Resistance and Potential Gradient Measurements. AIEE Subcommittee of Special Instruments & Auxiliary Apparatus Committee, J. C. Parker, Chairman.
- CP60-176. The Use of the Electrolytic Tank for Determining External Inductances of Enclosed Conductors. L. L. Mankoff, R. H. Brealey, Jr.; General Electric Co.
- CP60-220. The Role of A Standards Laboratory in a Missile Plant. S. W. Paulson, E. E. Zimmerman, Chrysler Corp.
- CP.* Some Fundamental Properties of Matter as Related to Measurement and Control of Wire Tension. E. J. Saxl, Tensitron, Inc.

2:00 p.m.—Electrical Space Heating and Heat Pumps

- 60-28. A Statistical Method for Determining Heat Losses in Electrically Heated Residences. E. E. Linden, The Narragansett Electric Co.
- CP.* Heat Storage as Applied to Residential Heat Pumps. J. A. Eibling, Battelle Memorial Institute.
- CP.* Economics of Heat Pumps. M. Wilson, Carrier Corp.
- CP.* Calculating the Electric Heating Load. W. R. New, Tennessee Valley Authority.

2:00 p.m.—Insulators and Radio Influence

- 60-191. Measuring the Lightning Strength of High Voltage Insulators. A. D. Lantz, Jr., Ohio Brass Co.
- 60-93. A Comparison of European and American Wet Flashover Test Methods. B. E. Kingsbury, General Electric Co.
- 60-90. The Electric Stress Grading of Insulator Strings and Their Radio Influence Voltages. A. S. Denholm, National Research Council.
- 60-192. Radio Frequency Propagation and Attenuation on the American Electric Power Dequene-Olive 345 KV Line. L. O. Barthold, J. J. LaForest, General Electric Co.; R. H. Schlomann, American Gas & Electric Service Corp.; F. J. Trebby, Kaiser Aluminum & Chemical Corp.
- 60-95. Radio Interference Studies for Extra-High Voltage Lines in Ontario. J. Reichman, J. R. Leslie; The Hydro-Electric Power Commission of Ontario.

2:00 p.m.—Switchgear

- 60-209. The Effect of Current Chopping in Current Breakers on Networks and Transformers—I. Theoretical Considerations. T. H. Lee, General Electric Co.
- 60-207. The Effect of Current Chopping in Circuit Breakers on Networks and Transformers—II. Experimental Techniques and Investigations. A. N. Greenwood, General Electric Co.
- CP60-208. Physical Factors in Expulsion Type Fuse Cutout Design. R. J. Bronikowski, Line Material Industries.
- CP60-107. Mechanical Loadings on Circuit Breaker Bushings. E. F. Huston, The Ohio Brass Co.; E. B. Rietz, I-T-E Circuit Breaker Co.

2:00 p.m.—Relays

- 60-155. A New Approach to the Pilot Wire Protection of Transmission Lines Using Leased Pilot Wires Having Relatively Long Electrical Characteristics. J. H. Neher, Philadelphia Electric Co.
- 60-164. Subharmonic Ferro-Resonance in Coupling-Capacitor Potential-Device and Method of Prevention. T. T. Norimatsu, Electrotechnical Laboratory; H. Uyeda, Nissin Electric Co., Ltd.
- 60-26. Bibliography of Relay Literature 1957-1958. AIEE Subcommittee on Bibliography of Relay Literature of the Relays Committee, R. W. Hirtler, Chairman.

2:00 p.m.—Design Theory of Combinational Switching Circuits

- CP.* Introduction to Switching (Boolean) Algebra. N. R. Scott, University of Michigan.
- CP.* Binary Numbers, Codes and Translators. W. J. Cadden, IBM Corp.
- CP.* Formulation of Switching Problems. J. P. Runyon, Bell Telephone Labs.
- CP.* Representation of Switching Functions. E. J. Tanana, Western Electric Co.
- CP.* Minimization Theory. E. J. McCluskey, Jr., Princeton University.
- CP.* Design Using Computers. T. C. Bartee, Massachusetts Inst. of Technology.

2:00 p.m.—Radiation Effects Symposium

- 60-89. Post Irradiation Thermal and Electrical Properties of Magnet Wire Insulation. J. W. Kallander, U. S. Naval Research Lab.
- CP.* Thermoelectric Power. P. H. Klein, General Electric Co.
- CP.* Transmission of Electromagnet Waves Through an Ionized Atmosphere. W. A. Greenhow, Chance Vought Aircraft Corp.

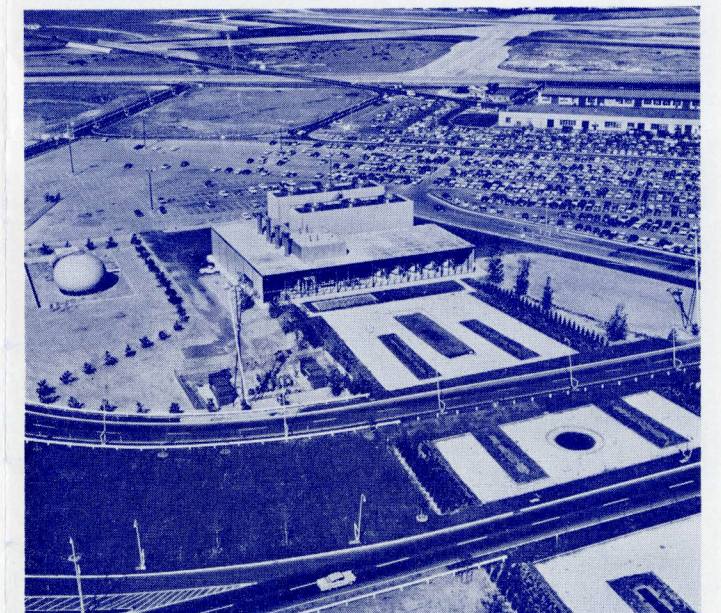
2:00 p.m.—Rotating Machinery

- 60-169. A Practical Commutator Primitive for Generalized Machine Theory. T. H. Barton, McGill University; C. V. Jones, Liverpool University.
- CP.* Basis for Inductance Calculations in Commutation Design—II. H. E. Koenig, H. K. Kesavan, J. D. Edick; Michigan State University.
- CP.* Digital Techniques in Commutation Design—III. H. K. Kesavan, Michigan State University.
- CP.* A New Criterion for Satisfactory Commutation—I. H. K. Kesavan, H. E. Koenig, Michigan State University.
- 60-41. End Component of Zero Sequence Reactance of A-C Machines. R. T. Smith, The University of Texas.

2:00 p.m.—Symposium on Grounding for Safety

2:00 p.m.—Man-Machine Integration and Complex Control Systems

- CP.* Automatic Maintenance Operation in an Electronic Telephone Central Office. W. Ulrich, Bell Telephone Labs.
- CP.* Use of an Electronic Data Processing System in Making Military Operational Decisions. R. G. Pfefferkorn, International Electric Corp.



N. Y. International Airport Heating and Refrigeration Plant
The Port of New York Authority

CP.* Experience in Using the Sage Computer for Sage System Operator Training and Analysis of Operator Performance. J. L. Morey, Systems Development Corp.

7:30 p.m.—The International Telecommunications Union and Its Decennial Conferences of 1959

CP.* The Geneva Plenipotentiary Meeting. F. C. deWolf, Dept. of State.
 CP.* International Telephone Regulations. H. R. Huntley, American Telephone & Telegraph Co.
 CP.* American Telegraph Regulations. M. H. Woodward, Federal Communications Commission.
 CP.* The Radio Regulations and the IFRB. P. D. Miles, International Radio Advisory Committee.

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

Thursday, February 4

9:00 a.m.—Modern Circuit Techniques I

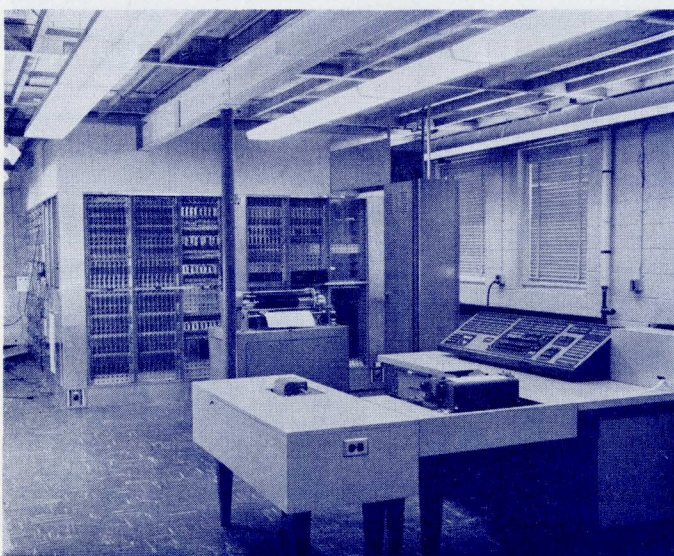
CP.* Esaki Diode Characterization. D. E. Thomas, Bell Telephone Labs.
 CP.* Tunnel Diode Circuit Aspects and Applications. W. F. Chow, U.S. Davidson, Y. C. Hwang, C. S. Kim, G. B. Ober; General Electric Co.
 CP.* Ferroelectric Energy Converter Circuits. S. R. Hoh, I.T.T. Labs.
 CP.* High Speed Silicon PNP Diodes. A. N. Baker, J. M. Goldey, I. M. Mackintosh; Bell Telephone Labs.
 CP.* Cascaded Automatic Gain Control. J. S. Brown, General Electric Co.
 60-57. Locking Range of an Oscillator for Different Non-Linearities. I B. R. Nag, University of Calcutta.
 60-6. Stable Transistor Wide-Band Direct-Current Amplifiers. R. H. Okada, University of Pennsylvania. (Re-presented for Discussion only).
 60-20. Fundamental Considerations of Power Dissipation Limits in Some Bistable Transistor Pulse Circuits. H. Raillard, General Electric Co. (Re-presented for Discussion only).

9:00 a.m.—Control System Components

CP.* Analog to Digital Devices. W. Gains, P. P. Fischer.
 CP.* Variable Reactance and Linear Differential Transformer Type Transducers. C. W. Baird.
 CP.* A. C. Servo Motors, Resolvers, etc. T. N. Feng, E. Gamble.
 CP.* Gyros. C. Janoff.
 CP.* A Paper Covering the Objectives of Component System Performance Evaluation Subcom. J. R. Shull.

9:00 a.m.—Automation Systems in Metal Industry

CP.* Advanced Electrical Systems for Application to Metal Industry Processes. W. H. Dauberman, Westinghouse Electric Corp.
 CP.* Automation for Sinter Plants. R. L. Houlton, D. E. Hamilton; General Electric Co.



"Merlin" digital computer, Brookhaven National Lab.

CP.* Data Accumulation and Logging Systems for Steel Strip Processing Lines. G. J. Hay, Westinghouse Electric Corp.
 CP.* Servo Control for Synchronized Conveyors. A. E. Lewis, Clark Controller Co.

9:00 a.m.—Production and Application of Light

60-24. Voltage-Temperature Life Testing of Fluorescent Ballast Insulation Systems. C. A. Howlett, General Electric Co. (Deceased). Presented by P. H. Landolt.
 CP.* Acceptance and Use of Higher Lighting Levels. G. J. Taylor, Day-Brite Lighting Inc.
 CP.* Integrated Lighting Air-Conditioning Systems. W. S. Fisher, General Electric Co.

9:00 a.m.—Capabilities of the Telephone Network for Data Transmission

CP.* Evaluating the Telephone Message Plant for Data Transmission—Description of Testing Program. A. A. Alexander, American Telephone and Telegraph Co.
 CP.* Basic Transmission Characteristics of the Telephone Network. Net Loss, Bandwidth, Delay and Noise. D. W. Nast, Bell Telephone Labs.
 CP.* Data Transmission Performance of the Telephone Network—Error Rate, Error Distribution and Error Control. R. M. Gryb, Bell Tel. Labs.
 CP60-99. Data-Phone-Customer Usage Results. R. W. Ralston, American Telephone & Telegraph Co.
 CP.* A High Speed (105,000 bit per second) Data Transmission System. R. H. Coe, Pacific Telephone and Telegraph Co.; R. T. James, American Telephone and Telegraph Co.

9:00 a.m.—Wire Communications

CP.* E6 Voice Repeater—Background and Theory of Operation. L. Hochgraf, Bell Telephone Labs.
 CP.* E6 Voice Repeater—Description and Testing. J. O. Smethurst, Bell Telephone Labs.
 CP.* E6 Voice Repeater—Packaging Design. L. Pedersen, Bell Telephone Labs.
 CP.* E6 Voice Repeater—Production Planning. R. Mittermann, Western Electric Co.
 CP.* E6 Voice Repeater—Engineering and Installation. E. J. Doyle, T. J. Talley, III; American Telephone and Telegraph Co.

9:00 a.m.—Power System Communications

60-242. Telemetering Applications and Operating Experience on a Large Power System. D. E. Johannson, Bonneville Power Administration.
 60-243. Neutralizing Chokes for Telephone Lines Entering Power Stations. O. Ramsauer, Pennsylvania Power & Light Co.
 60-244. Operation of a Power Line Carrier System During Sustained Line Faults. D. E. Jones, The Hydro-Electric Power Commission of Ontario.

9:00 a.m.—Protective Devices

60-249. Application for Arresters for Lightning Protection of Multi-Line Substations. J. M. Clayton and F. S. Young; Westinghouse Electric Corp.
 60-250. Arrester Protection of High Voltage Stations Against Lightning. G. D. Breuer, R. H. Hopkinson, I. B. Johnson, A. J. Schultz; General Electric Co.
 CP.* An Analysis of Arrester Operating Duty—Using a Thermal Approach. E. F. Reis, M. C. Galiyano, Pennsylvania Power & Light Co.; J. Teno, Lehigh University.
 CP.* Radio Influence Voltage Values for Lightning Arresters. H. R. Armstrong, The Detroit Edison Co.
 CP.* Problems in Lightning Arrester Standardization. W. F. Grifard, Commonwealth Associates, Inc.

9:00 a.m.—Power Generation Planning

60-256. An Approach to Peak Load Economics. C. D. Galloway, L. K. Kirchmayer, W. D. Marsh, A. G. Mellor, General Electric Co. (Re-presented for Discussion only).
 60-156. Load and Capacity Models for Generation Planning by Simulation. C. J. Baldwin, C. A. DeSalvo, Westinghouse Electric Corp.; C. H. Hoffman, E. C. Plant, Public Service Electric and Gas Co.
 60-251. The Use of Simulated Reserve Margins to Determine Generator Installation Dates. C. J. Baldwin, D. P. Gaver, Westinghouse Electric Corp.; C. H. Hoffman, J. A. Rose, Public Service Electric and Gas Co.
 CP.* Announcement of Future Roundtable Discussion on Power Station Automation. D. M. Sauter, Westinghouse Electric Corp.

9:00 a.m.—Substations and Transformers

CP60-42. 400 MVA Bulk Power Substation in Metropolitan Area. C. M. Short, H. L. Holland; City of Los Angeles Dept. of Water & Power.
 60-175. Some Characteristics of Audible Noise of Power Transformers and Their Relationship to Audibility Criteria and Noise Ordinances. M. W. Schulz, Jr., R. J. Ringlee; General Electric Co.
 CP60-238. Sound Barrier Walls for Transformers. W. G. on Technical Investigations of the Subcommittee on Audible Sound of the AIEE Transformer Committee, M. W. Schulz, Jr., Chairman.
 CP.* Mobile Test Unit Brings Factory Testing to Power Transformer Repair Shop. E. A. Thompson, W. H. Schneider; Westinghouse Electric Corp.

9:00 a.m.—Basic Sciences

CP60-193. Generalized Recurrence Relations in the Analysis of Physical Nonlinear Systems. A. A. Wolf, Stromberg-Carlson Co.
 CP.* Determination of the Transient Response of the Heaviside—Bessel Non-Uniform Transmission Line. D. T. Frankos, T. J. Higgins.
 CP60-194. Electro-Magnetic Induction Damping of Vibratory Motion. L. B. Cherry, Lamar State College of Technology.
 60-196. Voltage Regulation in Modern Aircraft Electric Power Systems. A. Krausz, Space Technology Labs., Inc.; H. A. Kahle, Jack & Heintz, Inc.
 CP60-195. A Transistorized DC Voltage Regulator for Direct Replacement of Carbon-Pile Regulators. P. D. Corey, W. O. Hansen; General Electric Co.
 60-240. An Analysis of Transfer in Gas Shielded Welding Arcs. W. J. Greene, Air Aeduction Co., Inc. (Re-presented for Discussion only).
 60-241. The Measurement of Temperature in Welding Arcs. H. C. Ludwig, Westinghouse Electric Corp. (Re-presented for Discussion only).

9:00 a.m.—Semiconductor Rectifying Devices and Applications—I

CP60-67. A Silicon Controlled Rectifier—Its Characteristics and Ratings—II. D. K. Bisson, R. F. Dyer; General Electric Co.
 CP.* 100 Kilowatt Trinistors. J. Philips, E. W. Torok, Westinghouse Electric Corp.
 CP60-227. Switching Characteristics of Silicon Power Controlled Rectifiers—I, Turn-on Action. I. Somos, General Electric Co.
 CP.* A Thermal Compression—Bonded Low Temperature—Coefficient Voltage Regulating Diode. J. B. Singleton, H. D. Sloan; Bell Telephone Labs., Inc.
 60-19. An Investigation of the Dynamic Switching Properties of Four-Layer Diodes. G. E. McDuffie, Jr., W. L. Chadwell; The Catholic University of America (Re-presented for Discussion only)

9:00 a.m.—Application of Computers in Manufacturing

CP.* Integrated Systems Planning. B. Grad, General Electric Co.
 CP.* Production Line Balancing. A. L. Paul, Westinghouse Electric Corp.
 CP60-131. An Experiment in Simulation of Factory Operation on a Digital Computer. R. S. Clement, General Electric Co.
 CP60-132. Complete Manufacturing Information Produced by Computer for Large A. C. Motor Coils. T. N. Kyriazi, R. C. Fuller; Westinghouse Electric Corp.

9:00 a.m.—Panel Discussion on "New Challenges to Electrical Engineers From Medical and Biological Problems"

CP.* Opening Address: J. H. Foote—President, AIEE.
 CP.* Physiology. S. Talbot, The John Hopkins Hospital.
 CP.* Radiology: G. Henry—Temple University.
 CP.* Biology: O. Schmitt—University of Minnesota.
 CP.* Space Medicine: A. Hetherington—Air Research and Development Command.

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

CP.* Solid State Switching Logic for Airborne Control Systems. K. H. Doerenkamp, R. W. Churchill; Minneapolis-Honeywell Regulator Co.
 CP.* A Switching Amplifier for a Space Vehicle Stable Platform Control System. J. McHugh, General Electric Co.

CP.* Characteristics of Wide Band Direct Coupled Amplifiers. J. Varga, General Electric Co.
 CP.* Transistor Morse to Teleprinter Code Converter. J. F. Cunniff, C. E. Theall, Jr.; C. G. S. Labs., Inc.
 CP.* The Design of the Generator Voltage Regulator. B. M. Van Emden, Hydro-Aire Corp.

2:00 p.m.—Mathematicians Look at Nonlinear Control Systems

CP60-109. Discrete Models for Nonlinear Systems. W. Kaplan, University of Michigan.
 CP.* Problems of Asymptotic Behavior and Stability. L. Cesari, Purdue University & RIAS.
 CP60-110. Recent Advances in the Analysis and Synthesis of Nonlinear Systems. A. A. Wolf, Stromberg-Carlson Co.
 60-111. On A Systematic Approximation to the Partition Method for Analysis of A Class of Nonlinear Systems. Y. H. Ku, J. H. Dietz, University of Pennsylvania; A. A. Wolf, Stromberg-Carlson Co.
 CP.* Mimial Time Problems and Maximum Principle. L. A. Zadeh, University of California.
 CP.* Bibliography on Recent Contributions in the Nonlinear Theory Area. T. H. Higgins, University of Wisconsin.

2:00 p.m.—Electric Systems for Metal Industry

CP.* The Rectifier Power Supply on the Lukens Steel Reversing Plate Mill. R. A. Hamilton, General Electric Co.
 CP.* Rectifier Power Supplies for Auxiliary Drives. S. J. Roumanis, General Electric Co.
 CP.* Application of Rotating Magnetic Stirrers to Electric Arc Furnaces. R. D. Thomas, Westinghouse Electric Corp.

2:00 p.m.—Analog and Digital Data Handling

60-114. A Precision Continuous Voltage Reference for Industrial Recorders. P. B. Robinson, General Electric Co.



Lighting and decorating by Rambusch Sigurd Fischer

- 60-113. Design and Performance Characteristics of a High-Speed Wide Chart Recorder. J. C. Garrigus, The Bristol Co.
- CP60-112. A Power Line Transient Recorder. C. H. Hoshall, Minneapolis-Honeywell Regulator Co.
- 60-104. A Solid State Digital Computing System for Electrical Load Monitoring. R. J. Thomas, Union Carbide Nuclear Co.; J. O. Gustafson, Bailey Meter Co.; G. E. Foster, Lundell & Co.
- 60-158. The Combi-System—A Proposal for New Concepts in Digital Data Processing. H. Schwab, Consolidated Electrodynamics.
- 2:00 p.m.—Telegraph Systems**
- CP.* Freight Car Report Sorting System. C. R. Fisher, Stromberg-Carlson Co.
- CP60-183. A Step-Driven Digital Magnetic Recorder. J. G. Hansen, Stromberg-Carlson Co.
- CP.* The 82B1 Military Teletypewriter Message Switching System. W. M. Bacon, G. A. Locke, Bell Tel. Labs. Inc.
- CP60-253. A High Capacity Teletypewriter Terminal Set. J. F. Auwaeter, Teletype Corp.
- CP.* Recent Advances in Printing Telegraph Apparatus. W. Y. Lang, Bell Telephone Labs., Inc.
- CP.* Advancements in the Facsimile Art During 1959. W. H. Bliss, RCA Labs.
- 2:00 p.m.—Wire Communications**
- CP.* A Pole Mounted Negative Impedance Repeater. H. W. Clark, Stromberg-Carlson Co.
- CP60-254. An Application of the E3 Negative Impedance Repeater. J. W. Joyner, Southern Bell Telephone and Telegraph Co.
- CP60-43. The REA-1 Transposition System. A. G. Chapman, J. M. Flanigan, Rural Electrification Administration; J. V. Buscemi, Anaconda Wire & Cable Co.
- CP.* Wire Line Communications on the Union Pacific Railroad. C. O. Jett, Union Pacific Railroad.
- 60-44. An All Transistorized Trunk Carrier System. F. H. Gardner, Stromberg-Carlson Co.
- 2:00 p.m.—Transformers**
- 60-80. Dielectric Tests on Transformers as Influenced by Further BIL Reductions. J. R. Meador, N. E. Dillow, General Electric Co.
- CP.* Some Aspects of Ground Current Measurements During Transformer Impulse Tests. L. C. Aicher, Allis-Chalmers Mfg. Co.
- 60-182. Pseudo-Final Voltage Distribution in Impulsed Coils and Windings. P. A. Abetti, General Electric Co.
- CP.* Front-of-Wave Air Gap Data Suggests Refinement in New Standard. C. A. Long, C. L. Moore; Westinghouse Electric Co.



Pennsylvania Railroad's Congressional to Washington

- 2:00 p.m.—Power System Economic Dispatch**
- 60-179. Power System Economic Load Allocation Using a New Equation for Transmission Losses. M. J. Fisher, Washington University.
- 60-82. A New Method of Making Transmission Loss Formulas by Means of Eigenvalues and Modal Matrices. E. E. George, Ebasco Services Inc.
- CP.* Direct Calculation of Transmission Loss Formula—I. L. K. Kirchmayer, H. H. Happ, General Electric Co.; G. W. Stagg, J. F. Hohenstein, American Electric Power Service Corp.
- CP.* Hydro-Thermal Economic Scheduling—Computational Experience with Coordination Equations. P. L. Dandeno, The Hydro-Electric Power Commission of Ontario.
- CP.* Hydro-Thermal Economic Scheduling—Solution by Incremental Dynamic Programming. B. Bernholz, L. J. Graham; The Hydro-Electric Power Commission of Ontario.
- 2:00 p.m.—Power Generation and New Energy Sources**
- CP60-108. A New Minimum Excitation Limiter for Electric Utility Generator Regulating Systems. P. O. Bobo, N. Kormanik, H. A. Steinbruegge, Westinghouse Electric Corp.
- CP60-157. A Simplified Method for Determining a Transfer Scheme on Generating Station Auxiliary Buses. J. L. Barker, S. M. Hussey, S. J. Sweeney, Boston Edison Co.
- CP.* Thermoelectric and Mechanical Conversion of Solar Power. R. C. Schlichtig, A. J. Morris, Boeing Airplane Co.
- CP.* Recent History of Thermoelectric Developments. S. J. Angello, Westinghouse Electric Corp.
- 2:00 p.m.—Symposium on Extra High Voltage Substations**
- 2:00 p.m.—Thermoelectricity**
- CP.* Theoretical Bounds on the Thermoelectric Figure of Merit. F. J. Donahoe, Franklin Institute Labs.
- CP60-173. Thermoelectric Concepts for Engineers. A. G. Milnes, N. Alfonso; Carnegie Inst. of Technology.
- 60-18. The Effect of Source and Sink Thermal Resistance on Thermoelectric Generator Performance. P. E. Gray, Massachusetts Inst. of Technology.
- CP60-174. Transient Response and Ripple Effects in Thermoelectric Cooling Cells. N. Alfonso, A. G. Milnes; Carnegie Institute of Technology.
- 58-821. A Non-Destructive Breakdown Phenomena in Selenium Rectifiers. A. C. English, University of California and W. H. Tobin, General Electric Co. (Re-presented for Discussion only).
- 2:00 p.m.—Radiation Effects Roundtable Discussion**
- 2:00 p.m.—Semiconductor Rectifying Devices and Applications—II**
- CP60-68. Transient Thermal Impedance of Semi-Conductor Devices. E. J. Diebold, Perkin Engineering Corp.; W. Luft, International Rectifier Corp.
- CP60-69. Power Semiconductor Ratings Under Transient and Intermittent Loads. F. W. Gutzwiller, T. P. Sylvan; General Electric Corp.
- CP60-70. Problems Encountered in Applying the Silicon Controlled Rectifier to Control Tungsten Lamp Loads. C. S. Daugherty, Vickers, Inc.
- CP60-71. Trinistor Triode Power Inversion. F. J. Hierholzer, Westinghouse Electric Corp.
- 2:00 p.m.—Electrical Techniques in Medicine and Biology**
- CP.* Thermo-Electrical Applications in Bio-Medical Studies. J. D. Mees, Westinghouse Electric Corp.
- CP.* An X-Ray Tube with Grid Control for Exposures in Cine-radiography. T. H. Rogers, Machlett Labs.
- CP.* Microliter Oxygen Detector in Medical Research. V. W. Bolie, Iowa State University.
- 60-100. Instrumentation for the Diagnosis of Coronary-Artery Disease. D. F. Moyer, G. D. Talbott; Dayton, Ohio.

- CP.* New Developments in Heart-Lung Bypass Systems. G. C. Riggle, J. M. F. DeBroske; National Institutes of Health.
- CP.* Use of a Low Power Nuclear Reactor in Biology and Medicine. A. J. Blotcky, A. L. Dunn, R. E. Ogborn; Veterans Adm. Hospital.
- CP60-101. Experiments with Air Ions on the Trachea. J. C. Beckett, Wesix Electric Heater Co.; A. P. Krueger, University of California.
- 59-236. Technical Solutions to the Problem of Reducing Patient Dosage. J. E. Jacobs, General Electric Co. (Re-presented for Discussion only).

Friday, February 5

9:00 a.m.—Non-Linear Control—II

- 60-115. Input-Output Cross-Correlation Functions for Some Memory Type Nonlinear Systems with Gaussian Inputs. H. R. Leland, Cornell Aeronautical Laboratory, Inc. of Cornell University.
- 60-116. Nonlinear Compensator for a Piecewise Linear Second Order. M. Athanassiades, O. J. M. Smith; University of California.
- 60-117. Stability Analysis of Dual-Mode Servomechanisms. J. E. Gibson, E. S. McVey; Purdue University.
- 60-118. Instrument Servomechanisms with Backlash, Coulomb Friction and Stiction. M. P. Pastel, G. J. Thaler; U.S. Naval Postgraduate School.

9:00 a.m.—Industrial Control

- 60-30. D-C Magnetic Crane Hoist Control for A-C Powered Cranes. A. H. Myles, M. C. Davies, L. J. Srnka; Square D Co.
- CP60-235. ARC Suppression Techniques and Devices. F. Miller, Square D Co.
- CP.* Control Components for Industrial Automation. V. E. Verheyden, General Electric Co.
- CP.* A Study of an Engine Generator Control System. R. J. Mudd, H. P. Contesse, V. C. Rideout; Allis-Chalmers Mfg. Co.

9:00 a.m.—Data Communications over Wire Systems

- 60-27. The Effect of Delay Distortion on Data Transmission. P. I. Mertz, The RAND Corporation.
- CP60-229. Layout and Adjustment of a Nationwide Facsimile Network for WeatherMap Service. W. D. Cannon, T. F. Cofer, Western Union Telegraph Co.
- 60-45. A Delay Distortion Simulation Set. F. C. Dunbar, Bell Telephone Labs., Inc.
- CP60-46. A Test Set for Measurement of Envelope Delay Distortion at Audio Frequencies With 1 uSEC Precision. W. A. Codd, Stromberg-Carlson Co.
- CP.* A Survey of Cable Characteristics for Data Communication. F. B. Wood, International Business Machines Corp.

9:00 a.m.—Radio Communication Systems

- CP60-159. A New Control Terminal for Mobile Telephone Service. L. E. Getgen, G. McGibbon, Lenkurt Electric Co., Inc.
- 60-160. Automation Applied to Mobile Radio Transmission Surveys. I. H. E. Strong, V. Feldkircher; The Ohio Bell Telephone Co.
- 60-161. Intermodulation Effects in FM and PM Systems. B. E. Love, American Tel. & Tel. Co.
- CP.* Service Area of an Airborne Television Station. M. T. Decker, National Bureau of Standards.
- 60-7. Optimum Design Considerations For Radio Relays Utilizing the Tropospheric Scatter Mode of Propagation. C. A. Parry, Page Communication Engineers, Inc. (Re-presented for Discussion only).

9:00 a.m.—Transformers

- CP.* A Report on the Proposed AIEE Test Procedure for Evaluation of Insulation Systems for Specialty Transformers. P. A. Vance, General Electric Co.
- CP.* Test Equipment Used to Evaluate Specialty Transformer Insulation Systems in Accordance with the Proposed AIEE Test Procedure. E. W. Lindsay, Westinghouse Electric Corp.

- CP.* Evaluating a Specialty Transformer Insulation System by the Proposed AIEE Test Procedure. D. S. Stephens, E. W. Lindsay, Westinghouse Electric Corp.
- CP.* Specialty Transformer Life Test Procedures in Selecting Impregnating Varnishes. D. H. Briggeman, G. I. Duncan; General Electric Co.

9:00 a.m.—Power Generating Capacity Problems

- CP.* Bibliography of Load and Frequency Control Literature 1922-1957. J. Preminger, Israel Institute of Technology.
- CP60-37. Application of Probability Methods to Generating Capacity Problems. AIEE Probability Applications Working Group; Presentation of Report and Panel Discussion by: H. A. Adler, A. K. Falk, C. D. Galloway, C. Kist, E. S. Loane and L. K. Kirchmayer, Chairman.

9:00 a.m.—Insulated Conductors

- 60-94. Mathematical Solution to the Problem of the Control of the Thermal Environment of Buried Cables. J. V. Schmill, The Mexican Light and Power Co., Ltd.
- 60-141. Characteristics of Power Cable Shielding. T. N. Mitropoulos, R. J. Fogel, C. J. Tang; Simplex Wire & Cable Co.
- CP.* A New High Voltage Capacitor-Graded Pothead. E. F. Huston, The Ohio Brass Co.

9:00 a.m.—Corona Effects

- CP60-97. A Capacitance Bridge Method for Measuring Integrated Corona Charge Transfer and Power Loss Per Cycle. T. W. Dakin, P. J. Malinaric; Westinghouse Electric Corp.
- 60-15. The Measurement and Influence of Surface Charges on the Inception Voltage Between Dielectric and Metal Dielectric Surfaces. S. I. Reynolds, General Electric Co.
- CP.* The Study of Discharges in Dielectric Voids by Photomultiplier Methods. N. M. Bashara, University of Nebraska.
- CP.* Ionization and Electron Attachment Coefficients in Alkyl Chlorides. J. C. Devins, O. H. LeBlanc; General Electric Co.

9:00 a.m.—Rotating Machinery

- 60-98. Calculation of Stray Load Losses in D-C Machinery. E. Erdelyi, University of Delaware.
- CP60-170. Armature Tooth Pulsations Eddy Current. M. J. Pasculle, Westinghouse Electric Corp.
- 60-154. The Effect of Rectifier Power Supply on Large D-C Motors. R. M. Dunaiski, General Electric Co.



S.S. Brasil, Moore-McCormack Lines

9:00 a.m.—Education

- CP.* The Public Schools in Relation to Electrical Engineering Education. T. M. Linville, General Electric Co.
- CP.* The Technical Institutes Part in Electrical Engineering Education. S. Linke, Cornell University.
- CP.* Electrical Engineering Education in Industry. L. N. Stone, Oregon State College.
- CP60-217. The AIEE: An Educational Catalyst. C. R. Vail, Duke University.

9:00 a.m.—Basic Sciences

- 60-197. A Method for the Design of Holding Electromagnets. J. T. Ludwig, Minneapolis-Honeywell Regulator Co.
- 60-198—Inductors Biased with Permanent Magnets—Part I. J. T. Ludwig, Minneapolis-Honeywell Regulator Co.
- 60-199. Inductors Biased with Permanent Magnets—Part II. J. T. Ludwig, Minneapolis-Honeywell Regulator Co.
- CP.* The Existence of an Electric Analogue of a Magnetic Circuit by the Laws Defining Magnetostatics. E. C. Koenig.
- CP60-200. The Determination of the Hysteresis Curve for Thick Tape Cores. P. Dentella, Fivre Co.; E. DellaTorre, Rutgers University.
- CP60-201. An Analysis of a Polarized Electro Magnetic Drive System and of Vibrator Systems. R. S. Nunn, Hampshire, England.

9:00 a.m.—Molecular Electronics—I

- CP.* Molelectronics. H. W. Henkels, Westinghouse Electric Corp.
- CP.* A Categorization of Molecular Engineering. J. W. Brouillette, S. K. Ghandi, A. Lesk; General Electric Co.
- CP.* Phenomena of Interest to Molecular Electronics. R. D. Larson, J. M. Blasingame; Wright Air Development Center.
- CP.* R. H. Rediker, Lincoln Labs.
- CP.* H. R. Owens, Texas Instrument, Inc.

2:00 p.m.—Radio Communication Systems

- 60-54. Radio Frequency Interference Considerations in the TD-2 Radio Relay System. H. E. Curtis, Bell Telephone Labs., Inc.
- CP60-224. Radio Communication in Aviation. P. Caporale, Federal Aviation Agency.
- CP60-162. A Format for a Fundamental Plan for the Improvement of Telecommunication Facilities in Underdeveloped Countries. C. A. Parry, Page Communications Engineers, Inc.
- CP.* R. F. Transmission Line Engineering. R. F. Lewis, Prodelin, Inc.
- CP60-9. Matching of High-Loss Transmission Section (With Application to Plain Wave Transmission Through Thin Conductor Film). C. Polk, University of Rhode Island.

2:00 p.m.—Television—Color and Monochrome

- 60-59. Redstone Arsenal Closed Circuit Educational T.V. System. I. J. P. Argo, I. N. Howell, Southern Bell Telephone & Telegraph Co.
- CP.* Aspects of the Land Color System (Including Demonstration) W. Hughes, Iowa State College.
- CP.* A Field Sequential Color Mobile Unit to Work with Ediphor. L. Tyrrell, Teletone.
- CP60-60. Automatic Logging of AM, FM, and TV Transmitting Station Parameters. G. Ehrenberg, Minneapolis-Honeywell Regulator Co.
- 60-11. An Omnidirectional Circular Antenna Array Excited Parasitically by a Central Driven Element. H. P. Neff and J. D. Tillman, The University of Tennessee.

- 60-260. Dial Selected Industrial Television for Ticket Reservation Facilities. J. W. Alinsky, Dage Television Div., Thompson Products, Inc. (Re-presented for Discussion only)

2:00 p.m.—Transformers

- CP.* Short-Time Overcurrent Ratings of CT's and CB's Proposed Co-ordination Standards. G. S. Duffus, Canadian Westinghouse Co., Ltd.
- 60-58. Permallex—A New Insulation System. M. F. Beavers, E. L. Raab, J. C. Leslie; General Electric Co.
- 60-81. Oil Preservation Systems, Factors Affecting Ionisation in Large Transformers. A. T. Chadwick, D. H. Ryder, A. E. Brierley; English Electric Co., Ltd.
- CP.* Studies of Insulating Oil in New and Used Transformer. T. K. Sloat, Westinghouse Electric Corp.; V. A. Banevicius, Cleveland Electric Illuminating Co.

2:00 p.m.—Power System Short Circuit Current Calculation

- CP.* Digital Computer Study of the Resynchronizing of a Turbo-Alternator. R. N. Sudan, Cornell University.
- 60-180. Digital Calculation of Line-To-Ground Short Circuits by Matrix Method. A. H. El-Abiad, Purdue University.
- CP60-181. Digital Calculation of Three-Phase Short-Circuits by Matrix Method. H. E. Brown, C. E. Person, Commonwealth Edison Co.; L. K. Kirchmayer, General Electric Co.; G. W. Stagg, American Electric Power Service Corp.
- CP60-255. Digital Calculations of Single Phase to Ground Faults. H. E. Brown, C. E. Person, Commonwealth Edison Co.

2:00 p.m.—Insulated Conductors

- 59-892. The Texada Island Submarine Cable Crossing. P. J. Croft, III British Columbia Power Commission (formerly with Canada Wire & Cable Co.)
- 60-13. Gas-Filled Cavities in Solid-Type Cables. N. Klein, Israel Inst. of Technology.
- CP.* Correlation Between Impregnant Stability Under Vacuum Discharge and Life of Solid-Type Oil-Impregnated Paper Cable on Accelerated High Voltage Load Cycle Test. A. O. McKean, E. J. Merrell; Phelps Dodge Copper Products Co.
- CP.* Improving Building Wire Performance. R. H. Lee, E. I. DuPont de Nemours & Co., Inc.

2:00 p.m.—Basic Sciences

- 60-202. The Synthesis of Linear Filters with Real or Imaginary Transfer Functions. E. G. Gilbert, J. Otterman; University of Michigan.
- 60-203. Difference Equations and Their Applications. L. A. Pipes, I. University of California.
- 60-31. Generalized Brillouin Flow. G. Kent, Syracuse University.
- CP60-204. Conformal Transformations in Analog Simulations of Non-Laplacian Fields. J. R. Allder, Space Technology Labs., Inc.; W. J. Karplus, University of California; R. N. Bryan, Pacific Semiconductors, Inc.

2:00 p.m.—Rotating Machinery

- CP.* Selecting and Applying Electro-Magnetic Friction Clutches. R. L. Kotnik, Fawick Corp.
- CP.* Electrostatically Responsive Fluids. J. A. Mason, Warner Electric Brake & Clutch Co.
- CP.* Characteristics & Application of Spring Engaged Magnetic Clutch. B. E. Wrench, Stearns Electric Corp.
- 60-5. An Improved Method of Corona Suppression for High Voltage Rotating Machines. V. E. Manni, W. Schneider, Westinghouse Electric Corp. (Re-presented for Discussion only).

2:00 p.m.—Education

- 60-134. Trends in Undergraduate Electrical Engineering Curricula. M. L. Manning, South Dakota State College of Agriculture and Mechanic Arts.
- CP.* Education of the Teacher of Electrical Engineering. G. M. L. Sommerman, Westinghouse Electric Corp.
- 60-17. Education for Expanding Horizons in Electric Power. G. S. III Brown, Massachusetts Inst. of Technology (Re-presented for Discussion only)

2:00 p.m.—Molecular Electronics—II

- CP.* Some New Examples of Molecular Engineering. R. W. Aldrich, N. Holonyak, Jr., I. A. Lesk; General Electric Corp.
- CP.* Theory and Applications of a Monolithic Null Device. W. Kaufman, Westinghouse Electric Corp.
- CP.* Microminiature Full Adder. E. Keonjiam, American Bosch Arma Corp.
- CP.* Microelectronics—A Circuit System Employing Microminiaturizing Components. E. Steele, W. B. Warren, R. A. Dgudmensen; Hughes Products.

Continued from page 2

trast on various visual tasks; the effect of intensity on speed of seeing and many other interesting and useful facts that they will be able to apply to their own lighting problems.

Refreshments will be served at the conclusion of the meeting.

Indian Point Nuclear Electric Generating Station, Consolidated Edison Company of New York, Inc. (Thursday morning). Con Edison has built a visitors' observation and exhibit building at the site of the new Indian Point atomic electric power plant at Buchanan, Westchester County, N. Y.

The observation building, high on a bluff overlooking the plant, contains colorful, animated displays showing how atomic energy will be used at Indian Point to produce electricity. Con Edison guides will show visitors a working model of an "Atomic Furnace," a complete model of the plant itself, and other exhibits pointing out how Con Edison's services form an integral part of the metropolitan area's economic life.

Binoculars available on the observation deck will enable visitors to get a close-up view of the plant under construction.

The station is expected to start operations in April 1961 and will have an electrical capability of 275 mw; 163 mw from the pressurized water thorium converter reactor, and 112 mw from two oil-fired superheaters. It will be the first unit to make use of thorium as fertile material to supplement the base fuel, highly enriched U-235.

International Business Machine Corporation, New York, New York (Wednesday afternoon, Thursday morning). The International Business Machine Corporation will show their 705 Electronic Computer on which they are processing a variety of their own accounting applications. In addition there will be a specific demonstration on the RAMAC 305 with a large unique type of storage on magnetic disks. Also there will be a discussion of new transistorized equipment such as the 1401 Data Processing System which was announced recently.

New York International Airport, New York, New York (Thursday afternoon). The trip will include an inspection of some of the most modern facilities in the Central Terminal area, including the International Arrivals Building and the central heating and refrigeration plant. Buses will be used during the tour to make stops at a central substation and a modern hanger equipped to handle the largest of the jets.

The New York Times, New York, New York (Wednesday afternoon, Thursday morning). Visit, in midtown Manhattan the home of what is probably the most widely read newspaper in the world, The New York Times. View the various devices in the communications room of the Times that make it possible to have news transmitted from all over the world. 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 will be sent to the pressroom. The automatic plate casting machines as well as the presses themselves are found in the stereotype department. The presses at The New York Times can print 375,000 48-page papers an hour.

The Okonite Company, North Brunswick, New Jersey (Wednesday morning). This half-million-square-foot ultra-modern plant produces rubber and plastic-insulated wires and cables for power, control, and signalling purposes. Here also are manufactured a wide range of heavy-duty portable cords and cables for industrial and mining use.

Of special interest are the automated compound department, the submersible platform testing tanks, and the most modern methods of quality control. Materials used in addition to copper and aluminum for the conductors, are butyl rubber, natural rubber, neoprene, polyethylene and polyvinyl chloride. The latter are all materials for insulating and sheathing the cables.

Of special interest will be a demonstration of the Gooding-Slade Test Train, a unique testing device that examines cables inch-by-inch for possible flaws. This unusual equipment is a pioneer development of the Okonite Research Laboratories and has been the subject of several AIEE papers.

A new 1100-foot-long tunnel-like structure has recently been erected to produce aluminum-sheathed cables, particularly Spir-O-line air-dielectric cables for ultra-high-frequency operation. Samples of these will be on display with other products.

Recent shipments from this plant have included several 15,000-volt polyethylene insulated submarine cables for power supply of off-shore drilling rigs used in oil well construction. Basically this Okonite unit produces standard types of single and multiple cables for industrial plants, railroads, mining and, particularly, the electric utilities. Bus leaves Statler at 8:15, returns at 12:45. Reservation \$2.00

Radio City Music Hall, New York, New York (Tuesday morning). 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 the revolving sectionalized stage, elevating orchestra pit, motorized curtains and the multitude of electric and mechanical controls required for the special stage and lighting effects.

Rambusch Decorating Company, New York, New York (Tuesday afternoon). The most diversified representation of artistry and craft work is found here. Designers, craftsmen, and lighting engineers work in complete shops and studios under one roof to serve architects and decorators with all phases of original design and execution of the decorative arts. Working in metal, wood, marble, glass, plastic, terra-cotta, and with light, paint, and mosaic, using all types of carving, paneling, and finishing equipment, skilled artisans create anything from medallions, candlesticks, and altars to murals, statues, and great stained, polished, or carved glass windows, using the most original lighting effects.

Some of Rambusch's many creations are: the lighting of the St. Louis Air Terminal Building, carved plate-glass windows in St. Thomas Moor Chapel of Yale University; bronze sculpture for the S.S. United States; the United Nations Metal Map in the World Assembly Hall; sand-blasted tinted glass in the U.S. Coast Guard Academy Chapel, New London, Conn.; and the colored maparium glass enamel sphere of the Christian Science Publishing House, Boston, Mass.

AIEE WINTER GENERAL MEETING

Underwriters' Laboratories, New York, New York (Wednesday morning). The Laboratories, sponsored by the National Board of Fire Underwriters, are operated for service, not for profit. They examine and test for public safety, write standards for safety, and control identification of their tested items, with markers, labels, lists, and listing cards.

The New York Laboratories test electric equipment and fire alarm and signaling apparatus.

The tour will include viewing a short color movie showing some of the spectacular tests in slow motion. Interesting tests, such as destruction of new television sets, as well as routine tests will be programmed.

The opportunity to observe the interest and concern these men have in public safety coupled with their thoroughness is sure to offer an interesting tour.

The Underwriters' Laboratories is a foremost safety testing laboratory whose clients operate 6,500 plants turning out an estimated 1 billion safeguarded articles each year.

United Nations General Assembly Building, New York, New York (Tuesday morning). The guided tour will take slightly over one 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 UN schedule lists committee sessions only, and admission tickets at no charge will be available for optional group attendance after lunch about 2 PM) Arrangements made for group luncheon (not included in tickets) in the Delegates Dining Room. The lunch is recommended but optional.

(The site of the new UNITED ENGINEERING CENTER will be pointed out, opposite the North end of the United Nations Plaza.)

SS Argentina, Moore-McCormack Line, New York, New York (Wednesday afternoon). An interesting tour of the newest luxury passenger liner of the Moore-McCormack Line has been arranged. This 22,590-ton ship commissioned in December 1958 has fully air conditioned luxury accommodations for 557 passengers in 182 modern staterooms. Her points of call include Rio de Janeiro, Montevideo, Buenos Aires, Barbados, and Trinidad.

The electric features of the ship include three turbo-generators with an aggregate capacity of 4,125 kw at 80 percent power factor. The 10,047 rpm turbines drive the generators at 1,200 rpm through reduction gears.

Visitors will inspect the ship's electric facilities after a brief talk on their significant features. A concurrent program and short inspection featuring interior decorations of staterooms and lounges has been arranged for the ladies. A social hour on board will follow the tours.

LADIES ENTERTAINMENT: The Ladies Entertainment Committee extends a cordial welcome to ladies attending the Winter General Meeting. An interesting program has been planned for the week.

Ladies Headquarters and Hospitality Room in Washington Room of Hotel Statler will be open **Sunday afternoon** from 2 until 4 o'clock and every day during the week.

Coffee Hour in Ladies Headquarters will be each morning Monday through Friday.

Program: Monday afternoon—A Get Acquainted Tea courtesy of Phelps Dodge Copper Products Corporation.

Tuesday—A morning tour of the new Guggenheim Museum with luncheon at the Terrace Room of the Metropolitan Museum and an opportunity to visit English and French Rooms of the latter museum. Tour limited to 90. Tickets for transportation and admission to Guggenheim Museum \$2.00. A meeting of the **Ladies Auxiliary** from 2:30 to 4 p.m. in Ladies Headquarters. At 6:30 p.m. the Ladies Dinner preceded by a cocktail hour courtesy of Waterbury Company, Inc., Cable Service Division and followed by entertainment courtesy of I-T-E Circuit Breaker Company. Dinner tickets \$8.00.

Wednesday—A morning tour of the Design Center for Interiors with lunch at a nearby White Turkey Restaurant. Tour limited to 90. Tickets including transportation and luncheon \$4.00.

Thursday—Breakfast at B. Altman's Store with a preview of spring millinery. Tickets \$1.75. A Luncheon and Fashion Show at the Waldorf-Astoria Hotel. The fashion show is by courtesy of Anaconda Wire and Cable Company. Luncheon tickets \$5.75.

Friday—Informal tours of the United Nations Building and the new Steuben Glass Store.

Registration: Ladies register with their husbands and obtain badges before getting tickets at Ladies Headquarters for events of the Ladies Program. Ladies registration fee \$2.00.

WINTER GENERAL MEETING COMMITTEE: Members of the 1960 Winter General Meeting Committee are: R. T. Weil, Jr., chairman; R. W. Gillette, vice-chairman; J. J. Anderson, secretary; J. R. Kerner, budget co-ordinator and AIEE vice-president for District 3; C. T. Hatcher, chairman, Technical Operations Department; C. F. Savage, public relations; W. G. Vieth, general session; M. Lennig, hotel accommodations; F. P. West, registration; H. G. Koch, inspection trips; T. W. Bartlett, monitors; D. Halloran, smoker; E. J. Doyle, dinner-dance; Mrs. D. M. Quick, ladies entertainment; and D. M. Quick, ex-officio member (past-chairman).

ETA KAPPA NU: A particularly significant event associated with the Winter General Meeting of the American Institute of Electrical Engineers will be held on Monday evening, February 1, 1960. On that night, electrical engineers both young and old will gather to honor Dr. Edgar A. Sack, Jr. of Westinghouse Electric Corporation recipient of the 1959 Outstanding Young Electrical Engineer Award and Mr. William O. Fleckenstein of Bell Telephone Laboratories, Mr. Kenneth H. Olsen of Digital Equipment Corporation, and Mr. John W. Wentworth of RCA who received Honorable Mention in this year's selection.

The annual search for the outstanding young electrical engineer is conducted by the Eta Kappa Nu Association, the national electrical engineering honor society. This year's Jury of Award consisted of the following engineering leaders: Chairman, Ernst Weber, President, Polytechnic Institute of Brooklyn and President, IRE; J. B. Browder, President, Illuminating Engineering Society; Larry Dwon, Past President, Eta Kappa Nu; L. C. Holmes, Director of Research, Stromberg Carlson Co. and Vice-President AIEE; A. G. Kandoian, Vice-President, ITT Laboratories, Inc.; A. Naeter, President, Eta Kappa Nu; and C. V. Roseberry, Vice-President, Westinghouse Electric Corporation.

The annual Eta Kappa Nu award banquet, which by now has become a traditional part of the AIEE Winter General Meeting, has many facets of interest to all members of the electrical engineering profession including the recent graduate as well as the experienced professional. There will be opportunities to renew friendships with your colleagues in the profession as well as to become acquainted with some of the leaders in electrical engineering. At the banquet you will hear remarks by the men being honored, and in addition, Dr. Ernst Weber, President of the Polytechnic Institute of Brooklyn, widely known for his scientific and engineering accomplishments, will deliver the principal address.

The banquet will be held at the Hotel Governor Clinton, 31st Street and 7th Avenue, New York City. The dinner itself will commence at 7:00 P.M. although it will be preceded by a cocktail hour. All electrical engineers, whether members of Eta Kappa Nu or not, are invited to this important event. Ladies are also cordially invited.

Reservations for the banquet should be mailed to William Levidow, Room 3B-154, Bell Telephone Laboratories, Inc., Whippany, New Jersey. For reservations postmarked on or before January 27, 1960 the cost of the banquet will be \$6.50 per person. For reservations postmarked later, or those made at AIEE Registration Headquarters during the Winter General Meeting, the cost will be \$7.50 per person. Checks or money orders should be made payable to the New York Alumni Chapter, Eta Kappa Nu. Attendance at the banquet is limited and reservations will be accepted in the order received up to the limit of space available.

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