



Winter General Meeting

January 29-February 3, 1961

STATLER-HILTON AND GOVERNOR CLINTON HOTELS

NEW YORK, N. Y.

SCHEDULE OF LOCALLY SPONSORED EVENTS

Sunday—January 29

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

Monday—January 30

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

Tuesday—January 31

- 7:30 AM—Canadian Breakfast
- 8:30 AM—James Forrester Research Center Trip
- 9:00 AM—Radio City Music Hall Trip
- 9:00 AM—Ladies' Washington Irving Home Trip
- 12:15 PM—Con Edison's Indian Point Nuclear Electric Generating Station Trip
- 1:30 PM—N.Y.C. Transit Authority Trip
- 6:30 PM—Ladies' Dinner

Wednesday—February 1

- 9:00 AM—Ladies' United Nations Trip
- 9:30 AM—United Nations General Assembly Bldg. Trip
- 10:00 AM—I.B.M. Corp. Trip
- 12:00 Noon—Sikorsky Aircraft Trip
- 12:15 PM—Bell Telephone Labs. Trip
- 1:00 PM—Ford Motor Co. Trip
- 1:15 PM—Con Edison's Astoria Generating Station Trip
- 3:00 PM—N. Y. Times Trip

Thursday—February 2

- 8:00 AM—Brookhaven National Laboratory Trip
- 9:00 AM—Ladies' Breakfast at B. Altman & Co.
- 9:45 AM—Con Edison's Astoria Generating Station Trip
- 10:00 AM—Rambusch Decorating Co. Trip
- 12:00 PM—Anaconda W. & C. Co. Trip
- 12:30 PM—Ladies' Luncheon and Fashion Show
- 1:15 PM—Cunard Line Queen Mary Trip
- 1:30 PM—Holophane Light and Vision Institute
- 2:00 PM—I.B.M. Corp. Trip
- 3:00 PM—N. Y. Times Trip

Friday—February 3 No Trips Scheduled

The AIEE Winter General Meeting to be held at the Statler-Hilton (Meeting Headquarters) and the Governor Clinton Hotels, New York, N. Y., January 29—February 3, 1961 will feature one of the largest technical programs in the history of the Institute. 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 General Session.

GENERAL SESSION: During this session the Institute's Edison Medal will be awarded to a Past President of AIEE and retired Chief Engineer, American Telephone and Telegraph Co., Dr. Harold F. Osborne, for his contribution to the art of telecommunication and his leadership and vision in extending its application; for his achievements in the coordination of international communication and in national and international standardization; and for his advancement of the engineering profession. A feature of the meeting will be the first presentation of the Mervin J. Kelly Award to the retired Chairman of the Board, Bell Telephone Laboratories, Inc. Dr. Mervin J. Kelly for outstanding contributions in the technology of telecommunication; as a distinguished organizer and an eminent leader. The AIEE Prize Paper Awards will also be presented at this time. President C. H. Linder will open the session with his report to the Members of the Institute. The 1961 Nominating Committee will also report.

The Communication Switching Systems Committee is sponsoring several unusual sessions at the Winter General meeting. On Friday the first American disclosures will be made on the British Electronic Switching Development. Representatives of the British Post Office and the manufacturer will describe the plans and progress of the Joint Electronic Research Committee for introducing Electronic Telephone Switching in Great Britain.

On Thursday the Communication Switching Systems Committee is sponsoring a trial of a "reporter" session on the subject of Automatic Toll Ticketing Techniques. Since this is a vital subject in Direct Distance Dialing and since the method of presentation is unusual, this session should be very interesting.

Also on Friday the Communication Switching Systems Committee will present a series of papers on the Electronic P.A.B.X. This is another first in Electronic Switching.

REGISTRATION: The registration fee for members will be \$6.00 and for nonmembers \$10.00. There will be a \$2.00 fee for each lady guest. No fees 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 29, from 4 p.m. to 6 p.m. in the Ballroom of the Statler-Hilton. 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.

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

Because of the crowded conditions in New York hotels, it is suggested that your reservation be made for arrival on Sunday, January 29, 1961, thereby avoiding delays in registration or unavailability of rooms in the early morning of subsequent days.

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

STATLER-HILTON HOTEL (meeting headquarters) — 7th Avenue, 32nd to 33rd Streets	
Single Room	\$ 8.00 to \$15.00
Double Room	11.00 to 20.00
Twin Bedroom	15.00 to 25.00

HOTEL GOVERNOR CLINTON (also used for meetings) — 7th Avenue, 31st Street	
Single Room	\$ 8.00 to \$14.00
Double Room	10.00 to 16.00
Twin Bedroom	12.00 to 18.00

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

SMOKER: One of the social highlights of the Winter General Meeting will be the Smoker on Tuesday evening, January 31, in the Grand Ballroom of the Hotel Statler-Hilton. Here will be found good food, good fellowship and top quality entertainment.

It is strongly recommended that requests for tickets be sent in at an early date. The price of the tickets 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."

AIEE WINTER GENERAL MEETING

DINNER-DANCE: The Dinner-Dance will be held Thursday evening, February 2, in the Hotel Statler-Hilton. Dress will be formal. Write soon for reservations for tables for 10. The price this year is \$14.00 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.

Anaconda Wire and Cable Company, Hastings on Hudson, N. Y. (Thursday 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 overvoltage 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, N. Y. (Wednesday afternoon and Thursday morning). Astoria station, newest and most efficient of Con Edison's 12 steam electric generating plants, is on the tidal East River in the Borough of Queens.

Ground was broken for the station in May 1951. 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 335mw. Construction of a fourth unit of 357 mw is scheduled for completion in the spring of 1961. A fifth unit, twin to Unit 4, is scheduled for operation in 1962.

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



Consolidated Edison's Nuclear Generating Station

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 2,000,000-ton capacity coal storage yard.

Adults only. No cameras permitted.

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

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

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

State Citizenship.

Bus leaves Statler-Hilton at 8:00 A.M.; returns at 5:30 P.M. Advance Reservation \$6.00.

Ford Motor Company, Mahwah, N. J. (Wednesday 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 1-story building, 2,115 feet long and 792 feet wide, provides 1,700,000 square feet of manufacturing space and a 10,800 square-foot quality control laboratory. Fronting the plant structure is a 2-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 8-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 2-shift 16-hour day.

Adults only. No cameras are permitted.

The Holophane Light and Vision Institute, New York, N. Y. (Thursday 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 levels are determined, how colors for working spaces should be chosen, how light is controlled by optical constructions — reflectors, refractors. Visitors will be able to see the effects of shadow, diffusion,

Continued on 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.

Monday, January 30

10:00 a.m.—Modern Circuit Techniques I

- CP.* The Dynamic Behavior of Negative Resistance Devices. C. O. Harbourt, Syracuse University.
- CP.* Large-Signal Circuit Theory for Negative-Resistance Diodes, In Particular Tunnel Diodes. M. Schuller, W. W. Gaertner; CBS Labs.
- CP.* Tunnel Diodes With Ultra-Linear Characteristics. J. J. Tiemann, General Electric Research Lab.
- CP.* Increasing the Q of A Filter Through the Use of Tunnel Diodes. D. Sabih, Hughes Aircraft Co.
- CP.* Tunnel Diode Modulators. B. M. Rabinovici, J. Klapper, RCA.

10:00 a.m.—Electric Heating

- CP61-200. Reading Electric Heating Paper in Russian. B. O. Buckland, General Electric Co.
- CP61-201. Leakage Currents in Appliance Heaters. A. F. Boice, General Electric Co.
- CP.* Applications of Variable Impedance Devices to Induction Heating. E. F. McBrien, R. A. Sommer; Ohio Crankshaft Co.
- 61-30 Heat Transfer Aspects of Electric Heating. B. Rolsma, General Electric Co.
- CP.* High Temperature Radiant Sources. J. P. Frier, General Electric Co.

10:00 a.m.—Industrial Power Rectifiers

- CP.* Ignitrons for Large Motor Drives. C. C. Herskind, R. V. Pohl; General Electric Co.
- CP.* Progress in High Power Rectifier Technology — II. P. J. Collieran, A. Hansen, Jr., E. C. Rettig; General Electric Co.
- 61-109 Design of Ignitron Firing Circuits Utilizing Controlled Rectifiers. D. C. Graham, Westinghouse Electric Corp.
- CP.* Semiconductor Rectifiers in Motor Drives. S. J. Roumanis, General Electric Co.

10:00 a.m.—Radio Communication Systems

10:00 a.m.—Telegraph Systems

- CP.* Recent Advances in Printing Telegraph Apparatus. W. Y. Lang, Bell Telephone Labs.
- 61-60 Telegraph Distortion and Distortion Measuring. H. H. I. Wusteney, Siemens & Halske.
- CP.* Advancements in the Facsimile Art During 1960. W. H. Bliss, RCA Labs.

10:00 a.m.—Generator Excitation Systems

- CP.* Static Excitation System for Electric Utility Steam Turbine Generators. L. M. Domeratzky, A. S. Rubenstein, M. Temoshok; General Electric Co.
- CP.* Design and Test of a Static Excitation System for Electric Utility Steam Turbine Generators. L. J. Lane, D. F. Rodgers, P. A. Vance; General Electric Co.
- 61-8 Principles of a Simulator for Studying Synchronous Machine Voltage Regulator Problems. C. Adamson, Manchester College of Science and Technology; A. M. El-Serafi, Cairo University.
- 61-9 Amplidyne Main Exciter Excitation System. L. M. Harvey, A. S. Rubenstein, M. Temoshok, General Electric Co.
- 61-137 Proposed Excitation System Definitions for Synchronous Machines. AIEE Excitation Sub. of the Power Generation Com., M. Temoshok, Chairman.

10:00 a.m.—Protective Devices

- 61-44 Field Tests of Lightning Arrester Voltage and Current Caused by Switching a 220-KV Line. M. C. Galiyano, V. C. Detty, Pennsylvania Power & Light Co.; A. R. Hileman, C. L. Wagner, Westinghouse Electric Corp.
- 61-46 A Mathematical Study of the Thermal Behavior of Silicon Carbide for Valve Blocks. N. E. Bolen, Ohio Brass Co.
- CP.* Rigorous Arrester Development Testing. F. V. Cunningham, A. C. Westrom, Hubbard-Kearney Electrical Research Lab.
- CP.* A Graphical Solution of the Separation Distance Between Arrester and Protected Equipment. Working Group of the Lightning Protective Devices Sub., A. R. Hileman, Chairman.

10:00 a.m.—Computing Devices

10:00 a.m.—Computing Devices



Sikorsky Helicopter at Work

AIEE WINTER GENERAL MEETING

10:00 a.m.—Management

- CP.* The Measurement of Engineering Effort. F. Ames, General Electric Co.
- CP.* Managing Research and Development. T. H. Hollomon, General Electric Co.
- CP.* Planning, Scheduling, and Measurement of Engineering Development. R. H. Buescher, Litton Industries.
- CP.* Use of the Business Simulator in Management Training. R. H. Davis, Westinghouse Electric Corp.

10:00 a.m.—Cathodic Protection

2:00 p.m.—General Session

Address: President C. H. Linder.

Report of the Nominating Committee by the Chairman.

Presentation of the Institute Prize Paper Awards by the President and L. F. Kennedy, Chairman, Prize Awards Committee.

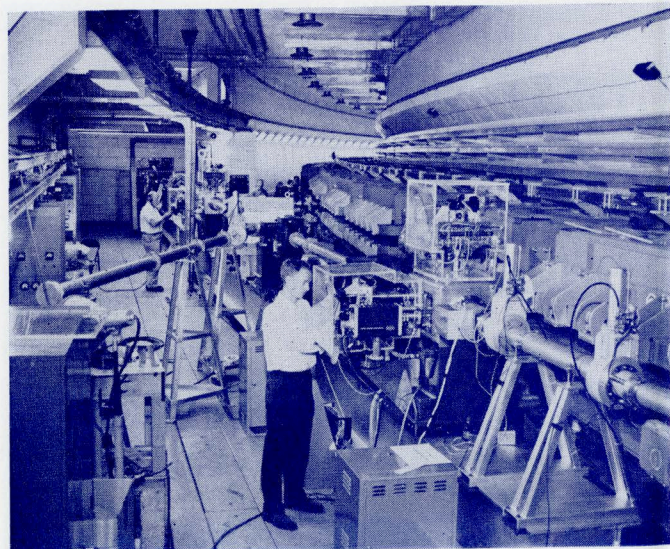
Presentation of the First Award of the Mervin J. Kelly Award to Dr. Mervin J. Kelly, Retired Chairman of the Board, Bell Telephone Laboratories, Inc. by the President and Dr. S. Reid Warren, Jr., Chairman, Recognition Awards Committee.

Presentation of the Edison Medal to Past President H. S. Osborne, Retired Chief Engineer, American Telephone and Telegraph Co., by the President and C. M. Mapes, Chairman of the Edison Medal Committee.

Tuesday, January 31

9:00 a.m.—Electrostatic Processes I

- 61-90 Movement of Air in the Electric Wind of the Corona Discharge. M. Robinson, Research-Cottrell, Inc.
- CP.* High Voltage Generation in Space: The Parametric Electrostatic Machine. A. S. Denholm, A. J. Gale, Goodrich-High Voltage Astronautics, Inc.; J. G. Trump, Massachusetts Inst. of Technology.



Brookhaven National Laboratory

- 61-91 Pulsed Discharges Preceding Sparkover at Low Voltage Gradients. G. W. Penney, Carnegie Inst. of Technology; S. Craig, General Electric Co.

9:30 a.m.—Section Representatives

9:00 a.m.—Safety

9:00 a.m.—Discrete Data Control Systems

- CP.* Theory of Pulse-Data Systems Applied to an Input Self-Adaptive Pulse Data System. C. K. Taft, Warner and Swasey Co.
- 61-76 Optimum Control of Nonlinear Discrete-Data Systems. J. T. II Tou, B. Vadhanaphuti, Purdue University.
- 60-803 The Use of Z Transforms for a Digital Simulation of a Continuous Transfer Function. P. A. Stephens, Jr., Litton Industries.
- 61-77 Time Domain Design of Sampled-Data Control Systems. M. P. II Pastel, G. J. Thaler, U. S. Naval Postgraduate School (Re-presented for Discussion only)
- CP.* Panel Discussion on the Status and Future Direction of Sampled Data Control System. J. R. Ragazzini; R. E. Kalman RIAS.

9:00 a.m.—High Speed Telegraphy

- CP.* Selective Control for Conventional Teletypewriters and High Speed Data Systems. C. J. Colombo, Canadian Pacific Railway Co.
- 61-29 A Proposed Electronic Method for High-Speed Teleprinters. I N. N. Biswas, University of Roorkee.
- CP.* SC 3000 High-Speed Communication Printer. K. M. C. I geld, Stromberg-Carlson.
- CP61-45. High Speed Communication of Graphic Intelligence with Hard Copy Readout. J. R. Shonnard, Westrex Corp.

9:00 a.m.—Radio Communications

- CP.* Standardization of Mobile Telephone Service Signaling. W. J. Dobias, General Electric Co.
- CP61-122. Selectivity and the Performance of a Mobile Receiver. R. T. Myers, Jr., General Electric Co.
- CP61-176. A New Concept in Point-To-Point Radio Systems for Light-Density Multichannel Service. E. E. Nolan, A. T. Ross, W. C. Fisher, H. B. Sutton; Farinon Electric Co.
- 61-61 The Theory of Single-Ring Circular Antenna Array. C. E. I Hickman, H. P. Neff, J. D. Tillman; University of Tennessee.
- 61-47 Antenna Matching Unit for H-F Vehicular Whip. J. R. I Gruber, G. J. Seward, Avco Corp. (Re-presented for Discussion only)

9:00 a.m.—Integrating and Digital Instruments

- CP61-62. The Extended Scale Demand Register. D. M. Ham, F. W. I Truesdell; General Electric Co.
- CP.* The Design of a Repulsion Magnetic Bearing for Watthour Meters. D. F. Wright, Westinghouse Electric Corp.
- CP.* A General Description of Digital Voltmeters. C. Stansbury, National Bureau of Standards.
- 61-189 Design of Resistive Temperature Compensation by Single and I Multiple Thermistor Networks. S. Farhi, Harowe Precision, Inc.; S. Groves, The Bendix Corp.

9:00 a.m.—Insulated Conductors

TECHNICAL PROGRAM

10 a.m.—Central Control Rooms for Power Station

- CP61-215. A Central Control Room for Dickerson Units 1 and 2. C. W. Schmitz, Jr., C. S. Bilisoly, Potomac Electric Power Co.
- CP61-216. Present Design Practice of Centralized Control Rooms in Pacific Gas & Electric Company's Power Plants. E. Nilsson and G. A. Abbott, Pacific Gas & Electric Co.
- CP.* Control Room Features at Saint Clair Power Plant. R. C. Austin, J. L. Voyles.

9:00 a.m.—Switchgear

- CP61-205. Proposed Standard for Molded Case Air Circuit Breakers. W.G. on Molded Case Air Circuit Breakers of AIEE Switchgear Committee, L. H. Romzick, Chairman.
- CP61-130. Interrupting Ratings for Low Voltage Circuit Breakers on a Symmetrical Basis. NEMA Joint Sections Committee on Air Circuit Breakers, J. D. Wood, Chairman.
- CP61-179. 5 Kv Metal Clad Switchgear — 1961. W. A. Carter, A. Conangla, J. E. Nugent; I-T-E Circuit Breaker Co.
- 61-131. A New Current-Limiting Motor-Starter Fuse. F. L. Cameron, Westinghouse Electric Corp.
- CP61-177. Proposed Revision of American Standard Low Voltage Air Circuit Breakers C37.13, C37.14. AIEE W.G. on Revision of Present Standards for Low Voltage Air Circuit Breakers of the Switchgear Committee, C. E. Asbury, Chairman.

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

- 61-23 Proposed Method of Loss Measurement for Semiconductor I Rectifier Equipments. I. K. Dortort, I-T-E Circuit Breaker Co.
- 61-206. Characteristics of Rectifier Cells. E. J. Diebold, International Rectifier Corp.
- CP61-24. Fatigue Free Silicon Device Structure. W. B. Green, Westinghouse Electric Corp.
- CP.* Semiconductor Rectifiers for Electrical Railroads. E. J. Diebold, International Rectifier Corp.
- 61-89 Commutation and Destructive Oscillations in Diode Circuits. I I. Somos, General Electric Co. (Re-presented for Discussion only)

9:00 a.m.—Electrical Insulation

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

- 61-96 Transistor Amplifier Stages with Prescribed Gain and Static and Dynamic Sensitivity. J. H. Mulligan, Jr., S. S. Shamis; New York University.
- CP61-97. Amplitude Distortion in Transistor Feedback Amplifiers. J. H. Mulligan, Jr., New York University.
- CP.* Improved AGC Performance for Transistor IF Amplifiers Using a Cascade Configuration. J. F. Perkins, Jr.
- 61-25 On the Elimination of Null in Modulating and Demodulating I Devices. S. Jones, Hughes Aircraft Co.
- CP.* Transfluxor Frequency Memory. A. G. Samusenko, RCA Labs.
- 61-98 Transistor Morse to Teleprinter Code Converter. J. F. Cuniff, I C. E. Theall, Jr.; C.G.S. Labs., Inc. (Re-presented for Discussion only)

9 a.m.—Symposium on Electrostatography (Recording of Information by Means of Electric Charge Patterns)

- CP.* Signal Recording Techniques in Xerography. C. R. Mayo, Haloid Xerox Inc.
- CP.* Technique of Digital Electrostatic Recording. P. A. Stowell, Burroughs Corp.
- CP.* The Videograph Printing Process. H. A. Dahl, G. H. Jenkinson; A. B. Dick Co.
- CP.* Thermoplastic Recording. W. E. Glenn, General Electric Research Laboratory.

2:00 p.m.—Section Representatives

2:00 p.m.—Land Transportation

- CP61-190. Contact Wire Wear. K. H. Gordon, Pennsylvania Railroad Co.
- CP61-208. The Economic Justification of Railway Electrification in the United States. H. C. Cross, Westinghouse Electric International Co.
- CP.* Electrical Control Equipment for Disneyland Monorail Trains. J. J. Stamm, Westinghouse Electric Corp.

2:00 p.m.—Control Components and Specifications

- CP.* The Chairman's Report of 1960. D. D. Pidhayny, Space Technology Labs., Inc.
- 61-78 A Set of Standard Specifications for Linear Automatic Control Systems. J. E. Gibson, Z. V. Rekasius, E. S. McVey, II R. Sridhar, C. D. Leedham; Purdue University.
- CP.* Proposed DC Tachometer Specification by NEMA. E. Luoma, Reliance Electric and Mfg. Co.
- CP.* Survey of AC Control Motors. J. O'Donohue, Lockheed Electronics.
- CP.* A Control Components Application of the Stability Factor Method. A. G. Fonda, Bell Aerospace.
- CP.* Gyro Progress Report by Aerospace Industries Association. C. Janoff, Bell Aerospace.
- CP61-85. Servo Motor Characteristics by Impulse Testing. H. R. Weed, Ohio State University.
- CP.* 1960 Activities of the Performance Measurements Subcommittee. J. R. Shull, AiResearch Mfg. Co. of Arizona.



International Business Machines Corp.

2:00 p.m.—Allied Developments in Broadcasting

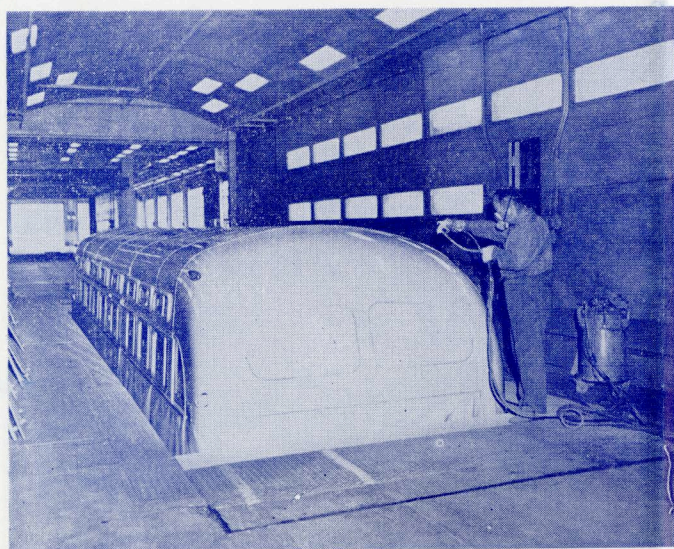
- CP.* Microwave Radio Relay of High Definition Video Information. R. Zamer, V. E. Love, Raytheon Corp.
- CP61-181. Noise and Intermodulation Problems in Multi-Channel Closed Circuit Television Systems. C. A. Collins, A. D. Williams; Bell Telephone Labs.
- CP.* FM Stereo Broadcast Field Tests. A. P. Walker, National Association of Broadcasters.
- CP.* Experience With Two-Way Radio Talk Back for Medical Education. A. P. Fredette, Albany Medical College.

2:00 p.m.—Indicating Instruments and Calibration

- 61-63 An Analysis of Errors in the Calibration of Electrical Instruments. F. L. Hermach, National Bureau of Standards.
- CP61-64. An A-C Ammeter Calibrator Using Tapped Winding Current Transformers. R. F. Estoppey, Daystrom, Inc.
- 61-65 Taut Band Suspension Switchboard Instruments. J. C. Nycz, I. V. S. Thomander, R. C. Mac Indoe, D. F. Roerty; Westinghouse Electric Corp.
- 61-66 A Simplified Design of Long-Scale Ammeters and Voltmeters. III C. F. Van Bennekom, R. M. Rowell; General Electric Co.

2:00 p.m.—Cross Compound Generator Starting

- 61-94 Cross-Compound Turbine-Generator Turning Gear Synchronization Study: I — Analytical Analysis Using Automatic Digital Computation. C. M. Lane, T. H. Kuo; Westinghouse Electric Corp.
- 61-95 Cross-Compound Turbine-Generator Turning Gear Synchronization Study: II — Field Test Investigation. C. M. Lane, Westinghouse Electric Corp. P. Barth; Public Service Electric & Gas Co.
- CP.* Recent Developments in Starting Cross Compound Turbine Generator Units. L. R. Stuve, P. E. Benner, General Electric Co.
- CP.* An Approach to Synchronizing Cross Compound Generators on Turning Gear. J. D. Davidson, Westinghouse Electric Corp.
- 60-852 A New Frequency Converter Excitation ("FCE") System for III A.C. Generators. K. M. Sparrow, Lima Electric Motor Co. (Re-presented for Discussion only)



N. Y. C. Transit Authority Paint Shop
Roland Harvey Photo

- 60-851 Performance of a New Static-Magnetic Exciter and Vol Regulator for Round Rotor Marine Steam Turbine Generators. D.F. Talcott, P. M. Tabor, C. Concordia; General Electric Co. (Re-presented for Discussion only)

2:00 p.m.—System Controls and Economic Dispatch

- 60-846 Methods of Controlling Generation on Interconnected Power Systems. N. Cohn, Leeds & Northrup Co. (Re-presented for Discussion only)
- CP61-48. Load Control Response Tests of Unit R2 at Grand Coulee. M. D. Liechty, Leeds & Northrup Co.
- CP61-49. Economic Dispatch With Phase Angles as Controlling Variables. H. G. Hedges, Michigan State University.
- CP61-50. Spinning Reserve on a Large Interconnected System. C. K. Duff, The Hydro-Electric Power Commission of Ontario.

2:00 p.m.—Transformers

- 61-18 Transformer Invented 75 Years Ago. A. A. Halacsy, Federal Pacific Electric Co.; G. H. von Fuchs, Doble Engineering Co.
- CP61-28. A Short History of Development of Power Transformers by One Manufacturer. R. L. Brown, Westinghouse Electric Corp.
- 61-58 The Current Comparator and Its Application to the Absolute Calibration of Current Transformers. N. L. Kusters and W. J. M. Moore, National Research Council.
- 61-13 Tertiary Windings in Autotransformers. O. T. Farry, Wagner Electric Corp.
- 61-27 Suggestions for Improving the Accuracy of Transformer Noise Tests in the Field. AIEE W.G. on Technical Investigations of Subcommittee on Audible Sound of Transformers Committee, M. W. Schulz, Jr., Chairman.

2:00 p.m.—Rectifiers in Electro-chemical Processes

- 61-20 An Investigation of the Transient Behavior of an Aluminum Pot-Line Installation. A. Greenwood, W. C. Kotheimer, General Electric Co.; C. A. Langlois, Reynolds Metals Co.
- CP.* Committee Report on Electrical Characteristics of Electro-chemical Cell Lines. C. S. Hague, Westinghouse Electric Corp.; A. E. Marshall, Monsanto Chemical Co.; R. P. Stratford, General Electric Co.
- 61-67 Grounding of D-C Structures and Enclosures. D. C. Hoffmann, II General Electric Co.
- CP.* Preliminary Report on Survey of Safety Procedures on the Application and Maintenance of Industrial Power Rectifiers. P. Comulkiewicz, Aluminum Co. of America.

2:00 p.m.—Electrical Insulation

2:00 p.m.—Industry & Safety

- CP.* Safety Considerations in Designing Data Processing Equipment. B. L. Stone, IBM Corp.
- CP61-108. Electrical Engineering Standards for Industrial & Commercial Power Systems. J. W. St. Andre, Kaiser Aluminum & Chemical Corp.
- CP61-123. Guide for the Installation in Buildings of Wiring and Equipment Over 600 Volts. An AIEE Preliminary Report Prepared by the Task Force on Medium Voltage Systems of the Industrial & Commercial Power Systems Committee, D. T. Michael, Chairman.
- CP.* Electrical Safety at Gary Steel Works. J. T. Seaman, U. S. Steel Corp.

9:00 p.m.—Electrostatic Processes II

- 61-92 The Determination and Simulation of the Equivalent Circuits of Electrostatic Precipitators. J. B. Thomas, Princeton University; J. W. Drenning, H. T. Williams, Koppers Co.
- CP.* Prediction of Fly Ash Precipitator Efficiency. R. Ramsdell, Consolidated Edison Co. of New York, Inc.
- CP61-184. Contact Potentials and the Adhesion of Dust. G. W. Penney, E. H. Klingler; Carnegie Inst. of Technology.
- 61-93 The Charging of Non-Spherical Particles in a Corona Discharge. P. L. Smith, G. W. Penney; Carnegie Inst. of Technology. (Re-presented for Discussion only)

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

- CP.* Threshold Logic and Tunnel Diode Applications. T. L. Francis, L. D. Wald; Texas Instruments.
- CP.* A Logic Device Utilizing Thin Ferromagnetic Films. R. E. Morley, Lab. for Electronics, Inc.
- CP.* Thin Film-Tunnel Diode Logical Devices. T. A. Smay, A. V. Pohm; Iowa State University of Science and Technology.
- CP.* Application of Transformer Logic Circuitry. D. J. Hinkein, IBM Corp.
- 61-1 A Low Level Linear Rundown Circuit for Pulse Height to Pulse Width Conversion. D. L. Endsley, W. W. Grannemann, T. Summers; University of New Mexico.

2:00 p.m.—Data Communications Theory

- 61-101 The Design of an "Error-Free" Data Transmission System for Telephone Circuits. B. Reiffen, W. G. Schmidt, H. L. Yudkin; Massachusetts Inst. of Technology.
- CP.* An Appraisal of "Error Free" Communication Methods. K. Morgan, J. Metzner, New York University.
- 61-102. Minimization of Error in Systems with Random Connections. J. B. Thomas, Princeton University; E. Wong, IBM Corp.
- CP.* Computer Simulation of the Use of Group Codes with Retransmission on a Gilbert Burst Channel. W. R. Cowell, H. O. Burton; Bell Telephone Labs.

Wednesday, February 1

9:00 a.m.—Industrial Control

9:00 a.m.—Land Transportation

- CP.* A Fresh Approach to Diesel Electric Locomotive Design. J. C. Aydelott, General Electric Co.
- CP.* Unique Features of 2500-hp Diesel-Electric Locomotive. J. C. Aydelott, General Electric Co.
- CP.* Senate Subway System. W. L. Rubel, Architect of the Capitol; W. H. Watson, R. E. Stillwagon, Westinghouse Electric Corp.

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

- CP61-41. Safety Aspects of Emergency Power Systems. C. F. Willott, E. J. Dubois; Automatic Switch Co.
- CP61-156. Recent Progress in Safety and Service Continuity in Molded Case Circuit Breakers and Enclosed Switches. J. E. Bayles, R. R. McGee; General Electric Co.
- CP.* Designing Maximum Safety into Metal-Clad Switchgear. W. R. Axon, Federal Pacific Electric Co.
- 61-42. A Case for Safety Grounding of a 4800 Volt System. R. W. Sittner, General Electric Co.; H. J. Donnelly, New York Telephone Co.

9:00 a.m.—Non-Linear Control Systems I

- 61-114 Determining the Response of Non-Linear Systems to Arbitrary Inputs. R. McFee, Syracuse University.
- 61-79 Optimum Nonlinear Bang-Bang Control Systems with Complete Roots Part II: Analytical Studies. P. Chandaket, Royal Thai Navy; E. C. Deland, The Rand Corp.; C. T. Leondes, University of California.
- CP61-80. Analysis of a Certain Class of Higher-Order Non-Linear Control Systems. Mrs. C. Lakshmi-Rai, Indian Inst. of Science.
- 60-1020 Problems of Asymptotic Behavior and Stability. L. Cesari, II University of Michigan. (Re-presented for Discussion only)
- CP.* Critique of Papers. K. Chen, Westinghouse Electric Corp.; R. E. Kuba, Power Equipment Co.

9:00 a.m.—Chemical Processes and Refining

- CP.* Direct Burial Cables versus Conduit Systems in Chemical Plants. P. T. Carmack, Union Carbide International Co.
- CP61-169. An Interlocked Armor Cable Installation in a Class I, Group D Division II Area. W. E. Burpee, Badger Mfg. Co.; S. P. Axe, The Atlantic Refining Co.
- CP61-31. Aluminum Conduit Use in the Hydrocarbon & Chemical Process Industries. H. Esch, R. P. Brown; Kaiser Aluminum & Chemical Corp.
- CP.* The X-ray Gauge as an Analytical Sensor in the Chemical Industry. H. N. Hickok, General Electric Co.

9:00 a.m.—Communication in Biological Systems

- CP.* Echolocation by Bats. D. R. Griffin, Harvard University; J. J. G. McCue, Massachusetts Inst. of Technology.
- CP.* The Detection and Evasion of Bats by Moths. K. D. Roeder, Tufts University.
- CP.* Event Correlation Analysis — A Method for Improving the Significance of Noisy Multiple Channel Bioelectric Signals. B. Saltzberg, Bisset-Berman Corp.
- CP.* Adjustment of Living Systems to Information Input Overload. J. G. Miller, University of Michigan.
- 61-170 An Error Correction Code for Quaternary Data Transmission. I E. H. Scherer, Collins Radio Co. (Re-presented for Discussion only)



Rambusch Decorating Co.
Fred English Photographs

AIEE WINTER GENERAL MEETING

9:00 a.m.—Telemetering

- CP.* The Language and Elements of Digital Telemetering. W. T. Wynne, Leeds & Northrup Co.
- CP61-16. Telemetering in the Crude Oil and Crude Oil Products Pipe Line Industry, Past, Present and Future. I. B. Cloessner, Humble Pipe Line Co.
- 61-17 Digital Telemetering Techniques. Miss A. Brothman, E. H. Brothman, R. D. Reiser; Industrial Process Engineers, Inc.
- CP.* Application of Digital Techniques in the Remote Control Monitoring of Petroleum Production. D. K. Puteneyer, Texas Instruments, Inc.

9:00 a.m.—Computer Application to Power System Engineering

- This Special Publication in \$2.50 per copy
- S109A Third Report on Survey of Electric Utility Applications of Digital Computers. AIEE Computer Application Sub. of the AIEE System Engineering Com., J. E. VanNess, Chairman, and AIEE Computer Systems Sub. of the AIEE Computing Devices Com., S. Levine, Chairman.
- 61-52 A Digital Approach to Power System Engineering — III (Digital Computer Program). M. B. Reed, G. B. Reed, Michigan State University; J. L. McKinley, H. K. Polk, R. V. Hugo, W. J. Martin, Public Service Co. of Colorado.
- 61-53 A Digital Approach to Power System Engineering — IV. The Node Transformation and N-Graph. M. B. Reed, G. B. Reed, Michigan State University; J. L. McKinley, H. K. Polk, W. J. Martin, Public Service Co. of Colorado.
- 61-54 A Logic for Identifying the Trees of a Graph. H. W. Hale, III, Iowa State University.

9:00 a.m.—Transformers

- 61-59 Detection of Incipient Faults in Transformers by Gas Analysis. P. S. Pugh, American Electric Power Service Corp.; H. H. Wagner, Pennsylvania Transformer Division — McGraw Edison Co.
- CP61-36. C₃F₈ As a Coolant and Dielectric in High Temperature Sealed Dry Type Transformers. B. F. Allen, G. F. Simmons; General Electric Co.
- CP61-39. Controlled Temperature and Insulation Protection in the Operation of Power Transformers. F. B. Grace, Westinghouse Electric Corp.



Holophane Light and Vision Institute

- CP.* Transformer Loadability and the Loading Guides. C. W. Hiers, J. H. Carpenter; General Electric Co.
- CP.* Utilization Transformers with 7620 volt Secondaries and Services for Underground Residential Distribution. H. G. Hally, Iowa Power & Light Co.

9:00 a.m.—Switchgear

- 61-132 Mechanical Effects Produced in Oil Circuit Breakers By High Power Fault Interruption. M. G. Mathers, P. Wildi; Federal Pacific Electric Co.
- CP61-133. The Trend to Single-Tank Oil Breakers for Subtransmission Voltages. E. B. Rietz, I-T-E Circuit Breaker Co.
- CP.* Lightning Surge Voltages in Substations Caused by Line Flashovers. C. F. Wagner, A. R. Hileman; Westinghouse Electric Corp.
- CP.* Electronics — A New Concept for Recloser Control. R. E. Riebs, N. J. Reis; Line Material Industries.

9:00 a.m.—Computing Devices

9:00 a.m.—Electrochemical Processes

9:00 a.m.—Magnetic Amplifiers

- 61-128 On the Process of Flux Reversal in Multiaperture Ferrite Cores. I. H. Rowe, DeHavilland Aircraft of Canada; G. R. Slemmon, University of Toronto.
- 61-129 Detailed Measurements of Slow Magnetization Processes in Tape Wound Cores. R. M. Brownell, R. C. Barker; Yale University.
- 60-874 Initiation of Flux Reversal in Magnetic Amplifier Cores. F. J. Friedlander, Purdue University; I. P. Leliakov, General Electric Co. (Re-presented for Discussion only)
- CP61-153. Crossed-Field Magnetic Modulators. A. J. DeMaria, United Aircraft Corp.

9:00 a.m.—Research Symposium: New Goals in Plasma Energy and in High Voltage Insulation

- CP.* Plasma Energy. A. E. Ruark, Atomic Energy Comm.; C. W. Little, "C" Stellerattor Assoc.
- CP.* High Voltage Insulation. J. J. Grebe, R. Boyer, R. C. Mildner; Dow Chemical Co.

2:00 p.m.—Industrial Control

2:00 p.m.—Land Transportation

- CP.* Electrical and Diesel Power on Russian Railroads. J. W. Horine, Pennsylvania Railroad Co.
- CP.* Symposium on British Electrification Conference. Panel consists of: S. V. Smith, Pennsylvania Railroad; H. H. Duehne, New York Central Railroad; K. A. Browne, Chesapeake & Ohio Railroad; J. Stair, Rosemont, Pa.

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

- CP61-209. Computers in Industrial Power System — Performance Analysis. R. S. Forbes, Jr., E. I. DuPont de Nemours & Co., Inc.
- CP.* Basic Considerations in the Proper Application of Low-Voltage Current-Limiting Fuses. P. J. Reifschneider, General Electric Co.
- CP.* Safety in the Application and Testing of Industrial Distribution Protective Devices. W. A. Weddendorf, Mutual Boiler & Machinery Insurance Co.

TECHNICAL PROGRAM

2:00 p.m.—Non-Linear Control Systems II

- CP61-81. Rate Diagram Method of Analysis of an On-Off Control System. H. Patapoff, Space Technology Labs., Inc.
- CP61-82. Mathematical Models for Time-Domain Design of Electro-Hydraulic Servomechanisms. P. K. C. Wang, IBM Corp.
- CP61-175. The Design of Time-Optimal Electro-hydraulic Servomechanisms. P. K. C. Wang, IBM Corp.
- 61-83 A Linear Switching Condition for Third Order Positive-Negative Feedback Control Systems. S. J. Garrett, Westinghouse Electric Corp. (Re-presented for Discussion only)
- CP.* Critique of Papers. K. Chen, Westinghouse Electric Corp.; R. E. Kuba, Power Equipment Co.

2:00 p.m.—Data Communication Theory

- CP.* Information Rate Analysis and Performance Prediction for an Operative Digital Data Link. R. D. Brandsberg, Remington Rand Univac.
- CP.* Reliable Data Transmission Through Noisy Media. C. M. Melas, IBM Corp.
- CP.* Further Studies in Error Detection Systems. G. J. McAllister, Bell Telephone Labs.
- CP.* Data Transmission Capacity and Reliability of Future Data Transmission Systems. R. Filipowsky, Collins Radio Co.

2:00 p.m.—Batteries

- CP.* The Silver Oxide-Cadmium Secondary Battery. P. L. Howard, Yardney Electric Corp.
- CP.* Sealed Silver-Zinc Cells. A. M. Chritzberg, The Electric Storage Battery Co.
- CP.* Sealed Nickel Cadmium Batteries. R. C. Shair, Gulton Industries, Inc.
- CP.* Maintenance of Storage Batteries and Chargers. P. B. Wickersham, Philadelphia Electric Co.
- CP.* Fuel Cells, Pounds, Cubic Feet and Dollars. E. Willihnganz, The Electric Autolite Co.

2:00 p.m.—Aircraft, Missile, Ordnance Telemetry

- CP.* A New Signal Conditioning System for Space Telemetry. D. B. Schneider, Neff Instruments Inc.
- CP.* A NEW Electronic-Mechanical Multiplexer. F. H. Gerring, Instrument Design Lab., Inc.
- CP.* The Design & Evaluation of a Magazine-Loaded Transistorized Instrumentation Magnetic Tape Recorder. K. W. Schoebel, R. L. Peshel; Precision Instrument Co.
- CP.* The EPSCO Data Processing System for Air Traffic Control. L. A. F. Rivas, EPSCO Inc.

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

- 61-51 Elimination Methods for Load-Flow Studies. J. E. Van Ness, III, Northwestern University; J. H. Griffin, General Motors Corp.
- 61-57 The Cost of Capital in Economic Studies. F. M. Heck, Jr., III, Potomac Edison Co.
- CP61-165 A Test of Direct Economic Dispatch of Real and Reactive Power In Network Analyzer Studies. F. W. Smith, Portland General Electric Co.
- 60-844 Incremental Cost of Water Power. S. Stage, Y. Larsson; III, South Sweden Power Co. (Re-presented for Discussion only)
- 61-1400 Operation of a Hydro-Thermal Electric System — A Multi-Stage Decision Process. J. Lindqvist, Swedish State Power Board.

2:00 p.m.—Switchgear

- 61-3 The Effect of Contact Synchronization on A-C Interruption. III, A. M. Howatson, The University of Sheffield.
- 61-134 20,000 Ampere Mechanical Switch. P. M. Newgard, Stanford III, Research Institute.
- CP61-135. Vacuum Power Switches: Five Years of Field Application and Testing. H. C. Ross, Jennings Radio Mfg. Corp.
- 61-136 An Investigation of the Breakdown Strength of Nitrogen at High Temperatures Using a Shock Tube. A. H. Sharbaugh, P. K. Watson, D. R. White, T. H. Lee, A. Greenwood; General Electric Co.

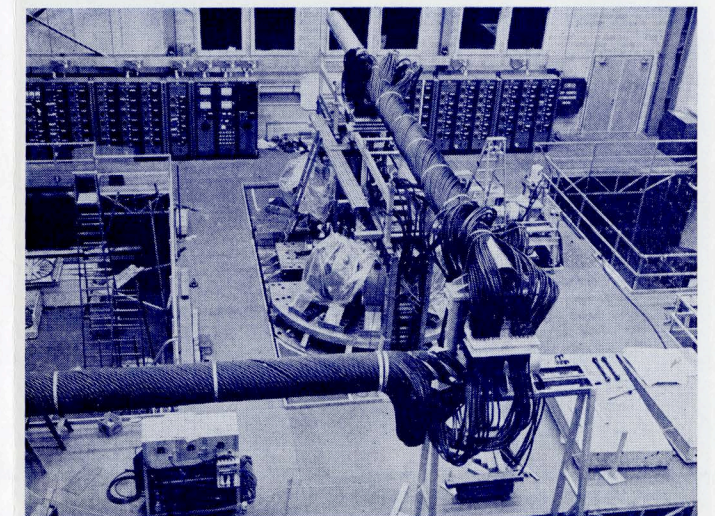
2:00 p.m.—Substations

- CP61-22. Dorchester 240,000 KVA Underground Substation in Downtown Montreal. P. L. Ward, L. D'Auteuil, J. Pauze, A. Gaudette; Quebec Hydro-Electric Commission.
- 61-155 650-KV Substations for Project EHV. P. A. Abetti, A. H. III, Powell, General Electric Co.; R. E. Larson, Aluminum Co. of America; M. D. Robinson, Stone & Webster Engineering Corp.
- CP61-19. Factors to Consider in the Selection of Substation Sites. W. A. Conklin, Consumers Power Co.

2:00 p.m.—Computing Devices

2:00 p.m.—Tube Techniques and New Tube Developments

- CP.* Operation and Applications of Getter-Ion Pumps. C. V. Larson, Varian Associates.
- CP.* Operating Characteristics of the Triode Ion Pump. W. M. Brubaker, Bell and Howell Research Center; A. R. Hamilton, Consolidated Vacuum Corp.
- CP.* Ni-Ti Technique of Sealing Ceramic Electron Tubes. G. R. Wisser, M. W. Hagadorn; Sylvania Electronic Tubes.
- CP.* Heater Cathode Leakage in Electron Tubes. R. J. Jaccodine, E. R. King; Bell Telephone Labs.
- CP.* The Influence of the Collector Mesh on the Basic Characteristics of Direct-View Storage Tubes. V. Le Gendre, Allen B. DuMont Labs.



Forrestal Laboratory of the Princeton-Penn Accelerator

AIEE WINTER GENERAL MEETING

- CP.* Self-Testing Thyratrons. W. A. Maijala, A. J. Humphrey; Reliance Electric and Engineering Co.
- CP.* A New Ruggedized "Instant-Heat" 175-MC Power Amplifier Tube for Mobile Applications. A. Dzik, RCA.

2:00 p.m.—Solid State Devices

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

7:30 p.m.—Space Communications

- CP61-110. Satellites Go Commercial — For Communications. H. E. Wepler, American Tel. & Tel. Co.
- CP.* TIROS II — Television Transmission System. J. Strother, RCA.
- CP.* Active Satellite Equipment for Communication Relays. L. Pollack, D. R. Campbell, ITT Labs.
- CP.* Communications With Lunar Spacecraft. R. D. Gloor, Space Technology Labs.

Thursday, February 2

9:00 a.m.—Graduate Education In Electrical Engineering

Sponsored by ASEE Electrical Engineering Division, IRE Professional Group on Education, and AIEE Education Committee.

Session I — Planned discussion of the objectives and characteristics of graduate education including appropriate criteria with respect to

- Faculty
- Admissions
- Programs of Study
- Residence Requirements
- Theses

9:00 a.m.—Land Transportation

- CP.* Epoxy Resins for Electrical Apparatus. I. H. Elbling, Westinghouse Research Labs.



Bell Telephone Laboratory's "Sibyl"

- CP61-43. Analog Simulation of Train Operation. R. C. Buck, General Railway Signal Co.

- CP.* Maintenance and Rehabilitation of Traction Electrical Equipment. D. E. Stafford, National Electric Coil Co.

9:00 a.m.—Domestic Appliances

- CP.* Matching Bimetal Elements to Snap-Action Switches. C. C. Perry, W. M. Chace Co. & Wayne State University.
- CP.* A New Electric Range Thermostat. S. C. Jordan, General Electric Co.
- CP.* Advanced Appliance Control Techniques. J. D. Harnden, Jr., General Electric Co.
- CP.* AIEE and Appliance Engineering — For What and For Whom. M. A. Fuller, Whirlpool Corp.

9:00 a.m.—Computers and Logic Devices

- CP61-213. A Study of a Generalized Model for Digital Computer Control of Blending Processes. G. E. Adams, General Electric Co.
- CP61-186. Accuracy In Process Computer Instrumentation Systems. W. M. Gaines, W. N. Patterson; General Electric Co.
- 61-73 II Plant Identification in the Presence of Disturbances and Application to Digital Adaptive Systems. P. Joseph, J. Lewis, J. Tou; Purdue University.

9:00 a.m.—Data Communication

- CP61-103. The Design of Data Transmission Systems. R. G. Enticknap, R. M. Lerner; Massachusetts Inst. of Technology.
- CP.* A Buffer Store for Data Transmission. W. A. Baker, F. E. Froelich, Bell Telephone Labs.
- CP.* Punched Card Transmission on Telegraph Switching Systems. R. Steeneck, Western Union Telegraph Co.
- CP.* Significance of Different Types of Delay Measurements in Digital Systems. D. L. Favin, Bell Telephone Labs.
- CP.* The Increasing Need for High Speed and Reliable Digital Communications. C. A. Strom, Jr., USAF.

9:00 a.m.—Wire Communications I

- CP61-111. A Completely Transistorized 600-Channel Multiplex System. D. W. Sparks, General Electric Co.
- 61-112 I Type T-12S-Tr Transistorized Short-Haul Carrier System. O. Ishihara, S. Fujita, Nippon Telegraph & Telephone Public Corp.; Y. Yamamoto, R. Murakami, Nippon Electric Co. Ltd.
- CP61-113. Pole-Zero Techniques Applied to Voice Frequency Telephone Lines. P. Fleming, Jr., Automatic Electric Labs., Inc.
- 60-1250 I A Speakerphone System for Large Conference Rooms. L. R. Huggler, The Bell Telephone Co. of Penna. (Re-presented for Discussion only)
- 61-164 I The Subscriber Loop Bridge Lifting Problem and Some Methods of Solution. L. Hochgraf, Bell Telephone Labs. (Re-presented for Discussion only)

9:00 a.m.—Special Instrumentation

- CP.* High Resolution Differential Tachometer with Suppressed Lower Speeds. V. B. Kwast, Daystrom Inc.
- CP61-106. Reliability of Industrial Pilot Lights as Indicating Devices. D. L. Pettit, Square D Co.
- 61-107 I A Pulse Position Modulator Type Magnetometer. S. Stricker, Israel Inst. of Technology; A. A. Wulkan.
- CP61-174. A Solid State Electronic Control System for Industrial Processes. H. H. Koppel, Bailey Meter Co.

TECHNICAL PROGRAM

9:00 a.m.—Transmission & Distribution

9:00 a.m.—Rotating Machinery

- 61-138 III Very Low Frequency High Potential Testing. B. V. Bhimani, General Electric Co.
- 61-139 III Resistance and Capacitance Measurement on High Voltage Insulation at Very Low Frequencies. B. V. Bhimani, General Electric Co.
- 61-140 III Evaluation of Generator Windings Based on In-Stator Single-Coil Power Factor Measurements. R. G. A. Brearley, D. A. Findlay, C. C. Louttit, Aluminum Company of Canada, Ltd.
- 61-141 III Investigation of Maintenance Tests for Generator-Insulation. C. A. Duke, L. E. Smith, C. A. Roberts; Tennessee Valley Authority; A. W. W. Cameron, The Hydro-Electric Power Commission of Ontario.
- CP61-163. A Simulated Service Test for Evaluation of High Voltage Turbine-Generator Insulation Systems. E. A. Boulter, H. N. Galpern, W. D. Bartlett; General Electric Co.

9:00 a.m.—Symposium — EHV Substations Panel Discussion on EHV Substations

9:00 a.m.—Super Power Tubes — I

- CP.* A Comparison of Approaches to the Generation of Very High Power at Microwave Frequencies. W. C. Brown, Raytheon Co.
- CP.* The TPOM As A Very High Power Broad Band Amplifier. P. Guenard, O. Doehler, Compagnie Générale de Télégraphie Sans Fil.
- CP.* On the Heating of Output Windows of High Power Microwave Tubes by Electron Bombardment. D. Preist, R. Talcott; Eitel-McCullough, Inc.
- CP.* Generation, Application, and Transmission of 20 KW C-W Power at X-Band. L. T. Zitelli, I. Maltzer; Varian Associates.
- CP.* Super-Power Ultra-High-Frequency Amplifier Tube Developments. A. C. Tunis, R. E. Reed; RCA.
- CP.* An Ultra-High-Frequency Super-Power-Amplifier Cavity. R. N. Clark, H. W. Duris, L. L. Koros; RCA.

9:00 a.m.—Nucleonics

9:00 a.m.—Magnetic Amplifiers

- 61-149 I Tunnel Diode D-C Power Converter. H. F. Storm, D. P. Shattuck; General Electric Co.
- CP61-150. A Magnetically Regulated D-C to D-C Converter Power Supply. G. Sager, Stromberg-Carlson Co.
- CP61-151. Achieving Maximum Power Utilization in Variable Output Transistor Oscillators. S. P. Jackson, Power Equipment Co.
- CP61-152. The Effect of the Series Connected Saturable Reactor with Finite Control Impedance on the Ripple Factor of a Single Phase Full Wave Bridge Rectifier. S. P. Jackson, Power Equipment Co.; H. R. Weed, Ohio State University.

9:00 a.m.—Basic Sciences

9:00 a.m.—Solid State Devices

- CP.* The Epitaxial Transistor — How It Is Made and What It Will Do. P. D. Lynch, M. J. Bentivegna, L. L. Lehner; Motorola Inc.
- CP.* Transistor Design Considerations for Nuclear Radiation Environments. J. Sluss, T. Miles, P. Bonk; Philco Corp.

- CP.* Advances in Silicon Power Transistors. T. New, Westinghouse Electric Corp.

- CP.* The Cadmium Sulphide Analog Transistor and Its Applications. R. W. Smith, RCA Labs.

- CP.* The Binistor — Its Characteristics and Its Applications. L. Kauffield, E. Jackson, Transitron Corp.

2:00 p.m.—Super Power Tubes — II

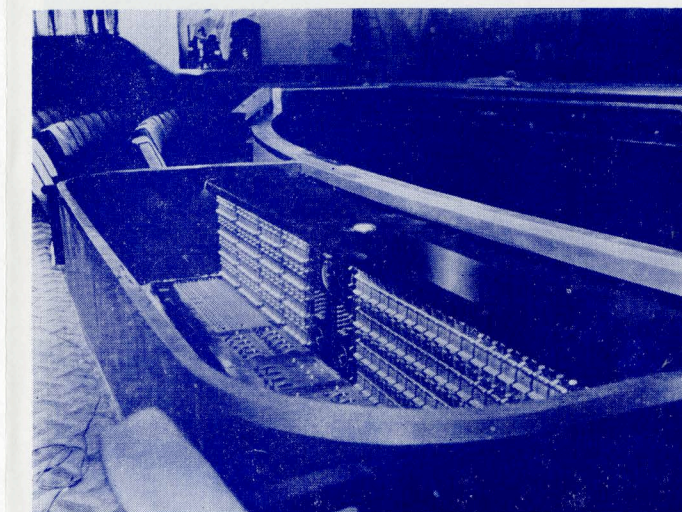
- CP.* Super Power Beam Tetrodes. W. P. Bennett, S. G. McNees, L. G. Sutton; RCA.
- CP.* High-Power Modulator Tubes and Circuits. W. E. Harbaugh, T. E. Yingst; RCA.
- CP61-172. Cooling of Anodes Subjected to Long Impulses of High Peak Power. P. W. Crapuchettes, Litton Industries.
- CP.* High-Power Triodes for Communications and Industry. C. V. Weden, Machlett Labs.
- CP.* A New 250-Kilowatt Short-Wave Broadcast Transmitter. N. W. Maphan, General Electric Co.
- CP.* The Radio Frequency Excitation of the Heavy Ion Linear Accelerator. F. Voelker, University of California.
- CP61-210. The RCA 6949 as a Self-Excited Cyclotron Oscillator. B. H. Smith, University of California.

2:00 p.m.—Man-Machine Aspects of Automatic Programming for Digital Control Systems.

- CP.* Automatic Programming for Real Time Systems. A. Siegel, Computronics, Inc.
- CP61-162. Man-Machine Aspects of Automatic Programming for Numerically Controlled Machine Tools. D. T. Ross, Massachusetts Inst. of Technology.
- CP61-74. Programming Techniques for New Electronic Switching Systems. S. H. Washburn, Bell Telephone Labs., Inc.
- CP61-185. Near Future Applicability of Problem-Oriented Languages to Programming for Real Time Control Systems. V. A. Vysotsky, Bell Telephone Labs., Inc.

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

- CP.* Heat Pump Compressor Performance. C. A. Duberly, General Electric Co.
- CP.* Analysis of Some Methods of Increasing the Heating-Cooling Ratio of Heat Pumps. S. F. Gilman, Carrier Air Conditioning Co.



Radio City Music Hall Control Board

AIEE WINTER GENERAL MEETING

- CP.* Multiple vs. Single Heat Pump Installations. R. D. Roley, General Electric Co.
- CP.* Developments in Thermoelectric Refrigeration. R. A. Whisnant, Westinghouse Electric Corp.

2:00 p.m.—Semiconductor Switching Devices and Applications

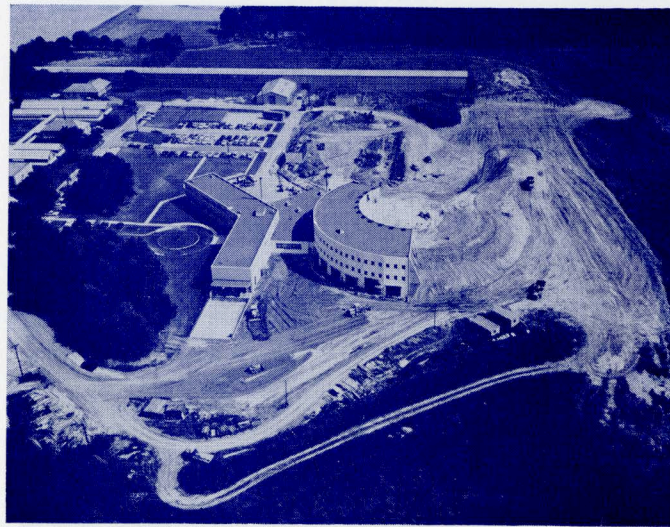
- 60-227 Switching Characteristics of Silicon Power Controlled Rectifiers — I Turn-On Action. I. Somos, General Electric Co. (Re-presented for Discussion only)
- CP.* Turn-Off Time Characterization and Measurement of Silicon Controlled Rectifiers. R. F. Dyer, G. K. Houghton; General Electric Co.
- CP.* A Semiconductor Variable Speed A-C Motor Drive. D. C. Griffith, R. M. Ulmer; Thompson Ramo Wooldridge.
- CP61-126. Surge Protection of Low Voltage D-C Circuits. P. Chowdhuri, L. J. Goldberg; General Electric Co.
- 61-127 Proposed Definitions for Semiconductor Switches. AIEE Rectifier Device Working Group of the Semiconductor Rectifiers Com., J. R. Thurell, Chairman.
- 61-182 Problems Encountered in Applying the Silicon Controlled Rectifier to Controlled Tungsten Lamp Loads. C. S. Daugherty, Vickers, Inc. (Re-presented for Discussion only)

2:00 p.m.—Wire Communications II

- CP61-115. Automatic Dialing and Electronic Selection on Railroad Message and Dispatcher Circuits. O. A. Jorgensen, Stromberg-Carlson Co.
- CP61-116. Transmission Aspects of an Integrated Private Line Telephone System. R. A. Schaefer, Wisconsin Telephone Co.
- 61-117. Telephone Circuit and Equipment Impedances As They Affect Transmission Performance. P. F. Radue, Kellogg Switchboard & Supply Co. (Re-presented for Discussion only)
- 61-118 Effects of Cable Irregularities on the Operation of Telephone Repeaters. S. I. McCaron, General Telephone Co. of California. (Re-presented for Discussion only)
- CP61-211. Administration of Exchange Area Trunks for Good Transmission. J. D. Howard, Jr., Southern Bell Tel. & Tel. Co.

2:00 p.m.—Special Instruments & Auxiliary Apparatus

2:00 p.m.—Transmission & Distribution



Forrester Laboratory—Showing the Administration Building (left) and Meson Experimental Area (right)

2:00 p.m.—Rotating Machinery

- CP61-11. Eddy Current Losses of a Drap Cup Rotor With Circular End Plates. D. Godovanik, Israel Inst. of Technology.
- CP61-142. A Basic Analysis of the Commutator-Less Primitive Machine of Kron. H. Majmudar; Syracuse University.
- 60-225 Thermal Relationships in an Induction Motor Under Normal and Abnormal Operation. W. J. Martiny, R. M. McCoy, General Electric Co.; H. B. Margolis, American Electric Power Service Corp. (Re-presented for Discussion only)
- CP.* Steady State Voltages and Torques of an Induction Machine With Simultaneous Rotor and Stator Impedance Unbalance. D. W. Olive, University of Nebraska.
- CP61-221. Transient Torques in 3-Phase Induction Motors During Switching Operations. M. R. Chidambara, S. Ganapathy; Indian Inst. of Science.

2:00 p.m.—Electronic Transformers

- 60-231 Ultra High Temperature (500°C) Electronic Transformers Part I — Design Considerations. J. F. Ripplin, Jr., U. S. Air Force; H. B. Harms, G. Walters, General Electric Co. (Re-presented for Discussion only)
- 60-230 Ultra High Temperature (500°C) Electronic Transformers Part II — Design Optimization. G. Walters, General Electric Co. (Re-presented for Discussion only)
- CP.* Tentative Proposed Standard for Computer Type Pulse Transformers. J. D. Schwartz, Bell Telephone Labs., Inc.
- CP.* Design of Transmission Transformers on a Digital Computer. J. K. Borkman, F. J. Kasper; Bell Telephone Labs., Inc.
- CP.* Some Aspects of Broadband Transformers. E. B. Harrison, Peerless Electrical Products, Inc.
- CP.* Consideration of Insulation Behavior in Wide-Band Transformers. S. W. Zimmerman, Cornell University.

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

- CP.* Properties of the Silicon Controlled Rectifier: A Survey. J. D. Harnden, Jr., General Electric Co.
- CP.* D-C to D-C Conversion by Means of Silicon Controlled Rectifiers. R. E. Morgan, General Electric Co.
- 61-99 Design of Diode-Switch High-Sensitivity Trigger Circuits. I. M. M. Vojinovic, Carnegie Inst. of Technology.
- CP61-4. An Electronic Stepping Switch Function Generator. A. F. Nagy, University of Michigan.
- 61-100 Linear Analysis of the Electromechanical Pulser. H. C. Pande, Polytechnic Inst. of Brooklyn.
- 60-1413 The Design of the Generator Voltage Regulator. B. M. Van Emden, Automation Development Corp. (formerly with Hydro-Aire Co.) (Re-presented for Discussion only)

2:00 p.m.—Nucleonics

2:00 p.m.—Magnetic Amplifiers

- 61-35 An Experimental Study on the Ampere-Turn Gain of Ordinary Saturable Reactors. W. A. Geyger, U. S. Naval Ordnance Lab.
- CP61-146. The Design of a Transistor Controlled Magnetic Amplifier. R. G. Schieman, K. A. Benjamin; Reliance Electric and Engineering Co.
- CP61-147. A Discussion of the Transient Behavior of Magnetic Amplifiers with a Nonlinear Steady State Gain Characteristic. N. E. Nahi; University of Southern California.
- 61-148 The Analysis of Conventional Single-Ended Magnetic Amplifiers with Inductive-Resistive Load Including the Derivation of Transfer Functions. N. E. Nahi, University of Southern California.

TECHNICAL PROGRAM

2:00 p.m.—Communications Switching I

- CP61-68. An Approach to Handling Automated Toll Traffic Requiring Operator Assistance. H. H. Smith, Stromberg-Carlson Co.
- 61-69 A Low Cost Number Identifier for Small Telephone Systems. I. T. R. Redington, Stromberg-Carlson Co.
- CP61-70. Economical Usage of Magnetic Tape Recording in Toll Ticketing. M. A. Clement, Stromberg-Carlson Co.
- CP61-71. Some Traffic Considerations in Toll Ticketing. R. R. Mina, Stromberg-Carlson Co.
- CP61-214. A New Service in Direct Distance Dialing. R. B. King, Automatic Electric Labs., Inc.
- CP.* Experimental SATT Tabulator Using Ferrite Cores. H. M. Winters, Automatic Electric Labs.

2:00 p.m.—Graduate Education in Electrical Engineering

Session II: Continuation of the study and discussion begun in Session I

Note: This series will be continued at the spring meeting of the IRE in New York City on 22 March 1961.

Friday, February 3

9:00 a.m.—The Organization of Large Volume Data Processing Systems

9:00 a.m.—Methods for Integration of Machine Aids Into Man's Design Effort

- CP.* Machine Processing of Manufacturing Information for Digital Systems. R. T. Herbst, Miss D. C. Leagus, G. A. Sellers, Bell Telephone Labs., Inc.
- CP.* Computer Aids to the Design and Machine Wiring of Digital Equipment. E. O. Codier, General Electric Co.
- CP61-104. Implications of Machine Aids to Design. O. J. Morzenti, Bell Telephone Labs., Inc.
- CP.* Design Automation — A Look at the Future. G. L. Baldwin, T. H. Crowley, C. W. Rusenthal; Bell Telephone Labs.

9:00 a.m.—Metal Rolling Mill Electrical Systems

- CP.* Electrical Systems Advancements for Steel Mill Processes. W. H. Dauberman, Westinghouse Electric Corp.
- CP.* The Application of Digital-Analog Techniques for Metal Rolling. K. R. Thompson, G. A. Branscom; General Electric Co.
- CP.* Sendzimir Mill Requirements for Motors and Control. D. E. Rea, Allis-Chalmers, Mfg. Co.
- CP.* Speed Regulators for Hot Strip Mills. K. G. Black, General Electric Co.

9:00 a.m.—Linear Control Systems

- 61-14 On The Design of A-C Servo Lead Networks. G. Weiss, II, Polytechnic Inst. of Brooklyn.
- CP.* Informationally Based, Optimally Controlled Physical Systems. D. L. Herr, Santa Barbara, California.
- CP.* Generalized 704 Program for Linear Systems Analysis. J. W. Ryan, General Electric Co.
- 60-1019 A Digital Time Domain Synthesis Technique for Feedback Control Systems. L. E. Weaver, A. P. Sage, Jr., University of Arizona; R. L. Miller, U. S. Army Signal Corps. (Re-presented for Discussion only)

- 60-1018 Stochastic Time Optimal Control Systems. M. Aoki, University of California. (Re-presented for Discussion only)
- CP.* Critique of Aforementioned Papers. G. C. Newton, Jr., Massachusetts Inst. of Technology; R. J. Kochenberger, The University of Connecticut.

9:00 a.m.—Communications Switching II

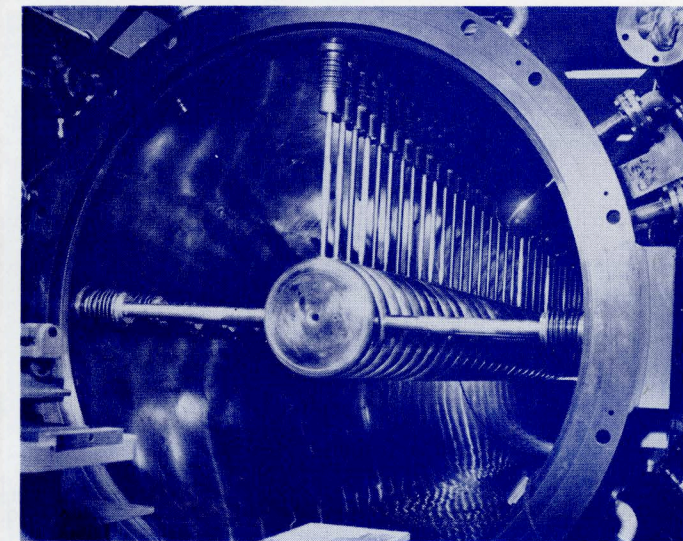
- CP.* Features of a 100 Line Electronic Crosspoint P.A.B.X. J. DeCicco, Automatic Electric Labs.
- CP.* Transmission in 100 Line Electronic Crosspoint P.A.B.X. R. F. Kowalik, Automatic Electric Labs.
- CP.* Logical Control in 100 Line Electronic Crosspoint P.A.B.X. R. P. Sanders, Automatic Electric Labs.
- CP.* Philosophy of Design of Ferrite Core Memory for 100 Line Electronic Crosspoint P.A.B.X. J. P. Shuba, Automatic Electric Labs.

9:00 a.m.—Transmission & Distribution

9:00 a.m.—Rotating Machinery

9:00 a.m.—Relays

- 61-124 Bonneville Power Administration Experience With Transferred Trip Over Microwave Radio. R. E. Dietrich, H. S. Lorentson, T. W. Stringfield; Bonneville Power Administration.
- CP60-183. Protective Relaying for the GPU — Penelec 460 KV Line. L. E. Goff, General Electric Co.; W. W. Turner and C. H. McCullough, Pennsylvania Electric Co.
- CP61-121. The R-C Circuit With Functionally Variable Time Constant and Its Application to Static Protective Relays. J. Baude, Allis-Chalmers Mfg. Co.
- CP.* Bridge Methods for the Measurements of Sequence Quantities on 3-Phase Unbalanced Systems. S. A. Nasar, University of California.
- CP61-203. Automatic Reclosing Following Bus Relay Operation. Task Force of the Relaying Practices Subcommittee of the AIEE Relays Committee, H. J. Sutton, Chairman.



Brookhaven National Laboratory

9:00 a.m.—Microwave Tubes

- CP.* A Light-Weight Ku-Band TWT Amplifying Chain. W. J. Caton, R. E. Bridge; RCA.
- CP.* A Study of Signal Suppression in Broad-Band TWT Amplifiers. M. Freeling, H. J. Wolkstein; RCA.
- CP.* Duplexers and Switching Devices in 4.3-MM Frequency Range. I. Reingold, U. S. Army Signal Research and Development Lab.
- CP61-168. Microwave Devices with Field Emission Cathodes. J. R. Fontana, H. J. Shaw; Stanford University.
- CP.* New Developments in Pencil Tubes. L. P. A. DeBacker, RCA.
- CP.* A Low-Cost L-Band Oscillator Package for Air-Traffic-Control Transponders. P. W. Gipslis, RCA.

9:00 a.m.—Electronics

9:00 a.m.—Basic Sciences

2:00 p.m.—Methods for the Automatic Design of Electronic Equipment

- CP61-178. Design Automation Survey — A Report to the AIEE Membership. R. J. Preiss, IBM Corp.
- CP.* A Quasi-Simplex Method for Designing Sub-Optimum Packages of Electronic Building Blocks. R. H. Glaser, ITT Communications Systems, Inc.
- CP.* The Automation of Computer Backwiring Design and Topological Layout. R. R. Brown, G. F. Putnam; Minneapolis Honeywell Regulator Co.
- CP.* Computer Simulation as a Machine Aid to Switching System Design. J. A. Bader, W. S. Hayward; Bell Telephone Labs., Inc.
- CP.* Use of a General Purpose Digital Computer for Design and Manufacture of an Airborne Bombing System. G. G. Evans, D. E. Brotherton; General Electric Co.

2:00 p.m.—Metal Making and Processing Electrical Drive Systems

- CP.* Anticipated Problems and Possible Solutions in Continuous Annealing of Thin Tinplate. A. L. Mozina, Allis-Chalmers Mfg. Co.
- CP61-10. A Transistorized Tension and Loop Control. T. E. DeViney, Square D Co.
- CP.* Approach to the Realization of Automatic Blast Furnace Operation. J. R. Erbe, Westinghouse Electric Corp.



Twentieth Century Limited

- CP.* Automatic Wheel Wear Compensation for Roll Grinder. M. Ranallo, Clark Controller Co.
- CP61-2. An Improved Consumable Electrode Vacuum Arc Melting Furnace. A. L. Field, Jr., K. L. Bryant, Jr., E. I. DuPont de Nemours & Co., Inc.

2:00 p.m.—Linear Control Systems and Applications

- 61-86 The Synthesis of Optimum Systems from Non-Ideal Components. J. K. Wolf, USAF; T. R. Williams, J. B. Thomas, Princeton University.
- 61-72 Random Linear Systems: A Special Case. A. R. Bergen, University of California.
- 61-12 Predictive Control System Application. H. Chestnut, W. E. Sollecito, P. H. Troutman, General Electric Co.
- CP61-154. Damping the First Stage of a Two-Stage Electro-Hydraulic Servo Valve. T. W. Thompson, P. F. Hayner, Sanders Associates, Inc.

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

- CP.* ESSEX and Time Divisions Communications. W. A. Maltaner, Bell Telephone Labs, Inc.
- CP.* Semi-Conductor Gates for Time Separation Switching. H. S. Feder, Bell Telephone Labs., Inc.
- 61-75 The British J.E.R.C. Development of Electronic Switching. T. H. Flowers, British Post Office Engineering Dept.; G. Forshaw, Automatic Telephone and Electric Co., Ltd.

2:00 p.m.—Transmission & Distribution

2:00 p.m.—Transmission & Distribution

2:00 p.m.—Basic Sciences

2:00 p.m.—Rotating Machinery

- CP61-143. The Effect of Temperature, Humidity, and Current on Collector Ring and Brush Wear. D. J. Herder, W. Kerber, Jr.; General Electric Co.
- 61-144 Synchronizing and Damping Torque Coefficients of Synchronous Machines. R. V. Shepherd, General Electric Co. (Re-presented for Discussion only)
- CP61-145. The Explanation of the Torque in a Dynamo. E. I. Shoberg II, R. Holm; Stockpole Carbon Co.
- CP61-222. Reluctance Motors for High Torque Specifications. J. F. H. Douglas, Marquette University.

2:00 p.m.—Subminiature Tubes and Environmental Testing

- CP.* New Subminiature Tubes Offer Improved Performance. J. D. Robbins, B. B. Scott; Sylvania Electronic Tubes.
- CP.* Design and Application Considerations for the Use of Nuvistor Tetrodes. I. E. Locke, RCA.
- CP.* A Developmental Nuvistor Triode for Small-Signal Grounded-Grid Amplifiers. W. A. Harris, R. J. Rundstedt; RCA.
- 61-34 An X-Ray Tube With Grid for Control of Exposures in Cineradiography. T. H. Rogers, Machlett Labs., Inc. (Re-presented for Discussion only)
- CP.* New Insight into Vibrational Testing of Electron Tubes. F. W. Willardson, Sylvania Electronic Tubes.
- CP.* Equipment Design Problems in Testing for Shorts. F. W. Mintel, Sylvania Electronic Tubes.

2:00 p.m.—Present and Future Trends in Education in Electronics

- Panel Discussion:
- CP.* J. B. Russel, General Electric Co.
- CP.* T. L. Martin, Jr., University of Arizona.
- CP.* T. F. Jones, Jr., Purdue University.
- CP.* R. A. Sharp, Iowa State University.

Continued from page 2

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

Refreshments will be served at the conclusion of the visit.

Indian Point Nuclear Electric Generating Station, Consolidated Edison Company of New York, Inc. (Tuesday afternoon). 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 go critical in 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 commercial sized unit to make use of thorium as fertile material to supplement the base fuel, highly enriched U-235.

This will be a "hard-hat" tour.

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

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

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

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

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

State Citizenship.

Adults only. No cameras are permitted.

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

Advance Reservations \$6.00.

The New York Times, New York, N. Y. (Wednesday afternoon, Thursday afternoon). A visit to the midtown Manhattan home of what is probably the most widely read newspaper in the world, The New York Times, will include a view of various devices in the communications room that make it possible to have news transmitted from all over the world. Visitors will see how the news is edited

as well as the mechanical operations that are required before the finished paper is put on the street.

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

The New York City Transit Authority, Brooklyn, New York (Tuesday afternoon). The New York City Transit Authority SURFACE Division's East New York Shop and Garage with a bus capacity of 300, was completed in 1950 at a cost of 11 million dollars. The shop and garage area cover 13 acres of ground. Within the shop, there are 57 bus lift positions. At any one time in the enclosed shop, there may be anywhere from 10 to 40 buses with their engines running. This creates no danger to the employees involved, since the engine fumes are piped out from bus exhaust systems, through a series of ducts to the outside open air. As an added safety precaution, blowers give the shop a complete change of air every 12 minutes.

The tour will consist of a visit to the Dynamometer Room where rebuilt engines are checked under all load conditions. Among other places of interest will be the Truck Shop where the Authority's fleet of trucks and radio patrol cars are maintained; the Unit Shop, where parts such as carburetor, ignition systems, generators, etc. are checked and overhauled and the Body Shop where dented or vandalized buses are repaired. Also included in the tour is a visit to the Upholstery Shop where two to three hundred thousand dollars in tax money is spent each year to repair damages caused by careless acts while aboard buses.

In 1953 the Transit Authority completed its modern bus Paint Shop at a cost of one million dollars. The 41,000 square feet of the Paint Shop contain two completely fireproof paint bins in which waterfalls purify the air while buses are being painted. By depressing the bus on an underground elevator, it is possible to spray the roof of the bus without climbing ladders, thus eliminating accident hazards. Paint Shop employees can "hot spray" paint at the rate of two buses per day.

The Transit Authority operates 2,081 buses, 66 million miles annually, over 560 miles of route. Buses carry 413 million passengers annually — 364 million adult and 49 million school age. The buses operate over 6 million round trips throughout the System, using 16 million gallons of diesel fuel annually.

Today's modern buses cost the City 28 thousand dollars each, and represent a capital investment of over 75 million dollars. Transit Authority SURFACE employs approximately 7,000 workers with an annual payroll of 43 million dollars.

The Queen Mary, Cunard Line, New York, New York (Thursday afternoon). The Cunard Line will host a visit aboard the 81,237-ton Queen Mary, the world's second largest passenger liner. There will be a guided tour of the passenger spaces which will include inspection of restaurants, swimming pool, shopping center, lounges and ballrooms.

Rambusch Decorating Company, New York, N. Y. (Thursday morning). During this year's visit work is in progress on decorative lighting for the extension and rehabilitation of the Capitol Building, Washington, D. C. Rambusch was a "natural" for this contract, being the most completely equipped of the decorative-craft houses in the United States, and having the most experience in engineered custom lighting.

Here, under one roof, designers, craftsmen and lighting engineers work painstakingly in complete shops and studios 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, employing 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.

AIEE WINTER GENERAL MEETING

Some of Rambusch's many creations are: the largest stained-glass window mural in the world, American Airlines Terminal at Idlewild International Airport; interior lighting, California Memorial Masonic Temple, San Francisco; lighting and wood-on-bronze network map and fountains of the new Headquarters Building, Atlantic Coast Line Rail Road, Jacksonville; Cobo Hall interior lighting, Detroit Civic Center; complete lighting of the National Shrine of the Immaculate Conception, Washington, D.C.; sculpture for the S.S. United States; carved plate-glass windows in St. Thomas Moor Chapel of Yale University; 30-foot diameter stained-glass world globe of the Christian Science Publishing House, Boston; and Houston International Airport interior lighting.

Radio City Music Hall, New York, N. Y. (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 revolving sectionized stage, elevating orchestra pit, motorized curtains, and the multitude of electric and mechanical controls which are required for the special stage and lighting effects.

No women or children are permitted.

Sikorsky Aircraft, Div. of United Aircraft Corp., Stratford, Conn. (Wednesday afternoon). Sikorsky's Stratford Plant, opened in 1955, covers 830,000 square feet of manufacturing facilities and a 500,000 square foot engineering and research addition completed in 1958, plus surrounding acreage for flight line and air operations.

Located just north of Stratford, Connecticut (northeast of Bridgeport, the Plant is adjacent to the Housatonic River crossing of the Merritt Parkway.

The inspection tour will cover all unrestricted manufacturing facilities here, including sub-assembly and main-assembly of the world's largest production helicopter. Completed units will be available for inspection and, weather permitting, actual flight operations will be witnessed.

Citizenship required — no cameras — adults only .

United Nations General Assembly Building, New York, N. Y. (Wednesday morning).

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

(The new United Engineering Center will be pointed out, opposite the north end of the United Nations Plaza.)

LADIES' ENTERTAINMENT: The Ladies' Entertainment Committee has planned an interesting week for ladies attending the 1961 Winter General Meeting.

These plans include a Coffee Hour each morning, Monday through Friday. Also, Monday Afternoon—a Tea. Tuesday—A visit to the Sunnyside home of Washington Irving, followed by luncheon at the Villa Arturo. Tuesday evening—A Cocktail Hour followed by dinner and entertainment. Wednesday—A trip to the United Nations Building. Thursday—Breakfast at B. Altman & Company, and at noon, a Luncheon and Fashion Show at the Hotel Sheraton East. Friday—The Coffee Hour on Friday will end the activities of the week.

WINTER GENERAL MEETING COMMITTEE: Members of the 1961 Winter General Meeting Committee are: R. W. Gillette, chairman; W. G. Vieth, vice-chairman; J. J. Anderson, secretary; R. T. Weil, Jr., AIEE vice-president for District 3 and budget co-ordinator; D. E. Trucksess, representative, Technical Operations Department; C. F. Savage, public relations; R. M. Franklin, general session; M. Lennig, hotel accommodations; F. P. West, registration; W. McConnachie, inspection trips; T. W. Bartlett, monitors; J. G. Derse,

smoker; J. E. Bevan, dinner-dance; Mrs. H. E. Martin, ladies entertainment.

ETA KAPPA NU: Kenneth H. Olsen, of Bedford, Massachusetts, has been named Outstanding Young Electrical Engineer of 1960 by Eta Kappa Nu Association, national electrical engineering honor society. Honorable mentions in this national competition are William B. Green of Greensburg, Pennsylvania; Robert R. Johnson of Phoenix, Arizona; and Thomas H. Thompson of Basking Ridge, New Jersey.

The 1960 award is the twenty-fourth since 1936. Formal presentation of the awards will be made at a banquet on January 30, 1961 during the Winter General Meeting of the American Institute of Electrical Engineers. The banquet will be held in the Governor Room, Hotel Governor Clinton, Seventh Avenue at 31st Street. The cocktail hour will start at 6:00 P.M. and the dinner promptly at 7:00 P.M. All electrical engineers, whether members of Eta Kappa Nu or not, are invited to the traditional and important event. Ladies are cordially invited.

Reservations for the banquet should be mailed to William Levidow, Room 3B-154, Bell Telephone Laboratories, Inc., Whippany, New Jersey. Reservations postmarked on or before January 25, 1961 will be honored at \$6.50 per person. Later reservations, or those made at AIEE Registration Headquarters during the Winter General Meeting, will cost \$7.50 per person. Checks or money orders should be payable to New York Alumni Chapter, Eta Kappa Nu. Attendance at the banquet is limited and reservations will be honored in the order received up to the limit of space available.

A compact informal yet dignified program has been arranged to honor these truly outstanding young men. The principal address, "Why We Need Engineers as Well as Scientists", will be delivered by Dr. John R. Pierce, Director of Research, Bell Telephone Laboratories. Dr. Pierce was an award recipient himself in 1942. This traditional meeting of electrical engineers and their friends has many facets of interest to mature as well as the younger members of the electrical engineering profession. Come and renew acquaintances while you honor the winners with your presence.

Eta Kappa Nu, the sponsor of the annual award, is the national electrical engineering honor society founded at the University of Illinois in 1904. The organization has more than 30,000 members, 82 college and 12 alumni chapters in the principal cities of the United States.

Selection of this year's Recognition winner and honorable mention recipients was made by a Jury of Award consisting of the following engineering leaders: W. R. Clark, assistant chief engineer, Leeds & Northrup Company, treasurer and director of AIEE; J. H. Craig, national vice president of Eta Kappa Nu; E. I. Green, executive vice president of Bell Telephone Laboratories, Inc., director of AIEE; J. C. McPherson, vice president of I.B.M.; A. Naeter, national president of Eta Kappa Nu; R. G. Slauer, sales manager, Sylvania Electric Products, president of Illuminating Engineering Society; and B. R. Teare, dean of Carnegie Institute of Technology, immediate past president of American Society for Engineering Education.

To assist the Jury of Award in their deliberations, the records of nominees are read and evaluated by the Society's Award Organization Committee. This group obtains references and other supporting data of use to the Jury of Award in the final judging. Every effort is made to secure nominations on a nationwide basis, and this year the sixty records of candidates represent all the geographical areas of major engineering activity in the country. The committee membership for 1960 under the chairmanship of W. B. Groth included Robin Beach, Larry Dwon, J. E. Farley, N. S. Hibshman, C. T. Koerner, E. S. Lee, B. F. Lewis, J. M. Monstream, J. H. Craig, J. H. Mulligan, Jr., E. F. Schuster, and R. I. Wilkinson.

The Canadian Breakfast will be held in the Cornell and Dartmouth Rooms of the Statler-Hilton Hotel at 7:30 a.m. on Tuesday, January 31, 1961. Price per plate including tax and gratuities will be \$3.75 — Ladies Welcome.

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