

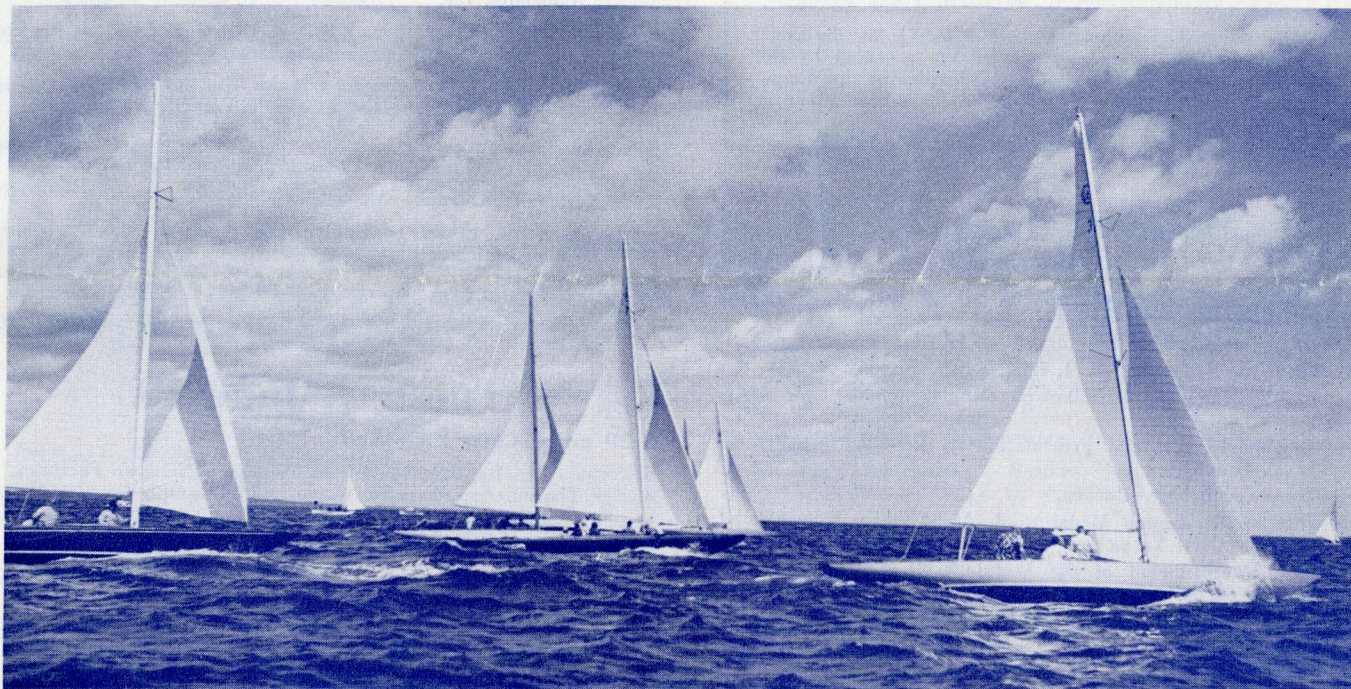


# Summer General Meeting

June 27 - July 1, 1955

SWAMPSCOTT, MASS.

Headquarters  
New Ocean House



Sailing off Swampscott, Massachusetts

Ronald E. Stroud

The 1955 Summer General Meeting to be held at the New Ocean House in Swampscott, Mass., June 27-July 1, provides a diversified program to satisfy the desires of all who attend. A total of 45 technical sessions will be held and 9 inspection trips of both general and technical interest have been arranged to complement the technical program.

Almost all of the forty technical committees of the Institute will sponsor sessions at this meeting. On Monday afternoon Applications of Polyethylene Insulated High Voltage Power Cable in Chemical Plants will be discussed. Tuesday morning the Committee on Safety will present four papers on electric shock and accident prevention. At 9:30 a.m. Wednesday, the Committee on Management is sponsoring two papers by men well qualified in this field. In the same period one session will be devoted to the Inter-Island Radio Network of the Hawaiian Telephone Company. Two sessions on Thursday will be devoted to applications and practices in the Textile Industry. An examination of the following detailed program will reveal many more papers in a wide range of subjects in each of the five technical fields of Institute activity.

Swampscott, located on Boston's north shore, is also ideally situated to provide you with unlimited vacation opportunities. The New Ocean House, meeting headquarters, is located on the Atlantic Ocean and has a private beach, extensive grounds, and an excellent 1000-yard golf course. Nearby is Marblehead, Mass., one of the famous yachting centers of the world. Also, Lexington, Concord, Salem, Gloucester, Plymouth, and Boston, all within easy driving distance, offer their points of historic interest for your pleasure.

**HOTEL RESERVATIONS:** Accommodations for members and guests have been arranged at the New Ocean House and Hotel Preston in Swampscott, the Hawthorne Hotel in Salem, the Hotel Kenmore in Boston, and a number of other smaller hotels and homes in Swampscott area.

Requests for reservations should be sent to the New Ocean House, Swampscott, Mass., prior to June 13. The New Ocean House will

assign space in a particular hotel and confirm to you the arrangements made. If you have a particular choice, please state this in your request. However, since the headquarters hotel will accommodate less than half the anticipated attendance, requests for this hotel can be honored only to the extent of the facilities available.

Special buses will be available on a morning and evening schedule for transportation between the various hotels. A nominal charge will be made for the longer of these trips.

The New Ocean House and Hotel Preston are available only on the American Plan—with meals served at the New Ocean House. Accommodations at other hotels are for room only, but meals may be had at the New Ocean House on a per diem or per meal basis.

Rates are as follows:

	Room and Meals per Day—per Person
New Ocean House and Hotel Preston	
Double room with bath—twin beds .....	\$11.50 to \$13.00
Double room with bath—twin beds— Hotel Cottages .....	11.25 to 11.50
Large Room with bath—Three beds .....	10.75 to 11.00
Large Room with bath—Four beds .....	10.25 to 10.50
Suite—2 Double rooms with bath between .....	11.00 to 12.00
Corner or Bay Window Room with bath— twin beds .....	13.50 to 13.75
Single room with bath (limited number available)	14.00 to 16.00
Hawthorne Hotel—Salem	Room Only
Single room with bath .....	per Day—per Room
Double room with bath .....	\$ 6.00
	10.00

	Room Only per Day—Per Room
Smaller Hotels and Homes in Swampscott Area	
Single room with bath .....	\$ 4.00 to \$ 5.00
Double room with bath .....	8.00 to 10.00

Continued on page 7

## ADVANCE COPIES OF PAPERS

Members may obtain preprints of numbered papers at the uniform price of 40c each (80c 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 for 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.

## Monday, June 27

### 10:00 a.m.—Annual Meeting

1. Report of the President, A. C. Monteith.
2. Report of the Board of Directors, N. S. Hibshman, Secretary.
3. Report of the Treasurer, W. J. Barrett.
4. Report of Committee of Tellers on vote for nominees for AIEE offices.
5. (a) Introduction of, and presentation of President's badge to M. D. Hooven.  
(b) Response by Mr. Hooven.
6. Presentation of Lamme Medal to A. M. deBellis, Consolidated Edison Co. of New York, Inc.  
(a) The Establishment of the Medal. S. B. Crary, Chairman, Lamme Medal Committee.  
(b) The Career of the Medalist. J. F. Fairman, Consolidated Edison Co. of New York, Inc.  
(c) Presentation of the Medal and Certificate by President A. C. Monteith.  
(d) Response by Mr. deBellis.
7. Any other business that may be presented.

### 2:00 p.m.—Chemical Industry

- CP.\*\* Application of Polyethylene Insulated High Voltage Power Cable in Chemical Plants. S. J. Rosch, Anaconda Wire and Cable Co.
- CP.\*\* Factors Affecting Selection of Insulated Cable. R. C. Graham, Rome Cable Corp.
- CP.\*\* System Neutral Grounding for Chemical Plant Power Systems. H. N. Hickok and D. S. Brereton, General Electric Co.
- CP55-470. Thermal Protection of Motors. G. R. Horcher, The Dow Chemical Co.

55-555. Operating Experience with a Mechanical Rectifier. J. Chamulak, J. W. Tracht, Pennsylvania Salt Mfg. Co. and W. C. McCullough, ITE Circuit Breaker Co. re-presented for discussion.

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

- 55-431. Engineering Multi-Stage Diode Logic Circuits. B. J. Yokelson and W. Ulrich, Bell Telephone Labs., Inc.
- 55-466. The Appraisal of Delays in Gate Type Operation. I. Molnar, Automatic Electric Co.
- 55-467. An Improved Detached-Contact Type of Schematic Circuit Drawing. F. T. Meyer, Bell Telephone Labs., Inc.
- CP.\*\* Recent New Features for the No. 5 Crossbar Switching System. J. W. Dehn and R. E. Hersey, Bell Telephone Labs., Inc.
- 55-436. Minimizing and Mapping Sequential Circuits. W. S. Bennett, The John Hopkins University.

### 2:00 p.m.—Insulated Conductors

- 55-446. Freezing Oil-Type Pipe Cable. E. J. Merrell, Phelps Dodge Copper Products Corp.

55-468. A-C Resistance of Conventional Strand Power Cables in Non-Metallic Duct and in Iron Conduit. R. W. Burrell and M. Morris, Consolidated Edison Co. of N.Y., Inc.

CP55-433. Typical Applications of Non-Leaded Cable on Low Voltage Alternating Current Network System. A. Bodicky, Union Electric Co. of Missouri.

### 2:00 p.m.—System Engineering and Relays

55-469. Relay Protection for Lines Being Sleet Melted by the Short Circuit Method. J. Hogan and C. G. Pebler, Commonwealth Associates, Inc.

CP.\*\* Protective Relaying and System Planning. J. E. Barkle and J. L. Blackburn, Westinghouse Electric Corp.

CP55-447. Protective Relaying as a Major Tool for System Planning. J. R. Linders, Cleveland Electric Illuminating Co.

CP55-526. Relationship Between System Planning and Relay Protection. E. L. Michelson, Commonwealth Edison Co.

### 2:00 p.m.—Conference on Ethics

CP.\*\* Teaching Ethics to Engineering Students. H. W. Bibber, Union College.

CP.\*\* What Ethics? C. T. Chave, Stone and Webster.

CP.\*\* The Philosophy of Codes of Ethics. L. L. Fuller, Harvard Law School.

## Tuesday, June 28

### 9:30 a.m.—Color Television

CP55-561. The Impact of Color on Television Network Facilities. J. Thorpe, American Telephone and Telegraph Co.

55-457. Basic Problems in Film Pickup for TV Broadcasting. E. M. Gore, Radio Corp. of America.

CP.\*\* The Continuous Film Projector and Flying Spot Scanner for Television. R. E. Putman, General Electric Co.

CP.\*\* A Color Projection Receiver. W. F. Bailey, R. P. Burr and R. J. Keogh, Hazeltine Corp.

### 9:30 a.m.—Insulated Conductors

55-443. The Limiter, Its Basic Function in Network Distribution Systems. C. P. Xenis, Consolidated Edison Co. of N.Y., Inc.

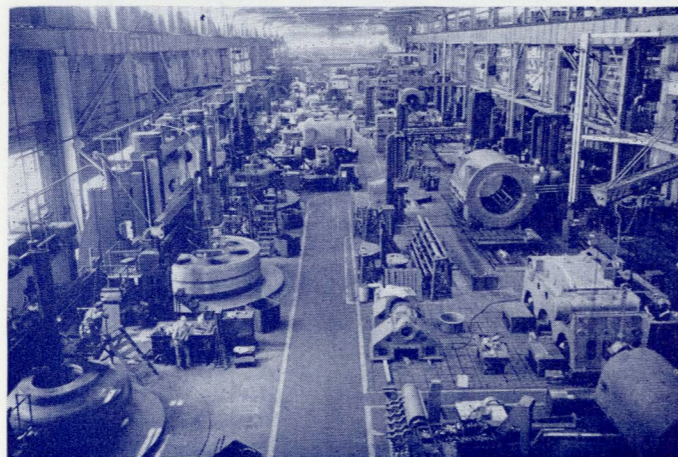
55-444. Overload Classifications for Secondary Network Cables. R. C. Graham, Rome Cable Corp.

55-434. Time Current Damage Characteristics, Cable in Duct. L. F. Porter, Consolidated Edison Co. of N. Y., Inc.

55-445. Co-Ordination of Secondary Network Protection. E. L. Leinbach, Detroit Edison Co., and A. S. Brookes, Public Service Electric and Gas Co.

### 9:30 a.m.—System Engineering and Power Generation

55-496. Automatic Load-Frequency Control System for Central Station Power. G. Ehrenberg, Minneapolis-Honeywell Regulator Co.



Turbine-Gear Division, General Electric Company

55-528. A Computer for Economic Scheduling and Control of Power Systems. C. D. Morrill and J. A. Blake, Goodyear Aircraft Corp.

55-529. System Planning Practices, System Planning Subcommittee of the System Engineering Committee.

### 9:30 a.m.—Section Delegates Conference

#### 9:30 a.m.—Computing Devices

CP.\*\* Superconducting Computer Components. D. A. Buck, Massachusetts Institute of Technology.

55-497. A Multi-Stable Transistor Circuit. R. A. Henle, International Business Machines Corp.

CP.\*\* Experimental Transistor Calculator. G. D. Bruce and J. O. Logue, International Business Machines Corp.

#### 9:30 a.m.—Safety

CP55-471. Electric Shock—Its Causes and Its Prevention. R. L. Kline and J. B. Friauf, Dept. of the Navy.

55-426. Protection of Personnel Against Electric Shock Hazards in Central Office Communications Equipment. R. V. Jones, American Telephone and Telegraph Co.

CP.\*\* A Worthwhile Approach to the Accident Prevention Problem. C. T. Williamson, Bethlehem Steel Co.

CP55-525. A Discussion of Causes of Electrical Accidents and Fires and Means for Their Prevention. E. W. McLeod, Hydro-Electric Power Commission of Ontario.

#### 2:00 p.m.—Satellite TV Transmitters

CP.\*\* An Experimental Investigation of the Engineering Aspects of a UHF Television Booster Installation. J. Epstein, W. C. Morrison and O. M. Woodward, Jr., RCA Laboratories.

CP55-472. Three Low Power UHF Television Systems. J. B. Grund, Sylvania Electric Products, Inc.



Official United States Navy Photograph

Four and three quarter Anchor Chain for Aircraft Carrier Forrestal

CP55-527. A Low Cost Automatic Computer for Economic Load Dispatching. M. H. Welsh, Duquesne Light Co.

CP.\*\* Systems for Satellite Television Broadcasting. T. B. Friedman, Adler Communications Laboratories.

CP.\*\* Considerations of Microwave Installations. R. G. McLaughlin, Raytheon Mfg. Co.

#### 2:00 p.m.—Insulated Conductors

55-473. Limiters, Their Design Characteristics and Application. F. Heller and I. Matthyse, Burndy Engineering Co.

55-432. High Temperature Classification of Rubber and Rubber-Like Insulation of Network Cable by Oven Heating Tests. W. H. Couch and G. J. Crowdes, Simplex Wire and Cable Co.

55-474. A Mathematical Method for Determining Insulation Damage Curves for Network Cables. R. H. Kolks, Cincinnati Gas and Electric Co.

55-441. Characteristic Properties of Secondary Network Cables. S. J. Rosch, Anaconda Wire & Cable Co.

#### 2:00 p.m.—System Engineering

55-530. Forecasting the Demand for Electricity. R. G. Hooke, Public Service Electric and Gas Co.

CP55-531. Electric Utility Load Forecasting. W. W. Godard, Cleveland Electric Illuminating Co.

CP55-532. Forecasting Farm Electric Power Requirements. E. R. Brown and R. D. Partridge, Rural Electrification Adm.

55-450. The Application of Business Machines to Electric Utility Load Forecasting. J. G. Gruetter, Bonneville Power Adm.

CP55-533. National Income and Use of Electrical Energy. F. Felix, International General Electric Co.

#### 2:00 p.m.—Section Delegates Conference

#### 2:00 p.m.—Computing Devices

CP55-515. A Machine for Computing the Convolution Integral. T. O. Ellis, Rand Corp., M. R. Davis and L. L. Grandi, University of California.

55-451. A Static Magnetic Transistor Analogue Divider. D. H. Schaefer, Naval Research Lab.

55-461. Four Quadrant Multiplication with Transistors and Magnetic Cores. R. L. Van Allen, Naval Research Lab.

55-430. A Sine Function Resistor. K. L. Nielsen, U. S. Naval Ordnance Plant and E. H. Roland, General Motors Corp.

## Wednesday, June 29

### 9:30 a.m.—Radio Communications

55-534. The Inter-Island Radio Network of the Hawaiian Telephone Company. W. B. Farinon, Hawaiian Telephone Co.

55-535. Engineering Problems and Performance Record of the Hawaiian Inter-Island Radio Network. W. B. Farinon and A. C. Walker, Hawaiian Telephone Co.

55-536. Equipment for Inter-Island Radio Circuits. A. C. Walker, V. P. Hoover, Hawaiian Telephone Co., and E. E. Nolan, Lenkurt Electric Co.

55-429. Impulse Noise in Narrow Band F.M. Receivers. S. P. Lapin, Motorola, Inc., and J. J. Suran, General Electric Co.

### 9:30 a.m.—Transmission and Distribution

55-437. Corona Studies—In Relation to Insulation. T. W. Liao, J. R. Nye, H. H. Brustle and J. G. Anderson, General Electric Co.

55-453. Effects of Corona on Traveling Waves. C. F. Wagner and B. L. Lloyd, Westinghouse Electric Corp.

55-475. Traveling Wave Protection Problems II. E. W. Boehne, Massachusetts Institute of Technology.

55-476. A Method for Studying Circuit Transient Recovery Voltage Characteristics of Electric Power Systems. W. C. Kotheimer, General Electric Co.

## 9:30 a.m.—Power Generation

- 55-459. An Approach to the Definition of Excitation System Response. T. J. Bliss, Westinghouse Electric Corp.
- CP55-462. Excitation System Response. J. V. Baptist and S. M. Denton, Bureau of Reclamation.
- CP.\*\* A Hydro Utility's Approach to Defining Excitation System Response. P. L. Dandeno and K. R. McClymont, Hydro-Electric Power Commission of Ontario.
- CP.\*\* Exciter Response. H. W. Cory, Allis-Chalmers Mfg. Co.
- CP55-524. Field Tests of Response of Excitation System for a Synchronous Condenser. A. N. B. Eliassen, Sargent and Lundy.
- CP.\*\* Excitation System Response—Definition and Significance in Power Systems. M. Temoshok, General Electric Co.

## 9:30 a.m.—Management

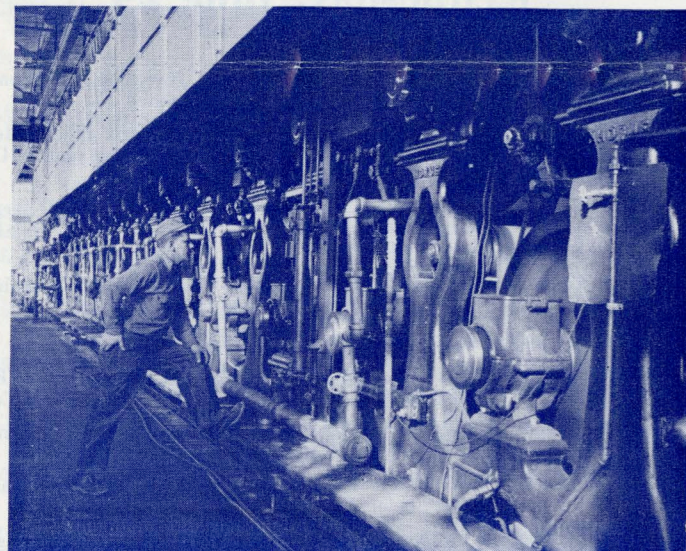
- CP.\*\* The Obligations of Engineering Management in a Large Decentralized Manufacturing Company. C. H. Linder, General Electric Co.
- CP.\*\* Challenges and Opportunities for Young Engineers in the Utility Industry. J. W. Bennett, Western Massachusetts Electric Co.

## 9:30 a.m.—Basic Sciences

- 55-428. Analysis of Nonlinear Coupled Circuits—II. Y. H. Ku, University of Pennsylvania.
- 55-490. A Method of Solving Mathieu's Equation. J. J. Smith, General Electric Co.
- 55-491. Magnetic Flux Density Measurements in Rotating Machines. B. J. Ley, New York University, and A. Charnetz, Ford Instrument Co.
- CP.\*\* Block Diagram Method of Solution of Rotating Machinery Problems. S. Hariharan, New South Wales University of Technology.

## 2:00 p.m.—Feedback Control Systems

- CP55-548. Correlation Between Root Locus and Transient Response of Sampled-Data Control Systems. E. I. Jury, University of California.
- 55-549. Optimum Switching Criteria for Higher Order Contactor Servo with Interrupted Circuits. S. S. L. Chang, New York University.
- 55-550. Extension of Continuous-Data System Design Techniques to Sampled-Data Control Systems. G. W. Johnson, C. P. Lindorff and C. G. A. Nordling, University of Connecticut.



Champion International Company Papermaking Machine

- 55-551. Design Principles of Second and Higher-Order Saturating Servomechanisms. R. E. Kalman, E. I. du Pont de Nemours and Co., and J. L. Preston, Wright-Patterson Air Force Base.
- 55-553. A Simple Method for Calculating the Time Response of a System to an Arbitrary Input. G. A. Biernson, Massachusetts Institute of Technology. Re-presented for discussion.

## 2:00 p.m.—Wire Communications

- 55-259. Aluminum Die Castings for Carrier Telephone Systems. L. Pedersen, Bell Telephone Labs., Inc.
- 55-559. Aluminum Conductor Steel Reinforced (ACSR) for Railroad Signal and Communications Circuits. H. W. Adams, Reynolds Metals Co.
- 55-560. Frequency Shift Signaling Circuit for '45' Type Carrier Systems. K. E. Appert and R. S. Caruthers, Lenkurt Electric Co.
- CP.\*\* A Telephone Communication System for the Green Bay and Western Railroad. G. W. Searle and J. W. Deist, Wisconsin Telephone Co.

## 2:00 p.m.—Transmission and Distribution

- 55-448. Voltage Dip and Synchronous-Condenser Swings Caused by Arc Furnace Loads. C. Concordia, General Electric Co.
- 55-477. Electromagnetic Unbalance of Untransposed Transmission Lines, II. Single Lines with Horizontal Conductor Arrangement. E. T. B. Gross, Illinois Institute of Technology, and S. W. Nelson, Armour Research Foundation.
- 55-478. "Oracle" Computes Line Constants with Tensors. R. B. Shipley, M. Hochdorf and M. Watson, Tennessee Valley Authority.
- 55-479. A Rational Method for the Step-by-Step Calculations in Power System Transient Stability Studies. E. O. Norinder, Swedish State Power Board.

## 2:00 p.m.—Electronic Reliability

- CP.\*\* Standard Functional Divisions for Electronic Equipment. R. S. Shultz and W. R. Waltz, Vitro Corp. of America.
- CP.\*\* The Modular Design of Electronics: A Progress Report. J. G. Reid, Jr., R. L. Henry and C. C. Rayburn, ACF Electronics.
- CP.\*\* National Bureau of Standards Preferred Circuits Program. J. H. Muncy, National Bureau of Standards.
- CP.\*\* Prediction of Electronic Equipment Reliability Based on Design Factors. V. Harris and M. M. Tall, Vitro Corp. of America.
- CP55-498. The Eccles-Jordan Trigger Circuit with Special Attention to Transition Time. R. Chatterjee, Bangalore, India, and W. G. Dow, University of Michigan.
- 55-500. Notes on the Use of Screen-to-Plate Transconductance in Multigrad Circuit Design. K. A. Pullen, Jr., Aberdeen Proving Ground. Re-presented for discussion.

# Thursday, June 30

## 9:30 a.m.—Textile Industry

The morning session will be devoted to acquainting the conference with the need for recommended electrical practices for installation and use of electricity and electrical devices on textile machinery. During this session the necessary background information leading to the preparation of the recommended practices will be given. Need for these recommended practices based upon machinery builders' experience, mill operators' experience and fire underwriters' experience will be presented.

### Speakers:

- V. F. Sepavich, Crompton and Knowles Loom Works.  
J. D. McConnell, Cone Mills Corp.  
Swaffield Cowan, Factory Insurance Assn.

## 9:30 a.m.—Telegraph Systems

- 55-501. The Ticketfax System. A. S. Hill, Western Union Telegraph Co.

- 55-502. Ticketfax Electronics. C. Jelinek, Jr., Western Union Telegraph Co.
- 55-503. Ticketfax Transmitters and Recorders. D. M. Zabriskie, Western Union Telegraph Co.

## 9:30 a.m.—Protective Devices

- 55-556. Lightning Protection in a 24-KV Station—Field and Laboratory Studies. H. R. Armstrong, Detroit Edison Co., R. W. Ferguson and A. R. Hileman, Westinghouse Electric Corp.
- 55-557. Review of the Factors Concerned with the Use of Protective Devices Shunting Reactors. Fault Limiting Devices Subcommittee of the Protective Devices Committee.
- 55-558. Surge Attenuation in Power Cables. W. W. Valentine, Potomac Electric Power Co. J. K. Dillard and J. M. Clayton, Westinghouse Electric Corp.

## 9:30 a.m.—Magnetic Amplifiers

- 55-537. Full-Wave, Reversible-Polarity, Half-Cycle Response Magnetic Amplifiers. C. B. House, Naval Research Lab.
- 55-538. Influence of ID-OD Ratio on Static and Dynamic Magnetic Properties of Toroidal Cores. R. W. Roberts and R. I. Van Nice, Westinghouse Electric Corp.
- 55-539. Magnetic Amplifiers in Bistable Operation. L. A. Finzi and G. C. Feth, Carnegie Institute of Technology.
- 55-540. Standards for the Presentation of Data on Magnetic Amplifier Core Materials. AIEE Materials Subcommittee.
- CP.\*\* The Replacement of Relays and Moving Contacts with Static Control Elements—A New Concept in Industrial Control. R. A. Ramey, Westinghouse Electric Corp.

## 9:30 a.m.—Basic Sciences

- 55-440. The Dielectric Behavior of Some Fluorogases and Their Mixtures with Nitrogen. G. Camilli, T. W. Liao and R. E. Plump, General Electric Co. Re-presented for discussion.
- 55-493. Electric Breakdown of Perfluorocarbon Vapors and Their Mixtures with Nitrogen. L. J. Berberich, C. N. Works, and E. W. Lindsay, Westinghouse Electric Corp. Re-presented for discussion.
- 55-494. Heat-Resistant Polyester Magnet Wire. W. F. Gilliam, E. M. Boldebeck and J. R. Elliott, General Electric Co. Re-presented for discussion.
- 55-495. Heat Resistant Insulation Systems for Motors. C. J. Herman and K. N. Mathes, General Electric Co. Re-presented for discussion.
- CP55-562. Electrical Insulation Progress. P. L. Alger and K. N. Mathes, General Electric Co.

## 2:00 p.m.—Textile Industry

The afternoon session will present in detail the recommended electrical practices for installation and use of electricity and electrical devices on textile machinery. This program will be in the form of a panel presentation wherein each member will present a particular section of the recommended practice based upon his intimate knowledge of the subject and reasons for the recommendations.

The panel will be made up of the following:

- F. D. Snyder, Westinghouse Electric Corp.  
R. R. Prechter, General Electric Co.  
M. R. Brice, Culter Hammer Co.  
R. H. Clark, Warner and Swasey Co.  
Swaffield Cowan, Factory Insurance Assn.  
V. F. Sepavich, Crompton and Knowles Loom Works.

## 2:00 p.m.—Rotating Machinery

- CP55-504. Direct Current High Potential Testing of Large Generators. H. H. Lang and W. D. Houser, Westinghouse Electric Corp.
- CP.\*\* Thermal Evaluation of Enamelled Wire. J. F. Dexter, Dow Corning Corp.

- CP55-541. Problems Encountered in Automatic Transfer of Large Induction Motors in Industrial Applications. R. O. Bigelow and C. Auty, New England Power Service Co.

- CP.\*\* Thermal Endurance Studies of High Voltage Insulation Systems for Large Generators. G. L. Moses, Westinghouse Electric Corp.
- CP.\*\* Guiding Principles in the Thermal Evaluation of Insulating Materials. L. J. Berberich and T. W. Dakin, Westinghouse Electric Corp.

## 2:00 p.m.—Land Transportation

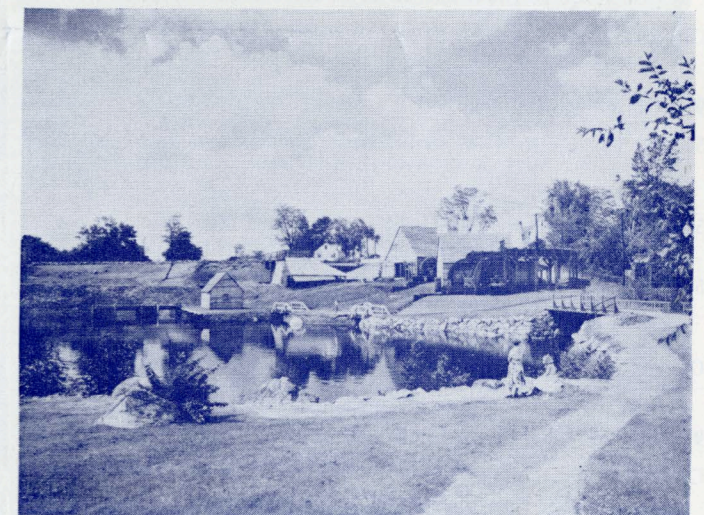
- CP.\*\* Transit Modernization and Rapid Transit Development in Cleveland. M. W. Rew, Cleveland Transit System and G. M. Woods, Westinghouse Electric Corp.
- 55-563. Cleveland Transit System Gets New Rapid Transit Cars. C. A. Koch, Cleveland Transit System and T. H. Murphy, Westinghouse Electric Corp.
- CP55-564. Progress in Design for Long Life of Control for Large Rapid Transit Cars. I. W. Lichtenfels, General Electric Co.
- 55-565. Modernizing Service Controls on Rapid Transit. George Krambles, Chicago Transit Authority.
- CP.\*\* Coordination of the Automobile with Public Transportation and a Paramount Urban Area Wide Need. E. E. Kearns, General Electric Co.

## 2:00 p.m.—Magnetic Amplifiers

- 55-542. Decicycle Magnetic Amplifier Systems for Servo Applications. L. J. Johnson, Hufford Machine Works, and S. E. Rauch, University of California.
- 55-463. Operational Magnetic Amplifier with Audio Frequency Transistor Power Supply. R. O. Decker and F. Gourash, Westinghouse Electric Corp.
- 55-543. Phase-Locking of Switching-Transistor Converters for Polyphase Power Supplies. A. G. Milnes, Carnegie Institute of Technology.
- 55-465. High-Frequency Operation of Self-Saturating Magnetic Amplifiers. H. W. Collins, Westinghouse Electric Corp.
- CP.\*\* Magnetic Logic Circuits for Use in Industrial Control Systems. W. G. Evans, W. G. Hall and R. I. Van Nice, Westinghouse Electric Corp.

## 2:00 p.m.—Industrial Power Systems and Switchgear

- 55-442. Short-Circuit Currents in Low Voltage Systems. Joint Sections Committee on Air Circuit Breakers of NEMA.
- 55-427. Relay Response to Motor Residual Voltage During Automatic Transfers. A. R. Kelly, Standard Oil Development Co.



The Saugus Iron Works Restoration

- CP.\*\* Economic Studies Applied to Industrial Power Systems. H. B. Backenstoss, Jackson and Mooreland Engineers.
- 55-508. Testing of D-C Interrupters on A-C Test Circuits. E. W. Boehne, Massachusetts Institute of Technology, and K. Chen, Westinghouse Electric Corp.

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

- CP55-482. A Liquid Scintillation Detector. J. H. Knapton, Tracerlab, Inc.
- 55-483. The Design of a New 2-Element, Single Disc, Polyphase Meter. W. J. Schmidt, Westinghouse Electric Corp.
- 55-484. A New Line of Direct-Acting Recording Instruments. L. J. Lunas and J. C. Nycz, Westinghouse Electric Corp.
- 55-485. A Transducer Type Frequency Meter. U. L. Smith, Westinghouse Electric Corp.

## 2:00 p.m.—Transmission and Distribution

- CP55-480. Probable Service Life of Creosoted Pine Poles in New England. C. A. Booker, New England Power Service Co.
- CP55-554. The Increasing Importance of Pole Line Inspection. J. A. Rawls, Virginia Electric and Power Co., and M. S. Hudson, Consulting Chemist.
- CP.\*\* Use of High Strength Steel in Transmission Towers. H. M. Walton, U. S. Steel Corp.

## Friday, July 1

### 9:30 a.m.—Rotating Machinery

- CP55-505. Design of High Precision Synchros and Resolvers. R. A. Hertz, Minneapolis-Honeywell Regulator Co., and R. M. Saunders, University of California.
- CP55-506. Optimum Design of Induction Torque-Motors and Servo-Motors. G. Weiss, The W. L. Maxson Corp.
- 55-507. Current Loci of Salient Pole Synchronous Motors—An Extension of Blondel Theory. J. F. H. Douglas, Marquette University.

### 9:30 a.m.—Carrier Current and Microwave

- 55-458. A Study of Carrier Frequency Noise of Power Lines Part IV, Conclusion of Field Measurements. J. D. Moynihan, Sprague Electric Co., and B. J. Sparlin, Westinghouse Electric Co.
- 55-516. Microwave Systems Parameters for Reliable Communications. A. Alvira and I. T. Corbell, General Electric Co.
- 55-517. Quadriphase—A New Approach to Time Division Multiplexing. W. E. Evans and R. F. Lowe, General Electric Co.
- CP55-566. Application of Passive Repeaters to Microwave Systems. R. H. Davis and L. G. Walker, Motorola Inc.

### 9:30 a.m.—Switchgear

- 55-509. A New 500 MVA Air Magnetic Circuit Breaker of Simplified Design. M. J. Reilly and D. E. Weston, Allis-Chalmers Mfg. Co.
- 55-460. Flux Measurements in Magnetic Air Circuit Breaker Interrupters. W. A. Carter, I-T-E Circuit Breaker Co.
- 55-510. A Power Class Recloser for Higher Speed Clearing of Distribution Circuits. E. J. Field and D. L. Leatherberry, I-T-E Circuit Breaker Co.
- CP.\*\* New Distribution Class Oil Circuit Breakers. E. J. Casey, T. R. Coggeshall and R. H. Miller.

### 9:30 a.m.—Theory of Rectifiers

- CP.\*\* Current Voltage Characteristics of Power Rectifiers. J. S. Saby, General Electric Co.
- CP.\*\* Surface States and Channels on Germanium. R. H. Kingston, Massachusetts Institute of Technology.

- CP.\*\* Design Specification for Silicon Power Rectifiers. D. H. Novon, Transitron Electronic Corp.
- CP.\*\* Mechanisms of Breakdown in Rectifiers. K. G. McKay, Bell Telephone Labs., Inc.

### 9:30 a.m.—Instruments and Measurements

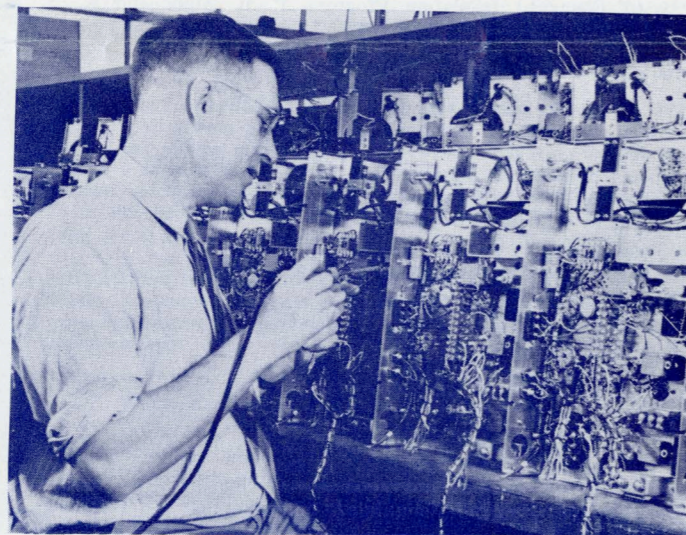
- 55-438. The Movable Core Transformer as a Pickup for Industrial Telemetry Systems. A. J. Hornfeck and L. M. Wermelskirchen, Bailey Meter Co.
- 55-486. A Precision Torque Balance for the Measurement of Small Torques. R. Matthys, Minneapolis-Honeywell Regulator Co.
- CP55-487. Automatic Testing and Selection of Magnetic Toroids. R. B. Einfeldt, and R. P. Fischer, Remington-Rand, and A. D. Glick, Minneapolis-Honeywell Regulator Co.
- CP55-488. A New High Speed Telemeter Transmitter for D-C Measurements. R. M. Stuart, General Electric Co.

### 9:30 a.m.—Transformers

- 55-449. Functional Life Tests of Insulation Systems for Dry Type Transformers. P. Narbut, Westinghouse Electric Corp.
- 55-435. Proposed Test Code for Functional Temperature Endurance Tests of Ventilated Dry-Type Power and Distribution Transformers. Working Group on Life of Materials.
- 55-452. Functional Life Evaluation of Group 2 Dry-Type Power Transformers. H. G. Zambell, Allis-Chalmers Mfg. Co.
- 55-520. Functional Life-Expectancy Tests for Liquid-Filled Distribution Transformers. A. M. Lockie, Westinghouse Electric Corp. Re-presented for Discussion.
- CP.\*\* A Study of Models for Use in Evaluating Dry-Type Transformer Insulating Systems. T. R. Walters and A. L. Scheideler, General Electric Co.

### 9:30 a.m.—Magnetic Amplifiers

- 55-544. The Application of Perpendicularly Superposed Magnetic Fields. R. A. Hertz and H. Buelteman, Jr., Minneapolis-Honeywell Regulator Co.
- 55-545. Oscillographic Techniques for the Evaluation of Magnetic Amplifier Response. D. L. Critchlow, Carnegie Institute of Technology.
- 55-546. Formulation of Magnetic Amplifier Circuit Equations. D. H. Schaefer, Naval Research Lab.
- 55-71. Voltage Gain of a Resonant Dielectric Amplifier. E. A. Sack, Westinghouse Electric Corp., and G. W. Penney, Carnegie Institute of Technology. Re-presented for discussion.
- CP.\*\* Design Methods for Magnetic Switching Element Control Systems. R. I. Van Nice, W. G. Hall and W. G. Evans, Westinghouse Electric Corp.



Assembling General Radio Amplitude Modulation Monitors

CONTINUED FROM PAGE 1

## 2:00 p.m.—Transformers

- 55-521. Control of Electrostatic Voltage Distribution in Power Transformer Design. S. Bennon and R. J. Cossaart, Westinghouse Electric Corp.
- CP55-439. A New Method for Analog Studies of Transformers. O. I. Elgerd, Washington University.
- CP55-522. Sources of High Power Factor in Dry Type Transformers. G. A. Monito and L. B. Rademacher, Westinghouse Electric Corp.
- 55-523. The Forced Oil Cooled Rotary Welding Transformer. W. E. Shenk, The McKay Machine Co.

## 2:00 p.m.—Switchgear

- 55-511. A Hydraulic Manual Power Closing Mechanism for Power Circuit Breakers. E. R. Perry and N. W. Morelli, Allis-Chalmers Mfg. Co.
- CP55-512. Electromagnetic Forces as Applied to Circuit Breaker Contact Design. T. G. Bank, Allis-Chalmers Mfg. Co.
- CP55-513. New Low Voltage Air Circuit Breaker of 25,000 A.I.C., 600 Volts. J. W. Timmerman and O. J. Albani, Allis-Chalmers Mfg. Co.
- 55-514. The Calculation of the Complete Time/Current Characteristics of Cartridge Fuses with Single Wire Element. A. E. Guile, Queen Mary College.

## 2:00 p.m.—Metallic Rectifiers

- 55-518. Selenium Rectifiers for High Temperature Operation. G. O. Isaacson, Fansteel Metallurgical Corp.
- CP55-519. High Temperature Operation of Rectifiers. H. W. Henkels, Westinghouse Electric Corp.
- Panel Discussion—Dr. S. J. Angello, Westinghouse Electric Corp., Moderator.

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

- 55-236. Report of Dielectric Tests on a Large Hydro Generator. C. A. Duke, Tennessee Valley Authority, C. W. Ross, James G. Biddle Co., and J. S. Johnson, Westinghouse Electric Corp.
- 55-489. Measuring and Recording Atmospheric Electrostatic Potential. J. S. Carroll, Stanford University, S. B. Hammond, University of Utah, and E. H. Stewart, Wesix Electric Heater Co.
- CP55-464. New Circuits for Recurrent Surge Oscillography. D. D. Davis, General Electric Co.
- 55-547. An Angular Position A-C EMF Transducer and its Application to Null-Type Recorders. E. C. Guptill and C. W. McCarty, General Electric Co.
- 55-456. The Recognition of Possible Measurement Errors in D-C Dielectric Testing in the Field. C. W. Ross and E. B. Curdts, James G. Biddle Co. Re-presented for discussion.

## 2:00 p.m.—Transmission and Distribution

- 55-481. Economics of Higher Primary and Secondary Voltages for Commercial Areas. R. F. Lawrence and D. N. Reys, Westinghouse Electric Corp.
- CP.\*\* Analysis of Low-Voltage Capacitors in Series with Distribution Transformers. G. G. Auer, R. G. Livingston, R. J. Hopkins and N. M. Neagle, General Electric Co.
- CP.\*\* Application of Low Voltage Series Capacitors with Distribution Transformers. R. F. Lawrence and L. W. Manning, Westinghouse Electric Corp.

- CP.\*\* Unnumbered Conference Papers 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.

	Room Only
Hotel Kenmore—Boston	per Day—per Room
Single room with bath	\$ 7.00 to \$11.00
Double room with bath	11.00 to 15.00
Suite—Living room, bedroom and bath—	
Single occupancy	17.00 to 19.00
Double occupancy	22.00 to 24.00

Meals may be obtained at the New Ocean House at the following rates:

Breakfast	\$1.50
Luncheon	2.75
Dinner	3.50

Snacks and sandwiches may also be had at the Hotel Coffee Shop.

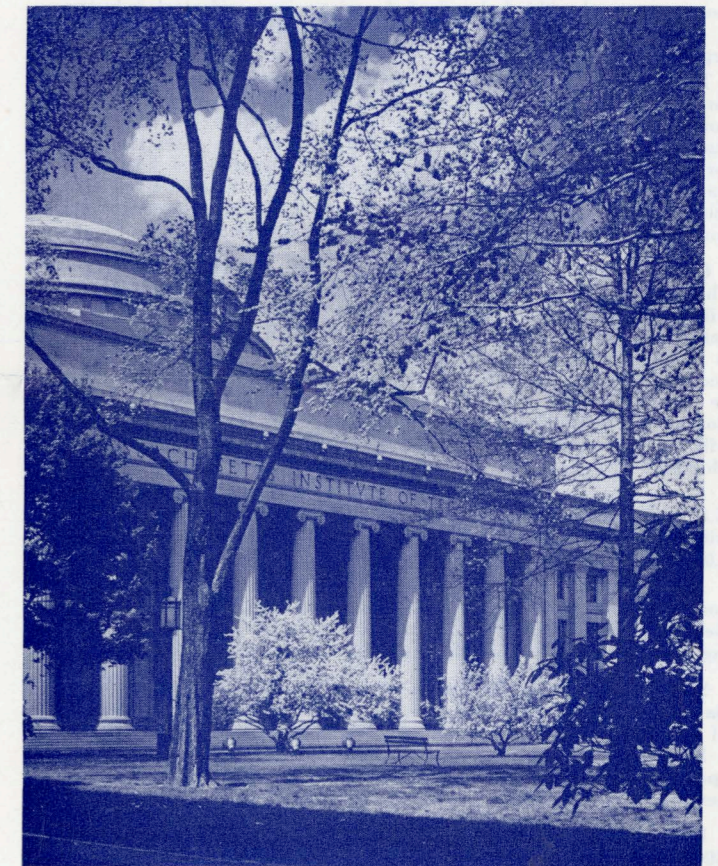
**ENTERTAINMENT AND BANQUET:** On Monday evening an old fashion barn dance has been planned in the true New England style. Appropriate costumes will add a great deal of fun and enjoyment to this occasion. Costumes may be simple or elaborate as desired. Music will be furnished by Albert Haynes and his Early American Dance Orchestra, which has become famous through its association with Longfellow's Wayside Inn. There will be instruction in old style dancing and in general a fine enjoyable New England evening is assured. Souvenir dance programs will be provided for the ladies.

On Wednesday evening the President's Reception will be held in the Ball Room. The banquet will take place in the main dining room at which the featured speaker will be Doctor C. G. Suits, Director of Research for the General Electric Company. He will speak on the subject "The Science of Commonplace Things."

Tickets for each of the above affairs will be available at the Registration Desk.

On Tuesday and Thursday evenings there will be informal dancing in the Ball Room.

**INSPECTION TRIPS:** A program of inspection trips of both technical and general interest has been arranged to complement the technical program. Members are urged to make arrangements at the Inspection Trips Desk immediately after registering.



Massachusetts Institute of Technology

# AIEE SUMMER GENERAL MEETING

**Champion-International Paper Company, Lawrence, Mass.—(Monday, June 27, P.M.)**—Located on the Merrimac River in Lawrence, Mass., Champion-International is one of the leading manufacturers of high-quality coated papers for the fine printing industry. Visitors can watch the entire paper-making procedure from the pulpwood yard to gleaming white sheets of paper.

**General Electric Co., Measurements Laboratory, West Lynn, Mass.—(Tuesday, June 28, A.M.)**—The Measurements Laboratory is one of the most modern and best equipped. Here the visitor will see the latest in test facilities for the measurement of shock, vibration and noise, environment, as well as all types of electrical and photometric measurement.

**General Electric Co., Medium Steam Turbine, Generator & Gear Department, Lynn, Mass.—(Tuesday, June 28, A.M.)**—The Medium Steam Turbine, Generator and Gear Department manufacturers power generation and marine propulsion equipment. Since 1903 over 21,000 kilowatts of power generation equipment have been manufactured and shipped by this department. Visitors on this inspection trip may observe the manufacture and testing of turbine-generators being built for large industrial plants and for public and private utilities.

**Harvard University, Massachusetts Institute of Technology, and Historic Points in Boston.—(Tuesday, June 28, P.M.)**—This inspection trip will include guided tours of specific buildings and laboratories for electrical engineering work at M.I.T. and Harvard. Transportation for the tour will be provided in sight-seeing buses whose route will be arranged to include points of historic interest in the Boston area.

At M.I.T. the tour will feature a demonstration of a Numerically-Controlled Milling Machine in the Servomechanisms Laboratory and the X-ray and Electron Generators in the High-Voltage Research Laboratory.

At Harvard, the Computation Laboratory containing two large scale digital computers will be among the laboratories to be visited.

**Saugus Iron Works, Saugus, Mass.—(Wednesday, June 29)** This replica of a 17th century iron works is more than just a monument to the "birthplace" of America's iron and steel industry. It is a "living" outdoor museum where visitors actually see the beginnings of one of our greatest industries.

The clock is turned back three centuries as the tourist walks through the restoration gates. Before him is a replica of the colonial iron works just as it appeared in the same location in 1650. Even though iron is not made at the restoration, all the essential units for making iron have been reproduced with the greatest fidelity. It was from this modest plant on the banks of the Saugus River that the industry has spread across the nation to become a major economic and social force in the life of every American.

**Charlestown Navy Yard—(Wednesday, June 29, P.M.)**—This trip to one of the oldest naval shipyards in the United States will include a visit to the Forge Shop where  $4\frac{3}{4}$ " die-lock chain being used on the U.S.S. FORRESTAL, SARATOGA, and RANGER is being manufactured, the large modern machine shop, pipe shop, and boiler shop. A large modern naval vessel in the yard will also be visited, as will the U.S. Frigate "CONSTITUTION," built in Boston in 1794-1797 and better known as "Old Ironsides." Included will also be a harbor trip to the South Boston Annex, viewing the Mothball Fleet and one of the largest drydocks in the country.

As an alternate to the harbor trip, a visit will be made to the U.S.S. Timmerman, a high speed experimental destroyer, powered with high pressure, high temperature propulsion equipment and with 1,000 volt 400 cycle service throughout.

Any alien desiring to make this trip must submit his name and country of origin to the Trip Committee, c/o A. M. Bjontegard, General Electric Co., 920 Western Avenue, Lynn, Mass. At the meeting no reservations for this trip can be accepted after Monday, June 27.

**Sylvania Electric Products, Inc., Woburn, Mass.—(Thursday, June 30, A.M.)**—On this trip you will visit the headquarters of the Electronics Division of Sylvania. This division manufactures a broad line of semi-conductor devices, microwave components, and special purpose tubes, such as silicon and germanium diodes, magnetrons, klystrons, flash tubes and thyatrons.

**U. S. Coast Guard Station, Salem, Mass.—(Thursday, June 30, P.M.)**—Located at Salem Willows in Salem Harbor, this station has an outstanding record of marine rescue operations over an area extending from Newfoundland to as far south as Bermuda.

This trip will feature a conducted tour of the station, including hangars, seaplane and helicopter launching ramps and will include demonstrations and explanations of various equipment and techniques used in air-sea search and rescue operations.

**General Radio Company, Cambridge, Mass.—(Thursday, June 30, P.M.)**—The General Radio Company is one of the best known manufacturers of electronic test equipment and associated high precision apparatus. This trip includes inspection of all of the laboratories and of the methods used for small lot production as they apply to electronic instrument manufacture.

## STUDENT ACTIVITIES:

Monday, June 27th has been designated as the day for special student activities at the meeting. The tentative schedule is as follows:

Morning—Registration at the Student Membership desk.

Attendance at the General Session.

Informal groups meetings of student members.

Noon—Students will be guests of the General Electric Co. for a catered luncheon at the G. E. Measurement Laboratory.

Afternoon—a) Attendance at a technical session of special interest to students.

b) Swimming or participation in scheduled inspection trip.

Evening—Attendance at a special dinner for the students and members at the Thomson Club, Nahant, Mass. (\$1.50 for students, \$3.00 for members). Following the dinner there will be an old-fashioned barn dance at the New Ocean House.

## LADIES' ACTIVITIES:

A summary of the program is as follows:

Coffee Hour every morning at 9:00 a.m.

Monday—3:00 p.m.—Acquaintance Tea.

Tuesday—Boston tour. Lunch at M.I.T.

P.M.—Tour Cambridge with men.

Wednesday—A.M.—Saugus Iron Works with the men.

P.M.—Tour Marblehead Craft Exhibits, and antiques. Shop at will.

Thursday—A.M.—Rockport Tour via Salem and Hammond Castle.

Lunch—Castle Hill, Ipswich.

Friday—Free.

The ladies are urged to register early because some of the women's activities are limited to a specific number.

**SOCIAL HOUR:** A social hour is planned on Sunday, June 26 for the early arrivals.

**REGISTRATION FEES REQUIRED:** Members and nonmembers should register in advance by filling in the advance registration card sent to you with this announcement. In order to help make the meeting self-supporting a registration fee of \$3.00 will be required for members and a fee of \$5.00 for nonmembers. Student members and the immediate families of members will not be required to pay any fee.

**GENERAL INFORMATION:** Information on all features may be obtained at the registration desk. A table for mail and memoranda will be maintained as well as a special bulletin board for the posting of messages and notices. The schedule of inspection trips and entertainment features will also be displayed.

**The Members of the Summer General Meeting Committee are:** M. A. Princi, Chairman; C. W. Maloney, Vice-Chairman; J. R. Macintyre, Secretary; R. G. Slaver, Treasurer; A. M. Bjontegard, Inspection Trips; J. A. Cook, Finance; R. E. Franck, Hotels; G. E. Wall, Sports; S. M. Osthagen, Publicity; N. Stadfeld, Jr., Meetings and Papers; L. F. Cleveland, Students' Activities; J. R. Cornell, Jr., Transportation; E. A. Harty, Registration; J. F. Archibald, Hospitality; E. K. Rohr, Entertainment and Banquet; Mrs. M. A. Princi, Ladies Entertainment.

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