American Institute of Electrical Engineers

Summer Convention Program

Mayflower Hotel
Washington, D.C.

JUNE 20-24
1938

INDEX

Schedule of Events
General Information
Technical Sessions
Convention Features
Committees

For Inspection Trips and Sports see separate folders
American Institute of Electrical Engineers

Summer Convention

Program

Washington, D.C.

JUNE 20-24

1938
American Institute of Electrical Engineers

SCHEDULE OF EVENTS

Eastern Standard Time

Monday, June 20

9:00 A.M.—Registration
10:00 A.M.—Conference of Officers, Delegates, and Members
11:00 A.M.—Separate Conferences
    (a) Section Delegates
    (b) Student Branch Counselors
2:00 P.M.—Conference of Officers, Delegates, and Members
    (continued)
    —Inspection Trips
7:00 P.M.—Student Branch Dinner

Tuesday, June 21

9:30 A.M.—Annual Meeting
2:00 P.M.—Technical Sessions
    —Inspection Trips
7:30 P.M.—Dinner-Dance at the Congressional Country Club

Wednesday, June 22

9:30 A.M.—General Session
2:00 P.M.—Inspection Trips
    —Visit to Mount Vernon
4:00 to
6:00 P.M.—Tea at Dr. McClellan’s Burgundy Farm,
    Alexandria, Va.

Thursday, June 23

9:30 A.M.—Technical Sessions
12:30 P.M.—Board of Directors Luncheon Meeting
2:00 P.M.—Conference Sessions
    —Inspection Trips
3:00 P.M.—Conference of Vice-Presidents, District Secretaries,
    and Counselor Delegates
7:00 P.M.—Formal Dinner—Mayflower Hotel
    President W. H. Harrison, Presiding
    Address: Dr. William McClellan, President, American
    Engineering Council
    Presentation of Gaston Plante Medal to Dr. George
    W. Vinal by the French Ambassador
    Greetings by the President-elect
    Introduction of Past Presidents
    Award of prizes for sports events

Friday, June 24

9:30 A.M.—Technical Sessions
2:00 P.M.—Inspection Trips

Note: See separate folders for schedules of sports and inspection trips.

GENERAL INFORMATION

This program contains a schedule of events, a complete list of the technical sessions and papers, as well as the entertainment features. For information regarding inspection trips and sports see separate folders.
Summer Convention

Please register promptly upon arrival at the convention. A registration fee of $2.00 will be charged all non-members except Enrolled Students and the immediate families of members.

Secure tickets early for the Luncheon Bridge (not later than Monday, 6:00 p.m.), Country Club Dinner-Dance (not later than Tuesday noon), Visit to Mount Vernon and Tea at Burgundy Farm (not later than Wednesday, 10:00 a.m.), and the Dinner at the Mayflower Hotel (not later than Thursday, 10:00 a.m.) so that proper reservations may be made.

Information on all features of the convention may be obtained at the registration desk. Efforts will be made to deliver telegrams and messages promptly. Any mail for members not staying at the headquarters hotel received during the convention will be held at registration desk until called for; letters undelivered at the close of the meeting will be forwarded to latest mailing address.

Photo-Offset Copies of Authors' Manuscripts may be purchased at the registration desk or at Institute headquarters, price 5c per copy; if ordered by mail from Institute headquarters, price 10c per copy. Coupon books in $1.00 and $5.00 denominations are available for those who wish to avoid remittance by check or otherwise. Most of the papers ultimately will be published in ELECTRICAL ENGINEERING and the TRANSACTIONS.

Technical Sessions and Discussions are governed by the "Conduct of Technical Sessions" at the discretion of the chairman presiding. The Institute will appreciate your courtesy and cooperation in strictly abiding by the decisions of the chairman in all matters. Ten minutes are allowed for the presentation of each paper unless otherwise arranged with the presiding officer.

Preference will be given to those who have explained in advance their intention to discuss papers. Usually 5 minutes are allowed to each discusser for the discussion of a single paper or of several papers on the same general subject. Names and affiliations should be clearly announced from the platform. Discussions should be typewritten, double spaced (original and two carbon copies), and left with the chairman. Otherwise they should be sent to C. S. Rich, A.I.E.E., 33 West 39th Street, New York, N. Y., before July 9.
American Institute of Electrical Engineers

PROGRAM
Monday, June 20
9:00 a.m.—Registration
10:00 a.m.—Conference of Officers, Delegates, and Members —Chinese Room
11:00 a.m.—Separate Conferences
   (c) Section Delegates
   Chinese Room
   (b) Student Branch Counselors
   Mezzanine "A"
2:00 p.m.—Conference of Officers, Delegates, and Members (continued)
   Chinese Room
7:00 p.m.—Student Branch Dinner

Tuesday, June 21
9:30 a.m.—Annual Meeting
   Main Ball Room
   Address of Welcome:
   Dr. WILLIAM McCLELLAN, Honorary Chairman
   Annual Report of Board of Directors, in abstract,
   By H. H. HENLINE, National Secretary
   Report of National Treasurer
   Report of Committee of Tellers on (c) Constitutional Amendments and (b) Election of Officers
   Introduction of and response from President-elect
   Presentation of Institute Prizes for Papers
   Presentation of Lamme Medal to
   Dr. R. E. DOHERTY
   Address: "Municipal Planning in Washington"
   Colonel DAN I. SULTAN, Engineer Commissioner
   District of Columbia
2:00 p.m.—Power Transmission and Distribution —Chinese Room
   R. D. EVANS, Presiding
55. Traveling Waves Initiated by Switching
   L. V. BEWLEY, General Electric Co.
75. Application of Large Phase Shifting Transformer on an Interconnected System Loop
   W. J. LYMAN, Duquesne Light Co.
   J. R. NORTH, Commonwealth and Southern Corp.
61. Tests on Oil-Impregnated Paper—
   III—Fluid Flow
   H. H. RACE, General Electric Co.
89. Field Testing of Bushings and Transformer Insulation by the Power Factor Method
   I. W. GROSS, American Gas and Electric Co.
72. Flashover Characteristics of Transformer Condenser Bushings
Presentation by title
79. Reactance of Square Tubular Busbars
H. E. DWIGHT and T. K. WANG, Massachusetts Institute of Technology

2:00 p.m.—Communication
Pan American Room
W. L. EVERITT, Presiding

73. Analysis and Design of Harmonic Generators
F. E. TERMAN, Stanford University
80. A Symbolic Analysis of Relay and Switching Circuits
C. E. SHANNON, Massachusetts Institute of Technology
81. Instruments for the New Telephone Sets
W. C. JONES, Bell Telephone Laboratories, Inc.
77. Transmission Features of the New Telephone Sets
A. H. INGLIS, Bell Telephone Laboratories, Inc.

Presentation by title
74. Transmission Theory of Spherical Waves
S. A. SCHELKUNOFF, Bell Telephone Laboratories, Inc.

2:00 p.m.—Symposium on Correlation of Mathematics and Physics with Electrical Engineering Subjects
North Room
R. E. DOHERTY, Presiding

67. The Co-ordination of Mathematics and Physics with Electrical Engineering Subjects
W. A. CURRY, Columbia University
82. A Course to Develop Facility in the Use of Mathematics and Physics in the Solution of Engineering Problems
B. R. TEARE, Jr., Yale University
83. Co-ordination of Physics with Electrical Engineering
J. M. BRYANT, University of Minnesota
76. Co-ordination of Mathematics and Physics with Electrical Engineering Subjects
T. H. MORGAN, Worcester Polytechnic Institute
68. Mathematics and Physics in Engineering
M. G. MALTI, Cornell University

2:00 p.m.—Conference on Machines in Mathematical Analysis
Mezzanine "A"
H. L. HAZEN, Presiding

Informal Talks
Why Machines for Mathematical Analysis?
L. S. DEDERICK, Aberdeen Proving Ground
The Utility of Machines for Solving Ordinary Differential Equations
S. H. CALDWELL, Massachusetts Institute of Technology
Punched Card Machines in Mathematical Analysis
W. J. ECKERT, Columbia University

7:30 p.m.—Dinner-Dance at the Congressional Country Club
Tickets $2.50 each. Transportation, round trip from the Mayflower Hotel, 75 cents. Sale closes Tuesday noon.
American Institute of Electrical Engineers

Wednesday, June 22

9:30 a.m.—General Session
Main Ball Room
President W. H. HARRISON, Presiding

Address of the President
Address: "Progress in Weather Forecasting"
Dr. W. R. GREGG, Chief of the Weather Bureau
Address: "The Present and Future of Commercial Aviation"
Col. J. M. JOHNSON, Assistant Secretary of Commerce

2:00 p.m.—Visit to Mount Vernon
Tickets $1.55 each including round trip transportation and admission to Mount Vernon. Sale closes Wednesday 10:00 a.m. Visitors making this trip are invited to:

4:00 to
6:00 p.m.—Tea at Dr. McClellan's
Burgundy Farm, Alexandria, Va.

Thursday, June 23

9:30 a.m.—Fault Interruption—I
Chinese Room
K. B. McEACHRON, Presiding

65. The Current Limiting Power Fuse
D. C. PRINCE and E. A. WILLIAMS, Jr., Gen'l Electric Co.

62. A New Multibreak Interrupter for Fast-Clearing
Oil Circuit Breakers
R. M. SPURCK and H. E. STRANG, General Electric Co.

84. Tests on and Performance of a High-Speed
Multibreak 138-Kv Oil-Circuit Breaker
PHILIP SPORN and H. P. ST. CLAIR, American Gas
and Electric Service Corp.

85. "De-ion" Air Circuit Breakers for A-C Feeder,
Motor Starting and Station Auxiliary Service

86. Enclosed Low-Voltage "De-ion" Air Circuit
Breaker of High Interrupting Capacity
JEROME SANDIN, Westinghouse Electric & Mfg. Co.

9:30 a.m.—Electrical Machinery
Mezzanine "A"
J. L. HAMILTON, Presiding

98. Stability Characteristics of Turbine Generators
C. CONCORDIA, S. B. CRAZY, and J. M. LYONS
General Electric Co.
37-58. Double Line-to-Neutral Short Circuit of an Alternator  
JAMES B. SMITH, Associated Factory Mutual Fire Insurance Co.  
C. N. WEYGANDT, University of Pennsylvania  

69. An Analysis of the Induction Machine  
H. C. STANLEY, American Gas & Electric Service Corp.

53. Amplitudes of the Magneto motive-Force Harmonics for Fractional Slot Windings—I  
J. F. CALVERT, Iowa State College

37-866. The Cause and Elimination of Noise in Small Motors  
W. R. APPLEMAN, Marathon Electric Mfg. Corp.  
Elec. Engg., Nov. 1937, p. 1359

87. The Wound-Core Distribution Transformer  
E. D. TREANOR, General Electric Co.

9:30 a.m.—Selected Subjects
Pan American Room  
J. W. BARKER, Presiding

88. The Economic Status of the Engineer  
R. W. SORENSEN, California Institute of Technology

60. A Self-Checking System of Supervisory Control  

66. Application of Capacitance Potential Devices  
J. E. CLEM, General Electric Co.

71. Radio Influence Characteristics of Electrical Apparatus  

78. Noise Coordination of Rural Power and Telephone Systems  
H. W. WAHLQUIST, Edison Electric Institute  
T. A. TAYLOR, Bell Telephone Laboratories, Inc.

9:30 a.m.—Electronics and Basic Sciences  
Jefferson Room  
H. M. TURNER, Presiding

54. Positive-Grid Characteristics of Triodes  
R. W. PORTER, General Electric Co.

64. A Position Regulator for Paper Slitters  

90. Combined Thyatron and Tachometer Speed Control of Small Motors  
A. J. WILLIAMS, Jr., Leeds and Northrup Co.

91. A Static Constant Current Circuit  
C. M. SUMMERS, General Electric Co.

Presentations by title

59. Graphical Field-Plotting Methods in Engineering  
HILLEL PORTISKY, General Electric Co.

92. Basic Equations for Electric and Sound Radiation  
L. ALAN HAZELTINE, Stevens Institute of Technology

(Continued on page 8)
American Institute of Electrical Engineers

THURSDAY—continued

12:30 p.m.—Directors' Luncheon Meeting

3:00 p.m.—Conference: Vice-Presidents, District Secretaries and Counselor Delegates

2:00 p.m.—Conference on Electrical Machinery

Mezzanine "A"

J. L. HAMILTON, Presiding

2:00 p.m.—Conference on Electronics

Jefferson Room

H. M. TURNER, Presiding

At this conference two phases of the subject of mercury-arc rectifiers will be discussed. The first phase will consider the arc-back in mercury-arc rectifiers. The second will deal with hot-cathode mercury-arc rectifiers versus the tank type.

2:00 p.m.—Conference on Definitions

Pan American Room

M. G. MALTI, Presiding

This second conference on definitions is sponsored by the A.I.E.E. Committee on Basic Sciences under the direction of M. G. Malti, Chairman of the Subcommittee on Definitions. Discussion will cover sections 10 to 21 of Group 05 of the Final Revised Report of Committee 42 (The Sectional Committee on Definitions of Electrical Terms). The object of this series of conferences is to supply Subcommittee 1 of Committee 42 with a set of suggestions which will help it in drafting improved definitions of fundamental terms.

Written discussions have been prepared by the following: A. Boyaciog, General Electric Co.; M. G. Malti, Cornell University; K. W. Miller, Utilities Research Commission; S. A. Schelkunoff, Bell Telephone Laboratories, Inc., and Ernst Weber, The Polytechnic Institute of Brooklyn.

7:00 p.m.—Formal Dinner—Mayflower Hotel

President W. H. HARRISON, Presiding

Address: Dr. William McClellan, President, American Engineering Council

Presentation of Gaston Planté Medal to Dr. George W. Vinal by the French Ambassador

Greetings by the President-elect

Introduction of Past Presidents

Award of prizes for sports events

Tickets $3.00 each. Sale closes Thursday 10:00 a.m.
Summer Convention

Friday, June 24

9:30 a.m.—Symposium on Fluorescent Lighting
—Main Ball Room

ROBIN BEACH, Presiding

57. The Fundamental Principles of Fluorescence
G. R. FONDA, General Electric Co.

93. Low-Voltage Fluorescent Lamps

94. High-Voltage Gaseous and Fluorescent Tubes for Advertising and Architectural Lighting Effects
J. A. McDERMOTT, Claude Neon Lights, Inc.

Demonstration Lecture: “Penny Wise Pound Foolish—How to Get the Most for Your Lighting Dollar”
A. L. POWELL, General Electric Co.

9:30 a.m.—Fault Interruption—II—and Lightning Protection
—Chinese Room

K. E. McEACHRON, Presiding

70. Remote Control of Network Protectors
W. R. BROWNLEE and W. E. DENT, Jr., Tennessee Electric Power Co.

63. System Analysis for Petersen Coil Application
—Part I, Operating Features and Basic Calculations—Part II, System Analysis and Computations
W. C. CHAMPE and F. VON VOIGTLANDER
The Commonwealth and Southern Corp.

58. Lighting Protection of 22-Kv Substations
E. R. WHITEHEAD, Duquesne Light Co.

56. Line-Type Lightning-Arrester Performance Data
LIGHTNING ARRESTER SUBCOMMITTEE

9:30 a.m.—Instruments and Measurements
—Pan American Room

H. C. KOENIG, Presiding

95. A Memory Attachment for Oscilloscopes

96. Absolute Power Factor of Air Capacitors
W. B. KOUWENHOVEN and E. L. LOTZ,
The Johns Hopkins University

97. The Electric Strain Gauge

9:30 a.m.—Conference on Power Requirements in Electrochemical and Allied Industries
—North Room

F. O. SCHNURE, Presiding

Address: “Power Requirements in the Electrochemical, Electrometallurgical, and Allied Industries”
J. V. ALFRIEND, Jr., Federal Power Commission

Discussions by:
M. E. STONE, United Engineering & Foundry Co., Ltd.
E. E. MERRICK, General Electric Co.
CONVENTION FEATURES

**Sports** and social activities will center at the beautiful Congressional Country Club situated in Maryland, near the banks of the Potomac and almost in sight of the Capitol dome.

Golf tournaments for the Mershon and Lee trophies will be held with the qualifying round scheduled for 1:00 p.m., Monday, June 20. A tournament for the Mershon tennis trophy also will be held as well as a variety of men’s and ladies’ single and double tennis events. See separate folder for a schedule of sports events.

**Entertainment** features include a dinner-dance at the Congressional Country Club on Tuesday evening, a tea at Burgundy Farm, Alexandria, Va., on Wednesday afternoon, and a final social gathering, a formal dinner on Thursday evening, which will be the occasion of the presentation of the Gaston Planté Medal to Dr. George W. Vinal by the French Ambassador, and the presentation of prizes for the sports events.

**Ladies’ Entertainment**, in addition to the foregoing entertainment features, includes visits to places of interest in Washington and a bridge-luncheon at the Congressional Country Club preceding the dinner-dance in the evening. The ladies of the local Section will provide transportation and personally conduct individual tours that the visiting ladies may wish to take.

**Inspection Trips** to many points of interest in Washington and in the near vicinity have been arranged for during the week. On Friday and Saturday out-of-town trips have been scheduled and arrangements will be made for several very interesting post-convention tours, provided a sufficient number register for the purpose. See separate folder on inspection trips for all information and prices.
1938 SUMMER CONVENTION COMMITTEES

General Committee
WILLIAM McCLELLAN, Honorary Chairman
H. W. OSGOOD, Chairman
C. A. ROBINSON, Vice-Chairman
G. L. WELLER, Secretary
A. F. E. HORN, Treasurer
F. A. ALLNER  T. J. MacKAVANAGH
R. C. BAILEY  J. FRANKLIN MEYER
L. D. BLISS  J. S. MILLER
J. V. B. DURER  H. S. OSBORNE
N. E. FUNK  H. M. SOUTHGATE
W. B. KOUWENHOVEN  W. H. TIMBIE

Entertainment Committee
S. K. BROWN, Chairman
F. B. Crider  George Fletcher  Henry Richter
J. I. Ellmann  E. T. Walker

Finance Committee
ROLAND WHITEHURST, Chairman
A. F. E. Horn  R. B. Stewart  T. R. Tate

Inspection Trips Committee
R. W. PRINCE, Chairman
L. M. Endres  J. L. D. Speer, Jr.  R. A. Strothman
G. W. Spaulding  Cabot Stevens  G. R. Wilhelm

Ladies’ Entertainment Committee
R. C. MARSHALL, Jr., Chairman
Mrs. C. H. Giroux  Mrs. Cabot Stevens  Mrs. A. O. White
Mrs. H. W. Osgood  Mrs. T. R. Tate  Mrs. Roland Whitehurst
Mrs. G. L. Weiler

Publicity Committee
H. E. WAY, Chairman
F. M. Felker  J. E. Smith

Registration and Housing Committee
W. J. ELLENBERGER, Chairman
C. J. Colbert  J. H. Rixse  H. C. Strobel
T. A. O’Halloran  C. E. Rose  W. M. Tucker

Sports Committee
A. O. WHITE, Chairman
L. W. Bates  W. F. Dietz  Mrs. C. H. Giroux
F. B. Crider  C. H. Giroux  R. W. McChesney
R. H. Dalgleish  T. A. O’Halloran

Technical Programs Committee
F. M. DEFANDORF, Chairman
G. G. Coleman  H. L. Curtis  A. G. Ennis

Transportation Committee
J. H. STEPHENS, Chairman
L. H. Curry  J. F. Darcey  E. L. White
R. G. Thring
Officers of A.I.E.E. 1937-1938

PRESIDENT
W. H. HARRISON

JUNIOR PAST PRESIDENTS
J. B. WHITEHEAD
A. M. MacCUTCHEON

VICE-PRESIDENTS
O. B. Blackwell
L. T. Blaisdell
C. F. Harding
J. P. Jollyman
L. N. McLellan

M. J. McHenry
C. E. Rogers
I. Melville Stein
A. C. Stevens
E. D. Wood

DIRECTORS
C. R. Beardsley
Vannevar Bush
F. M. Farmer
N. E. Funk
H. B. Gear
F. Ellis Johnson

C. R. Jones
W. B. Kouvlenhoven
F. H. Lane
K. B. McEachron
C. A. Powel
R. W. Sorensen

NATIONAL TREASURER
W. I. SLICHTER

NATIONAL SECRETARY
H. H. HENLINE

Technical Program Committee
H. S. OSBORNE, Chairman
J. W. BARKER, Vice-Chairman
C. S. RICH, Secretary
G. M. Armbrust
Robin Beach
C. R. Beardsley
H. S. Bennion
Vannevar Bush
W. E. Crawford
E. E. Dreese
Wray Dudley
R. D. Evans
W. L. Everitt
J. L. Hamilton
A. Kennedy, Jr.
R. L. Kingsland
H. C. Koenig
W. B. Kouvlenhoven
Wills Macalachlan
J. F. McKearin
V. M. Montsinger
L. W. W. Morrow
H. W. Rogers
O. J. Rotty
F. O. Schnure
M. W. Smith
I. Melville Stein
W. E. Wickenden
T. A. Worcester
G. I. Wright

Subcommittee on General Session
H. S. OSBORNE, Chairman
C. R. Beardsley
H. S. Bennion
Vannevar Bush
L. W. W. Morrow
H. W. Osgood
W. E. Wickenden

Page 12