

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS



SUMMER GENERAL MEETING

Program

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entire meeting*



CORNELL UNIVERSITY

ITHACA, N. Y.

JUNE 18-23, 1961

Meeting Headquarters

WILLARD STRAIGHT HALL

GENERAL INFORMATION

There awaits a full week of social and technical activities for those who attend the Summer General Meeting this year. The Ithaca Section and Cornell University, one of the nation's principal schools of higher learning, assures our guests a most enjoyable and well spent week. Headquarters for the meeting will be located in Willard Straight Hall.

At our annual meeting, Monday afternoon June 19, we will be welcomed to Cornell by Deanne W. Malott, President of the University, the presentation of the Lamme Medal will be made to Dr. John G. Trump of Cambridge, Massachusetts, and Dr. Allen B. DuMont will be awarded Honorary Membership in the American Institute of Electrical Engineers. At this meeting President C. H. Linder will present the Annual Report of the Board of Directors and the election of officers will be announced.

During the week, there is planned a series of social events, inspection trips, and special entertainment for the ladies.

Information on all features may be obtained at the information desk located in the Memorial Room of Willard Straight Hall. Efforts will be made to deliver telegrams and messages promptly. Members who expect to receive mail are asked to inquire frequently at the information desk.

Ticket Sales. Tickets for social functions will be on sale at the Entertainment ticket desk located in Willard Straight Hall.

Transportation, Hotels & Inspection Trips information can be obtained at the desk provided for this service in Willard Straight Hall.

Registration Fees Required. The Board of Directors has arranged for a ladies' registration fee of \$2.00 to help defray the cost of the ladies' functions. The registration fees for members and non-members have been set at \$6.00 and \$10.00, respectively. Student members and the immediate families of members are not required to pay any fee.

Technical Sessions and Discussions are covered by the "Technical Sessions Guide" at the discretion of the presiding officers. Sufficient time will be allowed for the presentation of each paper and 5 minutes for each discussion. To receive consideration for publication, discussion on TRANSACTIONS Papers in duplicate must be sent to Edward C. Day, Assistant Secretary, Technical Operations Department, AIEE, 33 West 39th Street, New York 18, New York, before July 7, 1961. Discussions received later may not be included, depending upon the printing schedule of the paper to which the discussion is directed. The original typewritten double spaced copy, together with original illustrations as photographs or inked tracings should be submitted.

SCHEDULE OF EVENTS

SUNDAY, JUNE 18

- 2:30 p.m. Registration Begins
- 4:00 p.m. Informal Tea

MONDAY, JUNE 19

- 9:00 a.m. Ladies' Coffee Hour
- 10:00 a.m. Indicating and Integrating Instruments & Telemetering
Computer Technology
Micro System Electronics
High Voltage Cable Project Trip
- 2:00 p.m. Annual Meeting
- 3:00 p.m. Ladies' Tea, Art and Craft Exhibit
- 8:00 p.m. Ornithology Lecture
Informal Cabaret

TUESDAY, JUNE 20

- 8:30 a.m. National Homes Trip
- 9:00 a.m. Section Delegates Conference
Hydro Power Generation
Direct Current Machinery
System Planning & Economics
Semiconductor Rectifying Devices and Power Supplies
Communications Switching I
Ladies' Coffee Hour
- 9:45 a.m. Ladies' Enfield Trip
- 10:30 a.m. Ladies' Auxiliary Meeting
- 1:00 p.m. Corning Glass Center Trip
- 1:30 p.m. Ornithology Laboratory Trip
- 2:00 p.m. Cornell Computing Center Trip
Section Delegates Conference
Induction Machinery
System Engineering & Transmission and Distribution
Research and Management
- 4:00 p.m. High Voltage Cable Project
- 8:00 p.m. Informal Cabaret

WEDNESDAY, JUNE 21

- 9:00 a.m. Industrial & Commercial Power Systems, Relays
Operating Experience, Nuclear Power Plants
Transmission & Distribution
Electrical Insulation
Management
Wire Communications & Data Communications
Insulated Conductors
Ladies' Coffee Hour

- 9:30 a.m. Ithaca Gun Trip
- 10:30 a.m. Creative Flower Arrangements
- 12:30 p.m. Ladies' Card Luncheon
- 1:00 p.m. Great Western Wineries Trip
- 1:30 p.m. General Electric Trip
Ornithology Laboratory Trip
- 2:00 p.m. Industrial & Commercial Power Systems
Power Generation & Transmission and Distribution
Education in Electrical Insulation
Wire Communications
Insulated Conductors
Linear Control Systems
- 3:00 p.m. General Electric Trip
- 4:00 p.m. High Voltage Cable Project Trip
- 6:00 p.m. Chicken Barbecue
- 8:00 p.m. Informal Cabaret

THURSDAY, JUNE 22

- 8:00 a.m. Ladies' Coffee Hour
- 8:30 a.m. IBM Trip
Ladies' Corning Glass Center Trip
- 9:00 a.m. Control System Analysis
Power System Communications
Transmission & Distribution
Electromechanical Energy Conversion—
System Analysis
Radio Astronomy
- 1:30 p.m. Westinghouse Trip
Ornithology Laboratory Trip
- 2:00 p.m. Sample Data Control Systems
Radio Noise
Electromechanical Energy Conversion—
Undergraduate Courses
Cornell Computing Center
- 4:00 p.m. High Voltage Cable Project Trip
- 7:30 p.m. Forum of Technical Committee Chairmen
- 8:00 p.m. Informal Cabaret

FRIDAY, JUNE 23

- 9:00 a.m. Control System Techniques
Substations and Power Generation
Transformers
Electric Circuit Theory
Ladies' Coffee Hour

PAPERS MAY BE PURCHASED

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

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

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

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

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

Monday, June 19th

10:00 a.m.—**Indicating and Integrating Instruments & Telemetering**

Room 219, Phillips Hall

Chairman: L. J. LUNAS, Westinghouse Electric Corp.

Indicating and Integrating Instruments & Telemetering Committees

- 61-719. The Design of a Repulsion Magnetic Bearing for Watthour
III Meters. D. F. Wright, Westinghouse Electric Corp. (Re-presented for Discussion only)
- 61-720. Photoelectric Impulse Generation Devices for Demand Metering. R. E. Whipple, General Electric Co.
- CP.* A New Kind of Tachometer. W. H. Middendorf, University of Cincinnati; F. C. Weimer, Ohio State University
- 61-721. A General Description of D-C Digital Voltmeters. C. Stansbury, National Bureau of Standards. (Re-Presented for Discussion only)
- CP.* A Differential Thermocouple Voltmeter. J. E. Griffin, F. L. Hermach; National Bureau of Standards
- S-111-A. A Bibliography on Telemetering—An Addendum. C. A. Mabey, The Bristol Co. Price \$1.50.

10:00 a.m.—**Computer Technology**

Room M, Olin Hall

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

Computing Devices Committee

- CP.* Considerations in the Development of an Optical Character Recognition System. J. J. Leimer, IBM Development Lab.
- 61-725. A Comparison of Computers. F. G. Curl, California Inst. of Technology
- 61-724. Results of Simulation Comparison of Control Computers.
I G. T. Sendzuk, General Electric Co. (Re-presented for discussion only.)
- CP61-726. Automation of Logic Page Printing. C. R. Warburton, IBM Corp.
- CP.* A Technique for Implementing Synchronous Sequential Relay Circuitry. R. L. Gamblin, M. P. Marcus, C. J. Tunis; IBM Development Lab.
- 61-732. Large-Scale On-Line Data Processing Systems. S. Levine,
I Teleregister Corp. (Re-presented for Discussion only)

BUY PAPERS IN WILLARD STRAIGHT HALL

MONDAY (continued)

- 60-1007. A Computer Program for Preparing Wiring Diagrams. Mrs. I D. B. Kirby, C. W. Rosenthal; Bell Telephone Labs., Inc. (Re-presented for Discussion only)
- 61-814. Forcing Circuitry—Sequential Building Blocks for Logical I Design. R. M. Meade, IBM Corp. (Re-presented for Discussion only)
- 60-1283. Boolean Prime Implicants by the Binary Sieve Method. I F. B. Hall, Argonne National Laboratory. (Re-presented for Discussion only)

10:00 a.m.—Micro System Electronics

Room 101, Phillips Hall
 Chairman: E. KEONJIAN, American Bosch Arma Corp.
Solid State Devices Committee

- CP.* An Approach to Circuit Integration. H. Kihn, RCA Labs.
- CP.* Molecular Electronics. H. C. Lin, J. P. Stelmak, G. Strull; Westinghouse Electric Corp.
- CP.* Heat Transfer Problems in Microminiature Electronic Equipment. W. Lukac, American Bosch Arma Corp.
- CP.* The Hall Effect Mapper. J. A. Dickerson, IBM Corp.

2:00 p.m.—Annual Meeting

Alice Statler Auditorium
 Chairman: President C. H. LINDER

Welcome to Cornell. Deanne W. Malott, President, Cornell University.

1. Report of the Treasurer, W. R. Clark.
2. Report of the President and the Board of Directors. C. H. Linder.
3. Report of the Committee of Tellers on the vote for the Constitutional Amendments and the nominees for AIEE Officers.
4. a) Introduction of and presentation of **President's Badge** to W. H. Chase.
 b) Response by Mr. Chase.
5. Presentation of **District Student Paper Prizes.**
6. Presentation of the **Lamme Medal** to Dr. John G. Trump.
 History of the Medal, John H. Chiles, Jr., Chairman Lamme Medal Committee.
 Career of Medalist, H. R. Stewart, New England Power Co.
 Presentation of the Lamme Medal by the President.
 Response by the Medalist.
7. Presentation of an **Honorary Membership** Certificate to Dr. Allen B. DuMont.
 Citation of the Recipient by Dr. T. Goldsmith, Jr.
 Presentation of Certificate by the President.
 Response by the Honorary Member.
8. Other Business.

Tuesday, June 20th

9:00 a.m.—Section Delegates Conference

Room M, Olin Hall
 Chairman: W. E. SCHOLZ, Philadelphia Electric Co.

9:00 a.m.—Hydro Power Generation

Room R, Olin Hall
 Chairman: K. J. GRANBOIS, Safe Harbor Water Power Corp.
Power Generation Committee

- 61-772. The Cowans Ford Project. J. Q. Wray, Duke Power Co. III

TUESDAY (continued)

- CP61-818. An Electric-Hydraulic Governor for Hydraulic Turbines, N. G. Dennis, Woodward Governor Co.
- CP.* Electrical Features of the Niagara Power Project. T. E. Thorgerson, Charles T. Main, Inc.
- CP.* Electrical Controls and Protective Relaying-Niagara Power Project. T. E. Thorgerson, J. Basileco; Charles T. Main Inc.

9:00 a.m.—Direct Current Machinery

Room B 11, Kimball Hall
 Chairman: J. F. DAVIS, General Electric Co.
Rotating Machinery Committee

- 61-766. DC Motor Flashover Torque. H. J. McLean, O.C. Coho; General Electric Co.
- 61-760. Design of Self Compensated High Current Comparatively III Higher Voltage Homopolar Generators. A. K. Das Gupta, Illinois Inst. of Technology
- CP61-820. A New D-C Motor Concept with Motor Designs. G. A. Oberbeck, Massachusetts Inst. of Technology
- 61-763. Ribbon Generators With MHD Generator and Other Implications. A. D. Moore, University of Michigan.

9:00 a.m.—System Planning and Economics

Room 101, Phillips Hall
 Chairman: J. J. RAY, Philadelphia Electric Co.
System Engineering Committee

- 61-780. Hydro-Thermal Economic Scheduling—Part II: Extension of the Basic Theory. B. Bernholtz, L. J. Graham; The Hydro-Electric Power Commission of Ontario (Re-presented for Discussion only)
- 61-824. Hydro-Thermal Economic Scheduling—Part III: Scheduling the Thermal Sub-System Using Constrained Steepest Descent. B. Bernholtz, L. J. Graham; The Hydro-Electric Power Commission of Ontario (Re-presented for Discussion only)
- CP61-798. Improving Transient Stability by Use of Dynamic Braking. W. H. Croft, R. H. Hartley, Arizona Public Service Co.
- 61-727. Limiting Curves for Transient Stability—A Digital Program III for Evaluating Operating Guides for Synchronous Generators Connected to Large Systems. A. Johannesen, J. A. Harle; University of Alberta
- 61-797. Calculation of Short Circuits Using A High-Speed Digital III Computer. A. H. El-Abiad, Purdue University and American Electric Power Service Corp.; Miss R. Guidone, G. W. Stagg, American Electric Power Service Corp.

9:00 a.m.—Semiconductor Rectifying Devices and Power Supplies

Room B 17, Upson Hall
 Chairman: L. W. BURTON, General Electric Co.
Semiconductor Rectifiers Committee

- CP.* Characteristics and Applications for the 100-Ampere Trinistor. W. F. Munzer, Westinghouse Electric Corp.
- CP61-716. Simplified Method for Measuring Nanosecond Reverse Recovery Time of Diodes. B. Szabo, IBM Corp.
- CP.* Transient Voltage Suppression in Silicon, Germanium and Controlled Rectifier Circuitry. C. E. Arnold, General Electric Co.
- 61-717. 30V 10A Regulated Power Supply Using the Variable Output I Transistor Oscillator With Current Transformer. S. P. Jackson, Continental Electronics Corp.

BUY PAPERS IN WILLARD STRAIGHT HALL

TUESDAY (continued)

- CP.* Silicon Controlled Rectifier High Voltage Power Supply. G. E. Snyder, General Electric Co.
- 61-718. A Silicon Controlled Rectifier Inverter With Improved Commutation. W. McMurray, D. P. Shattuck; General Electric Co. (Re-presented for Discussion only)
- 9:00 a.m.—Communications Switching I**
 Room 212, Hollister Hall
 Chairman: H. F. MAY, Bell Telephone Labs., Inc.
Communication Switching Systems Committee
- 61-722. A New Design for Customer Group Telephone Service in the I Modern Business Community. P. D. Shea, New York Telephone Co.
- CP61-815. A New Technique for Establishing a Connection Through Crosspoint Networks, Permitting Simplification of Solid-State Space-Division Switching Systems. M. S. Macrander, Automatic Electric Labs., Inc.
- CP61-723. An Electrically Controlled PAX—Its Design and Performance. S. Yamato, K. Watanabe, K. Muroga, J. Okuda; Nippon Electric Co., Ltd.
- CP61-817. The Relative Merits of Time Division Multiplex Versus Space Division as a Mode of Operation for Electronic Telephone Exchanges. J. G. Pearce, General Dynamics Electronics.
- 61-825. Transmission Network of an Electronic Crosspoint P-A-B-X. I R. F. Kowalik, Automatic Electric Labs., Inc. (Re-presented for Discussion only)
- 61-826. Logical Control of an Electronic Crosspoint P-A-B-X. R. P. Sanders, Automatic Electric Labs., Inc. (Re-presented for Discussion only)
- 61-827. Features of an Electronic Crosspoint P-A-B-X. J. G. Van Bosse, I J. De Cicco; Automatic Electric Labs., Inc. (Re-presented for Discussion only)

2:00 p.m.—Section Delegates Conference

Room M, Olin Hall
 Chairman: W. E. SCHOLZ, Philadelphia Electric Co.

2:00 p.m.—Induction Machinery

Room B 11, Kimball Hall
 Chairman: M. R. LORY, Westinghouse Electric Corp.
Rotating Machinery Committee

- 61-761. Saturation Harmonics of Polyphase Induction Machines. C. H. III Lee, Westinghouse Electric Corp.
- 61-762. Derivation of the Basic Constants of the General Induction III Machine in Terms of Winding Parameters. T. D. Graybeal, The Siegel Co.
- CP.* Advanced Design of Printed Motor Employing Barium Ferrite Field Structure. F. A. Higgins, Photocircuits Corp.
- CP61-764. A Magnetic Amplifier Voltage Regulator for a Brushless A-C Generator Using the New "FCE" Frequency Converter Excitation System. A. F. Szippel, K. M. Sparrow; The Lima Electric Motor Co., Inc.
- CP61-765. The Induction Frequency Converter Saturable Reactor (FCE-SR) As An Exciter-Regulator For A Brushless A-C Generator. K. M. Sparrow, The Lima Electric Motor Co., Inc.

2:00 p.m.—System Engineering & Transmission and Distribution

Room 101, Phillips Hall
 Chairman: W. D. WILDER, Niagara Mohawk Power Corp.
System Engineering & Transmission and Distribution Committees

TUESDAY (continued)

- 61-805. Voltage Nomenclature—Secondary and Utilization Systems. III A. S. Anderson, Ebasco Services Inc.
- CP61-790. Improvement of Electric Service Performance—Part I: Service and Facility Performance Records. J. J. Malone, R. K. Moore, Pennsylvania Power & Light Co.; N. N. Smeloff, Allentown, Pa.
- CP61-750. Improvement of Electric Service Performance—Part II: Selective Modernization of Distribution. J. E. Weed, R. K. Moore, Pennsylvania Power and Light Co.; N. N. Smeloff, Allentown, Pa.
- CP61-751. Improvement of Electric Service Performance—Part III: Greater Protection and Automation of Distribution. J. E. Treweek, R. K. Moore, Pennsylvania Power & Light Co.; N. N. Smeloff, Allentown, Pa.
- 2:00 p.m.—Research and Management**
 Room B 17, Upson Hall
 Chairman: B. G. BALLARD, National Research Council
Research and Management Committees
- CP61-800. Costs of Supporting Functions of Research and Development Laboratories. H. T. Thompson, General Electric Co.
- 61-801. Controller's Function as it Applies to Research and Develop- III ment in Industry. C. S. Van Wormer, General Electric Co.

Wednesday, June 21st

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

Room B 11, Kimball Hall
 Chairmen: D. V. FAWCETT, Canadian Westinghouse Electric Co., Ltd. and L. F. FERRI, Commonwealth Associates, Inc.
Industrial & Commercial Power Systems and Relays Committees

- CP61-821. Testing Protective Devices on Industrial Plant Power Systems. R. J. Dikeman, Jr., R. M. Shoop; Multi-Amp Electronic Corp.
- CP.* A Survey of Current Industrial Relay Protection. J. J. O'Connor, N. Peach; Power Magazine
- CP61-799. Team Work—The Key to Electrical Service Continuity for Continuous Process Plants. M. M. Gilbert, E. I. du Pont de Nemours & Co., Inc.
- CP61-829. What the Industrialist Should Know and Do When Arranging to Obtain Utility Power. W. E. Marter, Duquesne Light Co.; A. Hauspurg, American Electric Power Service Corp.

9:00 a.m.—Operating Experience Nuclear Power Plants

Room 101, Phillips Hall
 Chairman: F. W. McCLOSKA, Sargent & Lundy
Power Generation and Nuclonics Committees

- CP.* Selected Operating Experience of Commission Power Reactors. J. O. Roberts, U. S. Atomic Energy Commission
- CP.* Control & Transient Performance of the Dresden Nuclear Power Station. E. R. Owen, W. I. Collett; General Electric Co.
- CP61-771. Electrical Features of the Elk River Reactor Plant. D. C. McClintock, Sargent and Lundy
- CP.* A Nuclear Unit at the Humboldt Bay Power Plant. J. O. Schuyler, J. W. Colwell; Pacific Gas and Electric Co.
- CP.* Power Distribution at Boiling Nuclear Superheat Power Station, Puerto Rico. E. L. Bottum, Jackson and Moreland; F. Bevilacqua, General Nuclear Engineering Corp.

BUY PAPERS IN WILLARD STRAIGHT HALL

WEDNESDAY (continued)

9:00 a.m.—Transmission & Distribution

Room B 17, Upson Hall
 Chairman: H. E. HOUSE, Aluminum Co. of America
Transmission & Distribution Committee

- CP.* Bibliography on Bundled Conductors. AIEE Working Group of Towers, Poles & Conductors Subcommittee, H. B. White, Chairman
- CP61-823. Thermal Limits of Overhead Conductors at Various Meteorological Conditions. J. A. McElyea, Illinois Power Co.
- CP61-813. The Electrical Properties of Single Layer Aluminum Conductors, Steel-Reinforced (ACSR) Having Single Steel Core Wires With Heavy Aluminum Coating. C. H. Jensen, Retired (formerly with Copperweld Steel Co.; R. E. DeMuth, R. W. Mowery, Battelle Memorial Inst.
- CP61-791. Transmission Characteristics of the Near Signal. L. Runge, Midwest Research Inst.

9:00 a.m.—Electrical Insulation

Room R, Olin Hall
 Chairman: J. F. DEXTER, Dow Corning Corp.
Electrical Insulation Committee

- 61-757. Simplified Methods of Calculating Insulation Life Characteristics. L. C. Whitman, General Electric Co.
- 61-758. Thermal Endurance of Enamelled Wires Using Twisted Wire Specimens, Statistical Analysis of Test Results. H. Goldenberg, The Electrical Research Association Laboratory

9:00 a.m.—Management

Room 212, Hollister Hall
 Chairman: G. KLEIS, Westinghouse Electric Corp.
Management Committee

- CP.* Responsibilities of an Engineering Manager as Seen by the Engineer. W. J. Dowis, D. W. McLenegan; General Electric Co.
- CP.* The Young Engineer Looks at Management. N. J. Bowmaker, Baltimore Gas and Electric Co.
- CP.* The Use of Psychological Service in Manager Selection and Development. L. D. Edmonson, William, Lynd and Williams

9:00 a.m.—Wire Communications & Data Communications

Room 219, Phillips Hall
 Chairman: D. C. GEIGER, Bell Telephone Co. of Canada, Ltd.
Wire Communication Systems and Data Communication Committees

- 61-774. The 81-A Exchange Trunk Carrier System. M. E. Ferguson, I M. C. Harp; Lenkurt Electric Co.
- 61-775. The 81-A Exchange Trunk Carrier System-Repeaters and Regulation. E. A. Gilmore, C. G. Griffith; Lenkurt Electric Co., Inc.
- CP61-776. The 81-A Exchange Trunk Carrier System-Signaling. E. F. Tuck, D. K. Melvin; Lenkurt Electric Co., Inc.
- 61-777. The 81-A Exchange Trunk Carrier System-Applications. L. R. I Cool, R. G. Walker; Lenkurt Electric Co., Inc.
- CP.* Economical Short-Haul Four-Wire Circuits. J. A. Lee, E. L. Fletcher, New York Telephone Co.
- 61-822. Reliable Data Transmission Through Noisy Media—A Systems Approach. C. M. Melas, IBM Corp. (Re-presented for Discussion only)

WEDNESDAY (continued)

9:00 a.m.—Insulated Conductors

Room M, Olin Hall
 Chairman: F. M. HULL, The Detroit Edison Co.
Insulated Conductors Committee

- CP.* A 69 KV High-Pressure Gas-Filled Aluminum Sheath Aerial Cable. F. J. Bender, Long Island Lighting Co.; E. J. Merrell, Phelps Dodge Copper Prod. Corp.
- 61-736. Cable Sheath Insulation Requirements to Withstand Abnormal III Voltage Stresses. F. O. Wollaston, K. H. Kidd; International Power and Engineering Consultants, Ltd.
- 61-737. The Role of Grounding Cells and Similar Devices in the Effective Cathodic Protection of Lead Sheathed Power Cables of Substation Exit Systems. S. E. Trouard, M. J. Maier; New Orleans Public Service Inc.

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

Room B 11, Kimball Hall
 Chairman: T. W. CALLAHAN, Aluminum Co. of America
Industrial & Commercial Power Systems Committee

- CP.* Expansion of the Electrical Distribution System in a Chemical Plant. A. H. Barth, Monsanto Chemical Co.
- CP61-768. Selective Relaying for the Synchronizing Bus Industrial Power Distribution Systems. D. C. Burke, General Electric Co.
- CP.* Rectifier Applications in a Steel Plant. K. Forster, Algoma Steel Corp.
- CP61-767. Line to Enclosure Impedances—Use of Ground Fault Trip Devices to Limit Arcing Damage. L. E. Fisher, General Electric Co.
- CP.* Design of a Single Screw Industrial Terminal Connector. T. C. Price, Burndy Corp.

2:00 p.m.—Power Generation & Transmission and Distribution

Room B 17, Upson Hall
 Chairman: C. F. PAULUS, Cleveland Electric Illuminating Co.
Power Generation and Transmission & Distribution Committees

- 61-784. Digital Traveling-Wave Solutions — Part I: Single-Phase III Equivalents. L. O. Barthold, G. K. Carter; General Electric Co.
- CP61-785. Experience With Line Dropping Up to 500 KV at Hydro-Quebec. L. Cahill, Quebec Hydro Electric Commission; P. A. Baltensperger, Brown Boveri & Co., Ltd.
- 61-786. Investigations Concerning the Possibility of Dangerous Resonance Conditions at the Breed Plant During Unit Maintenance and Unit Startup. S. G. Vassiliev, V. P. Rader; American Electric Power Service Corp.
- 61-787. The Breed Plant Transmission System: Conceptual, Feasibility, III and Design Studies. C. F. De Sieno, A. Hauspurg; American Electric Power Service Corp.

BUY PAPERS IN WILLARD STRAIGHT HALL

WEDNESDAY (continued)

2:00 p.m.—Education in Electrical Insulation

Room R, Olin Hall

Chairman: G. L. MOSES, Westinghouse Electric Corp.
Electrical Insulation and Education Committees

- CP.* Opportunities for Electrical Engineers in the Field of Electrical Insulation. K. Mathes, General Electric Co.
- CP.* How the Modern College Prepares the Student for Work in Dielectrics and Insulation. P. J. Warter, Jr., Princeton University.
- CP.* The Need for Research in Insulating Materials. J. Swiss, Westinghouse Electric Corp.
- CP.* Industry's Outlook on Education in Dielectrics. J. R. Perkins, Jr., E. I. du Pont de Nemours & Co., Inc.
- CP.* How to Train the Young Engineer to Apply Basic Principles to the Solution of the Insulation Problems. M. L. Manning, South Dakota State College.

2:00 p.m.—Wire Communications

Room 219, Phillips Hall

Chairman: I. KOLODNY, General Cable Corp.
Wire Communication Systems Committee

- CP61-778. Speech Volume on Bell System Message Circuits. K. L. McAadoo, Bell Telephone Labs., Inc.
- 61-653. Loop Around Transmission Test Circuit for Step by Step I CDO's Having Verification Train. F. O. Richardson, J. J. Clark; New England Tel. & Tel. Co.
- CP61-816. Comparative Transmission Characteristics of Polyethylene Insulated and Paper Insulated Communication Cables. T. C. Henneberger, M. D. Fagen; Bell Telephone Labs., Inc.
- 61-779. Electrical Uniformity and Deviations Control in Polyethylene Insulated Multipaired Telephone Cables. W. L. Roberts, Superior Cable Corp.

2:00 p.m.—Insulated Conductors

Room M, Olin Hall

Chairman: F. M. HULL, The Detroit Edison Co.
Insulated Conductors Committee

- 61-738. Some Considerations Concerning Extra-High Voltage A.C. III Cable Power Transmission. J. M. Oudin, Cables de Lyon; R. A. Tellier, Electricite de France.
- 61-739. Effect of Temperature Gradient on Moisture Migration in III Granular Media. C. M. Wong, United Technology Corp.; F. K. Hoh, IBM Corp.; W. A. Hadley, Linotype and Machinery Ltd.; H. D. Baker, Columbia University.
- 61-242. Nondestructive Inspection of Cable Terminations and Splices III by X-Ray Analysis. T. L. Bourbonnais, II, E. I. du Pont de Nemours & Co., Inc. (Re-Presented for Discussion only)
- 61-730. Objectives for Overcoming Temperature and Electrical Stress III Barriers of E.H.V. Cable Insulation Through Molecular Design. R. C. Mildner, J. J. Grebe, The Dow Chemical Co. (Re-presented for Discussion only)

2:00 p.m.—Linear Control Systems

Room 212, Hollister Hall

Chairman: W. E. MESERVE, Cornell University
Feedback Control Systems Committee

- 61-753. Realization of Transfer Functions. M. Smith, Massachusetts II Inst. of Technology.

WEDNESDAY (continued)

- CP61-741. A Stability Investigation of Time-Varying Linear Systems. G. P. Szego, Purdue University.
- 61-728. On Linear Control Theory. P. D. Joseph, J. T. Tou; Purdue II University.
- 61-752. Feedback Compensation: A Design Technique. G. J. Thaler, II J. D. Bronzino, D. E. Kirk; U. S. Naval Postgraduate School.

Thursday, June 22nd

9:00 a.m.—Control System Analysis

Room 212, Hollister Hall

Chairman: H. C. Torng, Cornell University
Feedback Control Systems Committee

- 61-828. Phase Space Analysis and Design of Linear Discontinuously II Damped Feedback Control Systems. K. W. Han, G. J. Thaler; U. S. Naval Postgraduate School: (Re-presented for Discussion only)
- 61-754. An Introduction to Lyapunov's Second Method. W. J. Cunningham, II Yale University. (Re-presented for Discussion only)
- CP61-830. Use of an Incremental Computer in a Feedback Control System. C. E. Baker, McDonnell Aircraft Corp.
- CP61-748. Limit Cycles of a Sampled-Data Relay Servo Using the z-Transform and Describing Function. J. S. Demetry, U. S. Naval Postgraduate School.
- 61-819. Mathematical Models for Time-Domain Design of Electro- II Hydraulic Servomechanisms. P. K. C. Wang, IBM Corp.

9:00 a.m.—Power System Communications

Room M, Olin Hall

Chairman: E. S. Koesan, Pennsylvania Electric Co.
Power System Communications Committee

- 61-806. Digital Computer Solution of a Microwave Reflector Problem. III C. McCord, J. W. Vinyard; Tennessee Valley Authority.
- 61-807. A Repeater Receiver for the Near System. D. R. Cleary, Mid- III west Research Inst.
- 61-808. Receivers for the National Emergency Alarm Repeater Sys- III tem. F. H. Inderwiesen, Midwest Research Inst.

9:00 a.m.—Transmission & Distribution

Room B 17, Upson Hall

Chairman: J. K. DILLARD, Westinghouse Electric Corp.
Transmission & Distribution Committee

- CP61-792. Field Tests on an Interrupter Switch for Capacitor Service. J. J. Mikos, S&C Electric Co.; V. P. Rader, American Electric Power Service Corp.
- 61-740. Field Patterns of Bundle Conductors and Their Electrostatic III Properties. A. S. Timascheff, Aluminum Company of Canada, Ltd.
- 61-783. Current Asymmetry in Resistance-Reactance Circuits—II. III E. T. B. Gross, B. Thapar; Illinois Inst. of Technology
- 61-793. Extra-Long-Distance Transmission. E. W. DuBois, J. F. Fair- III man, Jr., C. M. Murphy, Westinghouse Electric Corp.; D. E. Martin, J. B. Ward, Pacific Power and Light Co.

9:00 a.m.—Electromechanical Energy Conversion-System Analysis

Room 101, Phillips Hall

Chairman: S. S. L. CHANG, New York University
Education and Rotating Machinery Committees, IRE Professional Group on Education, and ASEE Electrical Engineering Division

BUY PAPERS IN WILLARD STRAIGHT HALL

THURSDAY (continued)

CP61-734. Support of Endowed Colleges By Industry. M. G. Malti, Cornell University.

Note: The following three papers are being preprinted under one cover and will have the same number. Price \$1.25.

S-128. A Decade of Experience in Teaching Kron's Approach to Generalized Systems Theory. T. J. Higgins, University of Wisconsin.

An Abstract Mathematical Basis for Network Analogies and Its Significance In Physics and Engineering. F. H. Branin, Jr., IBM Corp.

Kirchoff's Versus Lagrange's Postulates as a Basis of System Analysis. H. E. Koenig, Michigan State University.

61-733. Educating Electrical Engineers for Professional Careers. S. III Linke, Cornell University. (Re-presented for Discussion only)

61-735. Motivation Through Challenge. W. C. Johnson, P. R. Clement, II Princeton University. (Re-presented for Discussion only)

9:00 a.m.—Radio Astronomy

Room R, Olin Hall

Chairman: H. G. BOOKER, Cornell University

Radio Communication Systems Committee

CP.* Observations of Extraterrestrial Radio Noise. P. F. Weaver, Cornell University.

CP.* Auroral Radar Phenomena. W. Flood, Cornell University.

CP.* Radio Investigations of the Moon. T. Gold, Cornell University.

CP.* A New Method of Space Exploration by Radar. T. Laaspere, Cornell University.

2:00 p.m.—Sample Data Control Systems

Room 212, Hollister Hall

Chairman: G. KRANC, Columbia University

Feedback Control Systems Committee

CP.* An Input Self-Adaptive Pulse-Data System. C. K. Taft, Cleveland, Ohio.

61-743. Sampled-Data Control Systems with Transport Lag by Mitrovic's Algebraic Method. D. Siljak, Beograd, Yugoslavia.

61-749. Optimum Synthesis of Multiport Systems Containing Modulators with Periodic Carriers. J. F. Egan, G. J. Murphy; Northwestern University.

CP61-742. An Analog Simulation of a Discrete Compensator for a Sampled Data System. R. C. Dorf, U. S. Naval Postgraduate School; R. L. Enos, U. S. N. Guided Missiles School.

2:00 p.m.—Radio Noise

Room B 17, Upson Hall

Chairman: H. L. RORDEN, American Electric Power Service Corp.

Transmission & Distribution Committee

61-795. The Spectrum of Corona Noise Near A Power Transmission Line. C. W. Helstrom, Westinghouse Electric Corp.

61-729. Radio Interference From High Voltage Lines: Part I—Statistical Approach. R. J. Mather, B. M. Bailey, Bonneville Power Administration.

CP.* The Problem of Radio Noise Instrumentation. W. E. Pakala, Westinghouse Electric Corp.

61-794. Digital Calculation of Radio Noise Levels. A. K. Abboushi, I L. O. Barthold, General Electric Co.

THURSDAY (continued)

2:00 p.m.—Electromechanical Energy Conversion—Undergraduate Courses

Room 101, Phillips Hall

Chairman: J. F. LAMB, University of Missouri
Education and Rotating Machinery Committees,
IRE Professional Group on Education, and
ASEE Electrical Engineering Division

Note: The following four papers are being preprinted under one cover and will have the same number. PRICE \$1.25.

S-128. Evaluation of a Program in Energy Conversion and Control. K. A. Fegley, University of Pennsylvania.

Electromechanical Energy Conversion in the Undergraduate Curriculum at the University of Delaware. E. Erdelyi, University of Delaware.

Electric Machinery in an Undergraduate Electrical Engineering Curriculum. H. Majmudaj, Syracuse University.

Electric Machinery and System Engineering Courses. P. L. Alger, Rensselaer Polytechnic Inst., O. I. Franksen, University of Denmark.

CP.* Progress Report by the ASEE Committee to Survey the Teaching of Electromechanical Energy Conversion Courses. A. D. Bailey, University of Illinois.

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

Alice Statler Auditorium

Honorary Chairman: President, C. H. LINDER

Moderator: F. L. LAWTON, Chairman, TOD

Friday, June 23rd

9:00 a.m.—Control System Techniques

Room 212, Hollister Hall

Chairman: H. T. MARCY, International Business Machines Corp.

Feedback Control Systems Committee

61-745. Experimental Determination of the Frequency Response of a Linear Transfer Function for Arbitrary Transient Inputs of Finite Duration. W. W. Wierwille, Cornell University.

CP61-746. A Digital Technique for Obtaining Sinusoidal Frequency Responses of any Block Diagram Configuration. R. G. Abraham, Westinghouse Electric Corp.

CP61-811. Extremum Adaptation in Transient Drift of Multivariable Situations. R. I. Van Nice, (formerly with Carnegie Institute of Technology), Westinghouse Electric Corp., R. A. Mathias, Carnegie Institute of Technology.

9:00 a.m.—Substations and Power Generation

Room M, Olin Hall

Chairman: E. T. B. GROSS, Illinois Inst. of Technology

Substations and Power Generation Committees

CP.* Solid State Bearing Protection. F. X. Carney, N. Y. S. Electric and Gas Co.; D. B. Seymour, Westinghouse Electric Corp.

61-781. Earth Resistivity Measurements for Grounding Grids. A. Kinyon, Vancouver, Washington.

61-782. G.P.U.—Penelec's 460 KV Substations. A. M. Baker, Pennsylvania Electric Co.; G. E. Hertig, I-T-E Circuit Breaker Co.

CP61-810. Work Simplification Methods Applied to The Construction of Standardized Substations. R. S. Melville, Southern California Edison Co.

CP.* Use of Aluminum in Substation Design. G. E. Heidenreich, Jr., Cincinnati Gas & Electric Co.

BUY PAPERS IN WILLARD STRAIGHT HALL

FRIDAY (continued)

9:00 a.m.—Transformers

Room B 17, Upson Hall
 Chairman: C. W. MILLER, Westinghouse Electric Corp.
Transformers Committee

- CP61-788. Reactance of Toroidal Transformer Devices. A. A. Halacsy, Federal Pacific Electric Co.
- 61-789. Optimization of Transformer Geometry by "Method of Finite III Increments." S. P. Jackson, Continental Electronics Corp.
- 61-773. Distribution Transformer Magnetizing Inrush Current. J. E. III Holcomb, General Electric Co.
- CP61-809. The Feasibility of Superconducting Power Transformers. R. McFee, Syracuse University.

9:00 a.m.—Electric Circuit Theory

Room 101, Phillips Hall
 Chairman: W. LePAGE, Syracuse University
Basic Sciences Committee

- 61-802. On the Optimum Synthesis of Random Sampling Multipole II Filters with Stationary Inputs. H. C. Hsieh, University of California.
- 61-803. Maximization and Minimization of Complicated Multivariable I Functions. N. S. Bromberg, Massachusetts Inst. of Technology.
- 61-804. A Note on the Approximate Representation of a Curve With I Linear Segments. S. G. S. Shiva, Bangalore, India.
- CP.* Solution of Initial-Valve Circuit Problems by Multiple Mellin Transforms. T. J. Higgins, University of Wisconsin; E. S. Ibrahim, Purdue University.

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.

INSPECTION TRIPS

Monday, June 19, 10:00 A.M. to 12:00 Noon and 4:00 P.M. Tuesday, Wednesday and Thursday — High-Voltage Cable Project. The Association of Edison Illuminating Companies and the Edison Electric Institute are sponsors of a research and test program at Cornell for the study and evaluation of specially-designed, extra-high voltage underground power cables. Cable specimens, each of unique design, have been built by four cable manufacturers and installed at the recently dedicated test station at Cornell. The cables, designed to operate underground with an excitation in excess of 345,000 volts between phases, provide a three-phase, load-transmission capability in excess of 500 mva. and represent the first such installation in America. The voltage will be gradually increased over a two year period to a maximum of 500 kv.

No cost for trip.

Monday, June 19 to Thursday, June 22, 1:30 P.M.—Cornell Ornithology Laboratory. The Cornell Ornithology Laboratory at Sapsucker Woods is located two miles Northeast of the Cornell Campus. This 150-acre woodland, with a 10-acre pond, is a refuge for many kinds of birds, ducks, geese and herons. Both woodland trails and a comfortable glassed-in area within the laboratory building are available for observation and study of these many species.

The laboratory is well known for the phonograph records it has produced over the last 25 years. The Cornell Library of Natural Sounds now includes the voices of over 1000 species of birds and other animals.

No cost for trip.

Tuesday, June 20, 8:30 A.M. to 12:30 P.M.—National Homes. The tour of the National Homes Plant at Horseheads, New York will encompass the major portion of the manufacturing operation so that all may see what goes into making a National Home. After completion of this portion of the guided tour, an inspection of five of their leading design homes will be made available. Homes manufactured at this facility are distributed to 12 eastern states of the Company's national sales market. The plant, in operation since 1950, completed the 200,000th home for the corporation last November.

Approximate cost of trip—\$2.00.

Tuesday, June 20, 1:00 to 6:00 P.M.—Corning Glass Center Trip. At the Center, built in 1951 to celebrate the 100th anniversary of Corning Glass Works, you will be introduced to the fascinating world of glass. In the lobby is a major achievement of modern glassmaking, the giant 20-ton predecessor of the disk cast for the Hale telescope on Palomar Mountain in California. In contrast, one of the earliest known examples of glassmaking, a tiny Egyptian amphoriskos made in 1500 B.C., is exhibited at the entrance of the Museum, where hundreds of pieces of glass from earliest times to the present are on display. The Hall of Science and Industry contains dramatic displays and push button exhibits which show how glass is used to make living more comfortable and productive.

From a spacious gallery you will see master craftsmen fashion and engrave world-famous Steuben crystal. Films and lectures on glass-making are presented in the Lecture Hall. You will be able to purchase souvenirs at the Gift Counter, or beautiful Steuben crystal in the Retail Shop.

Approximate cost of trip—\$2.00.

Tuesday, June 20 and Thursday, June 22, 2:00 P.M.—Cornell Computing Center. The Center recently installed a new data processing system in expanded quarters that provide 17 offices for staff and departmental use and three air-conditioned, humidity-controlled rooms to house the computer and associated equipment. The new system, known as the Burroughs 220, is comprised of card, paper tape and magnetic tape handling equipment, and a data processor with a magnetic core memory. This extremely versatile equipment provides facilities for increasing the scope of investigations in both data processing

and scientific areas. Students thus have access to a representative and powerful data processor such as they might encounter after graduation.

No cost for trip.

Wednesday, June 21, 9:30 to 11:00 A.M.—Ithaca Gun Company. Although the Ithaca Chamber of Commerce refers to the Ithaca Gun Company as the oldest industry in Ithaca (1880), the Company shies from the word "industry" and prefers instead the designation "craft." The difference reflects the pride Ithaca Gun Company employees take in their work. Whether it be a 2500 FEATHERLIGHT Shotgun inlaid with 24 karat gold and platinum, or a boy's .22 caliber LIGHTNING Rifle, it is fabricated with loving skill by Ithaca craftsmen. At the same time, the company must remain strictly competitive, parts must be interchangeable and modern production methods developed to stay ahead of the field. Any engineer will marvel at Ithaca Gun's ability to merge these two divergent philosophies in its plant nestled on a hillside "far above Cayuga's waters." From the master engraver who may take as much as eight weeks to engrave and inlay a gun, to the 17-ton Rotary Forge, only one in the American gun industry, which hot forges a gun barrel in a matter of seconds, visitors gain a wealth of understanding and appreciation for the skills handed down from generation to generation in this unique plant.

No cost for trip.

Wednesday, June 21, 1:00 to 6:00 P.M.—Great Western Wineries. Founded near Hammondsport in the Finger Lakes section of New York in 1860 as the Pleasant Valley Wine Company, Great Western is starting its second century of wine making in this country. Today's champagne is still made in the traditional fashion, aging it in the bottles for three years before placing it on the market. During these years, each bottle is handled 167 times, following the process used by the discoverer of champagne, Dom Perignon, in 1695.

The entire process of wine-making may be viewed in the cellars of Great Western. The wines are made with the same meticulous care and slow aging methods employed for centuries in Europe. The highlight of the trip is generally considered to be the samples offered at the end of the tour.

Approximate cost of trip—\$2.50.

Wednesday, June 21, 1:30 and 3:00 P.M.—General Electric Advanced Electronics Center. The General Electric Advanced Electronics Center, first permanent tenant in the Cornell University Industry Research Park, is the applied research and advanced engineering arm of GE's Light Military Electronics Department. The Center is engaged in research and development work in electronic countermeasures, navigation techniques, air-launched missiles and missile guidance, airborne tracking and search radar, sonar, undersea warfare, infrared and ultraviolet surveillance and detection, communications, data processing and display, bionics, magnetics and in the development of other light military equipment necessary to support the tactical and strategic missions of the U.S. Department of Defense. Tours of the Center's facilities and presentations and demonstrations of some of the latest developments in military electronics will be given.

No cost for trip.

Thursday, June 22, 8:30 A.M. to 1:00 P.M.—IBM, Endicott, New York. The Endicott plant of the International Business Machines, Corp. is the oldest, and at the same time, one of the principal modern plants exclusively manufacturing business machines and electronic computers. The manufacturing plant and engineering facilities now cover 2½ million square feet with approximately 9000 employees.

The results of modern research have created a new product line composed of electronics, transistors, printed circuits and modular concepts that were not in existence a decade ago. Of particular interest and a high point of the tour is the component assembly and test line of the modular system of printed circuit cards. A unique feature is that

their manufacturing, assembly and test is almost completely automatic. In addition, much of the entire wiring in the machine is done by tape programmed machines.

Later in the tour the final data processing machines become a reality as the visitor sees the component units flow into the final assembly and test stations. Also to be seen is the manufacturing and assembly of the high speed electro-magnetic printers used as output devices of data processing systems.

Approximate cost of trip—\$2.00.

Thursday, June 22, 1:30 to 5:30 P.M.—Westinghouse Tube Plant. The Elmira Plant, one of two in the Electron Tube Division, started operations in 1953. This plant manufactures television picture tubes and many special purpose types such as ignitrons, thyatrons, large high vacuum power tubes for radio and induction heating, neutron counters, magnetrons for radar, etc.

The plant area is one-half million square feet, single story in the manufacturing and warehousing areas, and two story for office and laboratories.

The visit will consist of a tour of the non-classified manufacturing areas. Operations involving glass blowing, metal sealing to glass, parts making, assembly, exhaust and test of electron tubes may be observed. Exhibits of completed tubes will be stationed along the tour path.

Citizenship not required—no cameras—adults only.

Approximate cost of trip—\$2.00.

LADIES' ENTERTAINMENT

The Ladies' Committee has prepared a schedule of events geared to any degree of energy or curiosity. Watching the changing view of the hills and Cayuga Lake is restful and refreshing. Bird watching at the Ornithology Laboratory or in the glens or bird sanctuary is brisker. Swimming in Teagle Hall or outdoors in Beebe Lake or at the State Parks, is more invigorating. And for the sturdy, hikes through the gorges, bowling and tennis are available.

Small fees will be charged for most of the sports. Bring your own swimming suit and tennis equipment!

For the curious, there is much to see on the campus; more still, of local topography and commercial production on some of the trips arranged by the men; and especially: a unique combination of flowers, music and the dance, and presentation of glass, past, present and future.

For fun and relaxation the Card Luncheon.

Ladies' Headquarters: The Elmhirst Room in Willard Straight Hall will be open Monday through Thursday, 9 A.M. to 4:30 P.M., Friday until noon. Use it to meet your friends, plan your days, or for an informal game of cards. Coffee Hour from 9-10:30 A.M. each morning, except on Thursday when service will begin at 8 A.M.

No special program has been planned for teen-agers, but there are ample facilities for outdoor sports, and for family picknicking in any degree of simplicity.

For parents of young children a list of recommended "sitters" will be available at Headquarters, for making individual arrangements.

Adequate medical care for all is available.

Ladies' Special Events:

Sunday, June 18—Informal Tea, Terrace Room, Willard Straight Hall, 4-6 p.m.

Monday, June 19—Coffee Hour, 9-10:30 a.m., Elmhirst Room. Tea and Exhibit of Art and Craft by wives of area engineers. 3-5 p.m. in the Big Red Barn.

Tuesday, June 20—Coffee Hour, 9-10:30 a.m., Elmhirst Room; Picnic Trip 9:30-3 p.m. by bus to Enfield Glen and Robert E. Treman State Park. Box lunch (\$1.50) in historic Old Mill, short walks, or

three mile hike to lower falls and swimming pool. The Finger Lakes country at its best! LADIES AUXILIARY MEETING in Elmhirst Room, 10:30 to noon.

Wednesday, June 21—Coffee Hour, Elmhirst Room, 9-10:30 a.m. Flower creations inspired by music and the dance—demonstrated by a past and a future director of the Garden Clubs of New York State, 10:30 to noon, in the Big Red Barn. Luncheon and Cards 12:30-4 p.m. (\$3.00).

Thursday, June 22—Coffee Hour, 8-10:30 a.m., Elmhirst Room. Special trip to Corning Glass Center, 8 a.m. to 6 p.m. by bus (\$2.00), will include: lecture on the history of glass, tours of the museum, films, "Glass and You," Luncheon (\$2.50), tour of the Science Hall, and the Steuben Factory. Souvenirs, favors, and door prizes at the luncheon. (Limited to 150 guests).

Friday, June 23—Coffee hour, Elmhirst Room 9-10:30 a.m.

Note: Tickets for the Card Luncheon and for the Corning Glass Trip must be purchased in advance. Box luncheons will be available for private outings as well as for the Enfield Trip. They must be ordered 24 hours in advance.

SPECIAL EVENTS FOR ALL

Monday Evening, June 19—A talk by Dr. Arthur A. Allen, Ornithologist of international reputation will be given at 8:00 p.m. in the Alice Statler Auditorium. Dr. Allen, a Professor Emeritus at Cornell University, will have a movie film to illustrate the photographic and sound recording techniques he has used to unravel some of the mysteries of bird behavior. No charge for tickets.

Monday, Tuesday, Wednesday, Thursday Evenings—An informal cabaret will be operated from 8:00 p.m. to 12:00 Midnight in the Statler Ballroom. Refreshments, buffet, dancing. No admission charge, no cover charge, no minimum charge—pay as you go.

Wednesday Evening, June 21—A chicken barbecue will be held on Schoellkopf Field on the campus. In case of rain, the barbecue will be held in Lynah Hall, nearby. Tickets will be priced at approximately \$2.25.

SPORTS

Cornell University has numerous athletic facilities that will be opened for convention guests and their families. A listing of the sports programs is presented as follows:

Golf—A special tournament has been arranged for both men and women guests on the Cornell University 18-hole championship course. This course is open to all convention guests. Green fees are \$1.50 on weekdays and \$2.00 on Saturday and Sunday.

Tennis—Numerous tennis courts of both clay and hard-surface construction are located throughout the Cornell campus. Many courts are within a short distance of the convention housing facilities. The courts are available at no charge on a first-come, first-served basis.

Swimming—Indoor swimming is available at Teagle Hall. A fee of 50¢ will be charged for use of lockers and towels. Outdoor swimming is available at Beebe Lake. Admission is 20¢.

Miscellaneous—A game room is located in Willard Straight Hall. Billiard and table tennis facilities are available at no cost. Many other facilities such as fishing, golfing, bowling, swimming, and water sports are available in the Ithaca area for convention guests and their families.

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 S. Linke, *Housing*
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 M. G. Malti, *Program*
 J. P. Peterson, *Finance*
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H. G. SMITH, *Chairman*
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 C. F. Green
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MRS. C. L. COTTRELL, *Co-Chairman*

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J. L. ROSSON, *Chairman*

L. D. Hall	I. R. Howland
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C. A. Wells

*Ex Officio

COMMITTEE MEETINGS

Monday, June 19

	<u>Hall—Room</u>
9:00 A.M.—Noon	
Professional Conduct Committee	Upson 111
Sections Committee	Upson 107
Public Relations Committee	Upson B11
10:00 A.M.—Noon	
Communication Theory Committee	Upson B7
12:00 Noon—2:00 P.M.	
Luncheon-Annual Meeting	West Lounge*
12:30 P.M.—2:00 P.M.	
Luncheon-Indicating & Integrating Instruments Committee	Kimball A**
2:00 P.M.—4:00 P.M.	
Annual Meeting	Alice Statler Auditorium
4:00 P.M.—7:00 P.M.	
TOD Ad Hoc Papers Committee	Upson B11
Semiconductor Rectifiers Committee	Upson B7

Tuesday, June 20

9:00 A.M.—Noon	
Chemical Industry Committee	Hollister 118
Frequency Range Transformers W. G. Electronic Transformers Sub. E.C.	Hollister 114
Research Committee	Upson 111
TOD Manual Subcommittee	Upson B11
9:00 A.M.—5:00 P.M.	
Section Delegates Conference	Olin M
Student Branches Committee	Phillips Lounge
Computing Devices Committee	Phillips 203
12:30 P.M.—5:00 P.M.	
Luncheon-Communication Committee	Kimball B**
Luncheon-Registration of Engineers	Kimball A**
2:00 P.M.—5:00 P.M.	
Power Transformers W. G. Electronic Transformers Sub., E.C.	Hollister 114
Inter-Society Relations	Hollister 202
AIEE W. G. 60.1 Aluminum & Steel Substation Structures	Upson B7
Nuclear Instrumentation Committee	Upson B11
4:00 P.M.—6:00 P.M.	
Hydroelectric Power Subcommittee	Hollister 118

Wednesday, June 21

9:00 A.M.—Noon	
AIEE-NEMA Industrial Control Liaison Committee..	Upson B7
Materials W. G. Electronic Transformers Subcommittee, E.C.	Upson B11

*Located in Statler Hall.

**Located in Willard Straight Hall.

WEDNESDAY (continued)

	<u>Hall—Room</u>
Task Group on Symbology, Standards Subcommittee C.D.	Hollister 202
Professional, Development and Recognition Dept....	Upson 107
District TOD Representatives Committee.....	Hollister 312
Pulse Transformers W. G. Electronic Transformers Subcommittee, E.C.	Hollister 118
9:00 A.M.—2:00 P.M.	
Science and Electronics Division & Luncheon....	Kimball A**
9:00 A.M.—5:00 P.M.	
General Administration Dept.	Phillips Lounge
9:30 A.M.—Noon	
Electric Coupling Subcommittee, RMC	Hollister 114
12:30 P.M.—4:00 P.M.	
Luncheon-Radio Communication Systems	Chatterbox*
1:30 P.M.—5:00 P.M.	
Electric Coupling Subcommittee, RMC	Hollister 114
Industry Division.....	Upson 107
2:00 P.M.—5:00 P.M.	
Power Division	Hollister 306
Electronic Transformers Subcommittee, E.C.	Hollister 118
Management Committee	Upson B7
Communication Switching Systems Committee	Upson B11
Computer Standards Subcommittee, C.D.	Hollister 202
4:00 P.M.—7:00 P.M.	
Electrical Insulation Committee	Hollister 206
Wire Communication Systems Committee	Upson 111

Thursday, June 22

9:00 A.M.—12:00 Noon	
I. & C. P. Executive Subcommittee	Upson B7
Industrial Power Systems Subcommittee I & CPS	Upson B11
Nuclear Reactor Subcommittee, N.C.	Hollister 114
9:00 A.M.—2:00 P.M.	
Technical Operations Dept. & Luncheon	West Lounge*
9:00 A.M.—5:00 P.M.	
AIEE W. G.—Hermatic Motor Insulation	Upson 111
Vice-Presidents & District Secretaries	Phillips Lounge
12:00 Noon—2:00 P.M.	
Luncheon—System Coord. & Prot. Subcommittee of I & CPS.....	Harvest Room*
2:00 P.M.—5:00 P.M.	
TOD Ad Hoc Committee (Co-operation with EJC & Cognate Societies)	Upson B7
Data Communication Committee	Upson B11
Industrial & Commercial Power Systems Committee	Upson 107
Planning & Coordinating Committee	West Lounge*

*Located in Statler Hall.

**Located in Willard Straight Hall.

THURSDAY (continued)

Hall—Room

7:30 P.M.—10:00 P.M.

Forum of Technical Committee Chairmen
 Alice Statler Auditorium

Friday, June 23

9:00 A.M.—12:00 Noon

Board of Directors.....West Lounge*
 Education CommitteeUpson 111

12:00 Noon—2:00 P.M.

Luncheon—Board of Directors.....West Lounge*

2:00 P.M.—5:00 P.M.

Energy Conversion Discussion, E. C.Upson 107
 Board of Directors.....West Lounge*

LIST OF AUTHORS

<i>Author</i>	<i>Page</i>	<i>Author</i>	<i>Page</i>
Abboushi, A. K.	12	Forster, K.	9
Abraham, R. G.	13	Franksen, O. I.	13
Alger, P. L.	13	Gamblin, R. L.	3
Anderson, A. S.	7	Gilbert, M.M.	7
Arnold, C. E.	5	Gilmore, E. A.	8
Bailey, A. D.	13	Gold, T.	12
Bailey, B. M.	12	Goldenberg, H.	8
Baker, C. E.	11	Graham, L. J.	5
Baker, A. M.	13	Graybeal, T. D.	6
Baker, H. D.	10	Grebe, J. J.	10
Baltensperger, P. A.	9	Griffin, J. E.	3
Barth, A. H.	9	Griffith, C. G.	8
Barthold, L. O.	9, 12	Gross, E. T. B.	11
Basileco, J.	5	Guidone, R. Miss	5
Bender, F. J.	9	Hadley, W. A.	10
Bernholtz, B.	5	Halacsy, A. A.	14
Bevilaqua, F.	7	Hall, F. B.	4
Bottom, E. L.	7	Han, K. W.	11
Bourbonnais II, T. L.	10	Harle, J. A.	5
Bowmaker, N. J.	8	Harp, M. C.	8
Branin, Jr., F. H.	12	Hartley, R. H.	5
Bromberg, N. S.	14	Hauspurg, A.	7, 9
Bronzino, J. D.	11	Heidenreich, Jr., G. E.	13
Burke, D. C.	9	Helstrom, C. W.	12
Cahill, L.	9	Henneberger, T. C.	10
Carney, F. X.	13	Hermach, F. L.	3
Carter, G. K.	9	Hertig, G. E.	13
Clark, J. J.	10	Higgins, F. A.	6
Cleary, D. R.	11	Higgins, T. J.	12, 14
Clement, P. R.	12	Hoh, F. K.	10
Coho, O. C.	5	Holcomb, J. E.	14
Collett, W. I.	7	Hsieh, H. C.	14
Colwell, J. W.	7	Ibrahim, E. S.	14
Cool, L. R.	8	Inderwiesen, F. H.	11
Croft, W. H.	5	Jackson, S. P.	5, 14
Cunningham, W. J.	11	Jensen, C. H.	8
Curl, F. G.	3	Johannesen, A.	5
Das Gupta, A. K.	5	Johnson, W. C.	12
De Cicco, J.	6	Joseph, P. D.	11
Demetry, J. S.	11	Kidd, K. H.	9
De Muth, R. E.	8	Kihn, H.	4
Dennis, N. G.	5	Kinyon, A.	13
De Sieno, C. F.	9	Kirby, D. B. Mrs.	4
Dickerson, J. A.	4	Kirk, D. E.	11
Dikeman, Jr., R. J.	7	Koenig, H. E.	12
Dorf, R. C.	12	Kowalik, R. F.	6
Dowis, W. J.	8	Laaspere, T.	12
DuBois, E. W.	11	Lee, C. H.	6
Edmonson, L. D.	8	Lee, J. A.	8
Egan, J. F.	12	Leimer, J. J.	3
El-Abiad, A. H.	5	Levine, S.	3
Enos, R. L.	12	Lin, H. C.	4
Erdelyi, E.	13	Linke, S.	12
Fagen, M. D.	10	Lukac, W.	4
Fairman, Jr., J. F.	11	Mabey, C. A.	3
Fegley, K. A.	13	Macrander, M. S.	6
Ferguson, M. E.	8	Maier, M. J.	9
Fisher, L. E.	9	Majmudar, H.	13
Fletcher, E. L.	8	Malone, J. J.	7
Flood, W.	12		

LIST OF AUTHORS

<i>Author</i>	<i>Page</i>	<i>Author</i>	<i>Page</i>
Malti, M. G.	12	Shea, P. D.	6
Manning, M. L.	10	Shiva, S. G. S.	14
Marcus, M. P.	3	Shoop, R. M.	7
Marter, W. E.	7	Siljak, D.	12
Martin, D. E.	11	Smeloff, N. N.	7
Mather, R. J.	12	Smith, M.	10
Mathes, K.	10	Snyder, G. E.	6
Mathias, R. A.	13	Sparrow, K. M.	6
McAdoo, K. L.	10	Stagg, G. W.	5
McClintock, D. C.	7	Stansbury, C.	3
McCord, C.	11	Stelmak, J. P.	4
McElyea, J. A.	8	Strull, G.	4
McFee, R.	14	Swiss, J.	10
McLean, H. J.	5	Szabo, B.	5
McLenegan, D. W.	8	Szego, G. P.	11
McMurray, W.	6	Szippl, A. F.	6
Meade, R. M.	4		
Melas, C. M.	8	Taft, C. K.	12
Melville, R. S.	13	Tellier, R. A.	10
Melvin, D. K.	8	Thaler, G. J.	11
Merrell, E. J.	9	Thapar, B.	11
Mikos, J. J.	11	Thompson, H. T.	7
Mildner, R. C.	10	Thorgerson, T. E.	5
Moore, A. D.	5	Timascheff, A. S.	11
Moore, R. K.	7	Tou, J. T.	11
Mowery, R. W.	8	Treweek, J. E.	7
Munzer, W. F.	5	Trouard, S. E.	9
Muroga, K.	6	Tuck, E. F.	8
Murphy, C. M.	11	Tunis, C. J.	3
Murphy, G. J.	12		
		Van Bosse, J. G.	6
Oberbeck, G. A.	5	Van Nice, R. I.	13
O'Connor, J. J.	7	Van Wormer, C. S.	7
Okuda, J.	6	Vassiliev, S. G.	9
Oudin, J. M.	10	Vinyard, J. W.	11
Owen, E. R.	7		
		Walker, R. G.	8
Pakala, W. E.	12	Wang, P. K. C.	11
Peach, N.	7	Warburton, C. R.	3
Pearce, J. G.	6	Ward, J. B.	11
Perkins, Jr., J. R.	10	Warter, Jr., P. J.	10
Price, T. C.	9	Watanabe, K.	6
		Weaver, P. F.	12
Rader, V. P.	9, 11	Weed, J. E.	7
Richardson, F. O.	10	Weimer, F. C.	3
Roberts, J. O.	7	Whipple, R. E.	3
Roberts, W. L.	10	White, H. B.	8
Rosenthal, C. W.	4	Whitman, L. C.	8
Runge, L.	8	Wierwille, W. W.	13
		Wollaston, F. O.	9
Sanders, R. P.	6	Wong, C. M.	10
Schuyler, J. O.	7	Wray, J. Q.	4
Sendzuk, G. T.	3	Wright, D. F.	3
Seymour, D. B.	13		
Shattuck, D. P.	6	Yamato, S.	6

MEMORANDUM

MEMORANDUM

MEMORANDUM

DAILY CALENDAR

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

CORNELL UNIVERSITY CAMPUS



