



# Winter Technical Meeting

January 24-28, 1944

*Headquarters*

ENGINEERING SOCIETIES BUILDING

33 West 39th Street

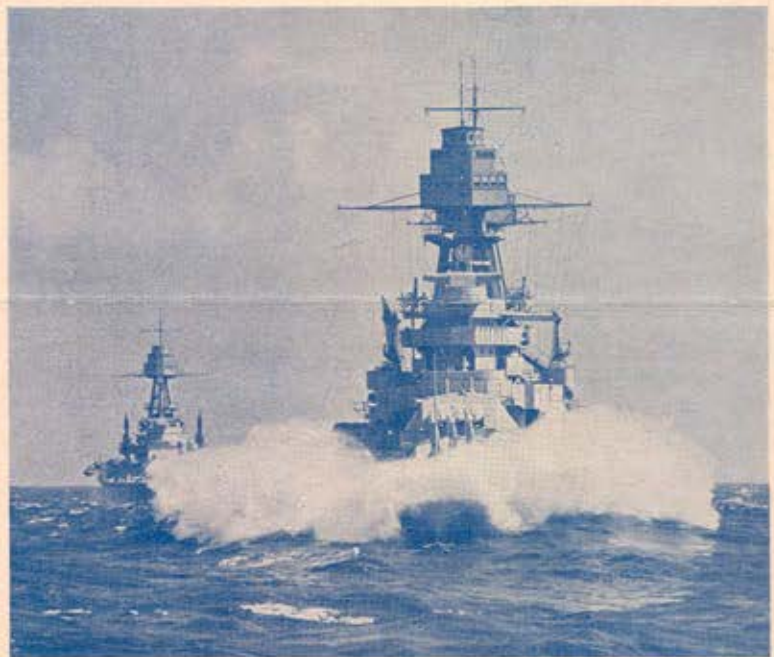
New York 18, N. Y.



*Western Electric Photo by Mettee*

A Typical Command Post Telephone Switchboard. The importance of communications in today's war will be told in an address by Major General Colton, Thursday evening.

U.S.S. Arizona. "Electricity on Shipboard" will be the subject of an address by Captain Rickover, Friday evening, both as a matter of general interest and as an aid to those teaching Navy Specialized Training Programs.



*U. S. Navy Official Photo*

## OTHER FEATURES

GENERAL SESSION

EDISON MEDAL PRESENTATION

30 TECHNICAL SESSIONS AND CONFERENCES

DISPLAY OF CAPTURED COMMUNICATIONS EQUIPMENT



# AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

## ADVANCE COPIES OF PAPERS

Preprints of technical papers may be obtained by mail by remitting price indicated to the A.I.E.E. Order Department, 33 West 39th Street, New York 18, N. Y.; if purchased at A.I.E.E. headquarters or at the meeting 5c less per copy. For convenience an order form is enclosed. Only numbered papers will be available in advance-copy form. 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 \$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** or the **TRANSACTIONS**.

## Monday, January 24

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

- ✓ 44-53. Current Rating of Cables As Affected by Mutual Heating in Air or Conduit. IPCEA Committee on Research. 30 cents by mail.
- ✓ 44-54. Calculation of Unbalanced Voltage Drops in Distribution Circuits with Particular Reference to Multi-grounded Neutrals. W. R. Bullard, H. L. Lowe, and H. W. Wahlquist, Ebasco Services, Inc. 15 cents by mail.
- 44-10. Transformer Magnetizing Inrush Currents and Influence on System Operation. L. F. Blume, G. Camilli, S. B. Farnham, H. A. Peterson, General Elec. Co. 30 cents by mail.
- 44-62. Costs Study of 69 to 345-Kv Overhead Power-Transmission Systems. John G. Hohm, Boston Port of Embarkation. 30 cents by mail.

### 9:30 a.m.—Electrical Measuring Instruments

- 44-21. A Multiplied-Deflection A-C Potentiometer. R. B. Marshall, Purdue Univ. 15 cents by mail.
- 44-4. An Instrument for the Measurement of Large Alternating Currents. Walther Richter, Allis-Chalmers Mfg. Co. 15 cents by mail.
- 44-33. Crossed-Coil Power-Factor Meters. N. P. Millar, General Elec. Co. 25 cents by mail.
- 44-31. Influence of Improved Magnetic Alloys on Design Trends of Electrical Instruments. M. S. Wilson, J. M. Whittenton, General Elec. Co. 15 cents by mail.

### ~~9:30 a.m.—Conference on Electric Welding~~

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

- 44-15. Regulation of A-C Generators with Suddenly Applied Loads. E. L. Harder, R. C. Cheek, Westinghouse Elec. & Mfg. Co. 30 cents by mail.
- ✓ 44-12. Steady-State Stability of Synchronous Machines As Affected by Voltage Regulator Characteristics. C. Concordia, General Elec. Co. 25 cents by mail.

- ✓ 44-17. Lightning Protection for Rotating Machines. G. D. McCann, E. Beck, L. A. Finzi, Westinghouse Elec. & Mfg. Co. 30 cents by mail.

- ✓ 44-23. The Effect of Kilovar Supply on the Design of Systems for Load Growth. T. W. Schroeder, J. W. Butler, N. H. Meyers, General Elec. Co. 15 cents by mail.

### 2:00 p.m.—Applications of Electrical Measurements and Basic Sciences

- 44-55. The Accuracy of Measurements in Lumped R-C Cable Circuits As Used in the Study of Transient Heat Flow. Victor Paschkis, Michael P. Heisler, Columbia Univ. 20 cents by mail.
- ✓ 44-9. Polarized Light Servo-System. T. M. Berry, General Elec. Co. 15 cents by mail.
- 44-16. A New Differential Analyzer. H. P. Kuehni, H. A. Peterson, General Elec. Co. 25 cents by mail.
- ✓ 44-24. Symmetrical-Components Analysis of the Four-Phase System. A. Boyajian, General Elec. Co. 15 cents by mail.
- ✓ 44-45. Some Aspects of Inductance When Iron Is Present. L. T. Rader, E. C. Litscher, General Elec. Co. 30 cents by mail.

### ~~2:00 p.m.—Conference on Marine Transportation~~

## Tuesday, January 25

### 9:30 a.m.—Transmission and Protective Devices

- ✓ 44-13. Transmission and Relaying Problems on the Fort Peck Project. Erik Floor, Harza Engg. Co.; H. N. Muller, S. L. Goldsborough, Westinghouse Elec. & Mfg. Co. 20 cents by mail.
- 44-52. Fusing Practices on Distribution Systems. John S. Parsons, J. M. Wallace, Westinghouse Elec. & Mfg. Co. 15 cents by mail.
- 44-30. Reclosing of Single Tie Lines between Systems. W. W. Parker, H. A. Travers, Westinghouse Elec. & Mfg. Co. 15 cents by mail.
- ✓ 44-50. An Eight-Year Investigation of Lightning Currents and Preventive Lightning Protection on a Transmission System. E. Hansson, S. K. Waldorf, Penna. Water & Pr. Co. 25 cents by mail.

### 9:30 a.m.—Conference on Turbogenerator Characteristics

This conference is sponsored by the Committee on Power Generation and the Standards Committee to develop information that is required in the standardization of turbogenerator characteristics. The work is being carried on by the AIEE-ASME Joint Committee on Turbogenerators. The committee is concerned with units of 10,000-kw capacity and above but at present is confining its work to 3600-rpm units for which the ASME group has recommended 12,500, 20,000, 30,000, 40,000, and 60,000-kw ratings. The conference will include results of a survey of present-day practice in loading and the power-factor rating of generators. The effect of changing of generator characteristics, such as power-factor rating, short-circuit ratio, temperature rise, etc., on the weight of active material required in the generators will be discussed. While a part of the material will be presented by the AIEE group of the Turbogenerator Committee, a major portion of the conference time will be available for general discussion, and it is hoped that as many members will participate as possible.



**9:30 a.m.—Conference on Measurement of Temperature Rise in Continuous-Duty Machines**

**2:00 p.m.—Circuit Breakers**

- ✓ 44-44. The Geometry of Arc Interruption—II—Current Zero Phenomena. E. W. Boehne, General Elec. Co. 30 cents by mail.
- ✓ 44-56. A 500,000-Kva 7.5-Kv Air Circuit Breaker for Steel Mill Service. R. C. Dickinson, Westinghouse Elec. & Mfg. Co. 15 cents by mail.
- 44-37. High-Voltage Oil Circuit Breakers for Rapid Reclosing Duty. A. W. Hill, W. M. Leeds, Westinghouse Elec. & Mfg. Co. 20 cents by mail.
- 44-47. A Magnetic-Type Air Circuit Breaker for 15,000-Volt Services. L. J. Linde, B. W. Wyman, General Elec. Co. 15 cents by mail.
- ✓ 44-48. A New Three-Element Current-Limiting Power Fuse. H. L. Rawlins, H. H. Fahnoe, Westinghouse Elec. & Mfg. Co. 15 cents by mail.

**2:00 p.m.—Land Transportation**

- 44-20. Electrification of Large Open-Pit Copper Mines. L. W. Birch, Ohio Brass Co. 15 cents by mail.
- ✓ 44-28. Modern Electric Locomotives in Open-Pit Mine Haulage. J. E. Borland, L. G. Riley, Westinghouse Elec. & Mfg. Co. 15 cents by mail.
- “Open-Pit Copper Mining”—a motion picture, by courtesy of the General Elec. Co.
- ✓ 44-25. Diesel Features of Generators for Diesel-Electric Switcher Locomotives. C. A. Atwell, Westinghouse Elec. & Mfg. Co. 15 cents by mail.
- ✓ 44-27. Diesel-Electric Switching Locomotive Application by Means of Nomographic Charts. A. P. Millan, T. F. Perkinson, General Elec. Co. 15 cents by mail.
- ✓ 44-26. Gear Ratio and Its Effect on Traction Motors. G. M. Woods, Westinghouse Elec. & Mfg. Co. 15 cents by mail.
- CP.\* Rail Transportation's Role in War Production. A. M. Candee, Westinghouse Elec. & Mfg. Co.

**2:00 p.m.—Conference on Permissible Temperature Rise of Short-Time Rated Machines**

**2:00 p.m.—Conference on Speed Relaying**

- CP.\* Effect of Relaying Time on Damage to Equipment and Lines. H. R. Paxson, Philadelphia Elec. Co.
- CP.\* Effect of Speed of Relaying on System Stability. R. C. R. Schulze, Public Serv. Elec. & Gas Co.
- CP.\* Influence of High-Speed Relaying and Reclosing on Overall-System Performance. C. E. Parks, Public Serv. Co. of Ind.

**6:30 p.m.—Smoker at the Hotel Commodore**

\*CP: Conference paper; no advance copies are available; not intended for publication in Transactions.

## Wednesday, January 26

**10:00 a.m.—General Session**

Presentation of Edison Medal to Doctor Vannevar Bush  
 Feature talk on a timely topic to be of interest to many members.

**2:00 p.m.—Conference on Lighting**

Address: “Progress in Lighting.” Preston S. Millar, President, Elec'l Testing Labs.  
 Address: “Seeing Things”—illustrated by motion pictures. S. G. Hibben, Director of Applied Lighting, Westinghouse Elec. & Mfg. Co.

**2:00 p.m.—Relays**

- 44-46. The MHO-Carrier Relaying Scheme. R. E. Cordray, A. R. vanC. Warrington, General Elec. Co. 25 cents by mail.
- 44-51. The Functions of Ground Preference in Carrier-Current Relay Schemes. S. C. Leyland, S. L. Goldsborough, Westinghouse Elec. & Mfg. Co. 15 cents by mail.
- 44-68. System Voltages and Fault Currents Determined Easily on D-C Board. C. E. Asbury, Illinois Pr. Co. 20 cents by mail.
- 44-34. A Versatile Power-Line Carrier System. H. W. Lensner, J. B. Singel, Westinghouse Elec. & Mfg. Co. 15 cents by mail.

**2:00 p.m.—Conference on Industrial Control**

**2:00 p.m.—Conference on Civic Affairs and Cooperation with Other Organizations**

**2:00 p.m.—Meeting of Safety Committee**

- 44-22. Study of Artificial Respiration on Anesthetized Men. W. B. Kouwenhoven, D. R. Hooker, J. A. York, The Johns Hopkins Univ. 15 cents by mail.

## Thursday, January 27

**9:30 a.m.—Air Transportation**

- 44-32. Present D-C Aircraft Electrical Supply Systems. H. C. Anderson, Jr., S. B. Crary, N. R. Schultz, General Elec. Co. 20 cents by mail.
- ✓ 44-38. Electric-Circuit Fault-Protective Principles As Applied to D-C Aircraft Systems. R. H. Kaufmann, General Elec. Co. 30 cents by mail.
- ✓ 44-36. Basic Considerations in Selection of Electrical Systems for Large Aircraft. W. K. Boice, L. G. Levoy, Jr., General Elec. Co. 30 cents by mail.
- ✓ 44-43. Testing Aircraft Generators. H. E. Keneipp, Westinghouse Elec. & Mfg. Co. 20 cents by mail.
- ✓ 44-7. Electric Circuits and the Magnetic Compass. R. C. Burt, H. R. Beck, Lockheed Aircraft Corp. *Presentation by title.* 15 cents by mail.



**9:30 a.m.—Conference on Domestic and Commercial Applications**

- ✓ 44-69. The Vibration of Electrical Contacts. M. N. Russell, Saul Keilien, Pass & Seymour, Inc. 15 cents by mail.
- CP.\* Design Procedure for Low-Temperature Panel Space Heating. B. F. Raber, F. W. Hutchinson, University of California.
- CP.\* Data on Electric Loads of Wartime Projects. O. B. Falls, Jr., General Elec. Co.
- CP.\* Resistance Wire. W. A. Gatward, Hoskins Mfg. Co.
- ~~CP.\* Low Reactance Busway. J. G. Jackson, Square D. Co.~~
- CP.\* Protective Devices. Stephen Jones, Heinemann Circuit Breaker Co.

**9:30 a.m.—Conference on Industrial Power Applications**

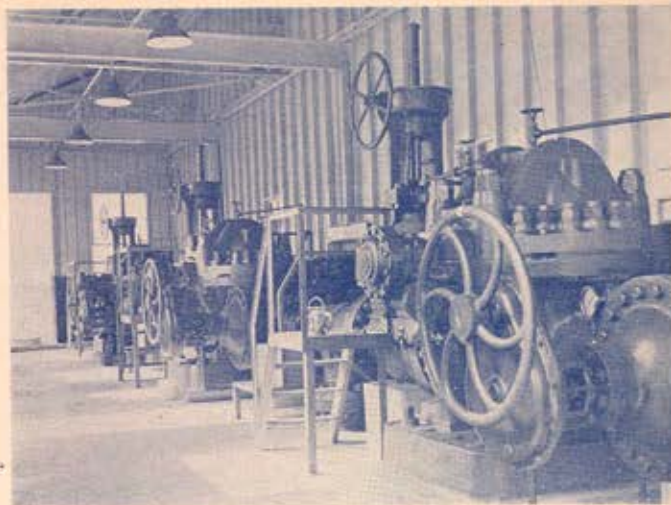
- ✓ 44-18. Inverter Action on Reversing of Thyatron-Motor Control. H. L. Palmer, H. H. Leigh, General Elec. Co. 25 cents by mail.
- CP.\* Experience with Short Circuits and Breakers, with Emphasis on Co-ordination between Fuses and Breakers. L. C. Peterman, Ford, Bacon, and Davis.
- CP.\* Lightning Protection for Industrial Equipment Operating at Line Potential. A. C. Muir, Berwind-White Coal Mining Co.
- CP.\* Plant Distribution Systems. C. E. Smith, New York Shipbuilding Corp.
- CP.\* Dodge Chicago Plant's Distribution Scheme with Airplane Engine Power Recovery Circuits. E. L. Bailey, Chrysler Corp.

**2:00 p.m.—Air Transportation**

- ✓ 44-57. Effect of Altitude on Electrical Breakdown and Flashover of Aircraft Insulation. L. J. Berberich, G. L. Moses, A. M. Stiles, C. G. Veinott, Westinghouse Elec. & Mfg. Co. 30 cents by mail.
- ✓ 44-58. Electrical Circuit Burning Clear and Damage Phenomena on Aircraft Structures. C. M. Foust, J. G. Hutton, General Elec. Co. 20 cents by mail.
- ✓ 44-29. Potential Breakdown of Small Gaps under Simulated High-Altitude Conditions. M. J. DeLerno, General Elec. Co. 15 cents by mail.
- ✓ 44-59. Corona in Aircraft Electric Systems As a Function of Altitude. W. R. Wilson, General Elec. Co. 20 cents by mail.
- ✓ 44-5. Aircraft Signal Systems. Raymond A. Rugge, Curtiss-Wright Corp. 15 cents by mail.
- ✓ 44-70. Electrically Driven Gyroscopes for Aircraft. H. M. Witherow, Albert Hansen, Jr., General Elec. Co. 15 cents by mail.

**2:00 p.m.—Communication and Electronics**

- ✓ 44-42. Crossbar Toll Switching System. L. G. Abraham, A. J. Busch, F. F. Shipley, Bell Tel. Labs., Inc. 25 cents by mail.
- ✓ 44-49. Automatic Ticketing of Telephone Calls. O. A. Friend, Bell Tel. Labs., Inc. 25 cents by mail.



Pump Room in 3-Unit Pumping Station on 24-Inch Pipe Line. Electrical equipment for the lines will be described in papers in the Industrial Power Applications Session.

- ✓ 44-14. A Short-Cut Method of Estimating TIF of Power Systems with Rectifier Load. C. W. Frick, General Elec. Co. 20 cents by mail.
- ✓ 44-41. Rectifier Circuit Duty. C. C. Herskind, General Elec. Co. 20 cents by mail.
- ✓ 44-8. Electronically Controlled Dry-Disc Rectifier. Allen Rosenstein, H. N. Barnett, Signal Engg. Prod. Co. 15 cents by mail.

**2:00 p.m.—Industrial Power Applications**

- ✓ 44-19. A New Electric Hoist Drive for Cranes. M. A. Whiting, General Elec. Co. 20 cents by mail.
- ✓ 44-60. Heating of Nonmagnetic Electrical Conductors by Magnetic Induction—Longitudinal Flux. R. M. Baker, Westinghouse Elec. & Mfg. Co. 30 cents by mail.
- ✓ 44-39. Supervisory Control for the World's Most Modern Steel Mill. P. B. Garrett, M. E. Reagan, Westinghouse Elec. & Mfg. Co. 15 cents by mail.
- ✓ 44-61. Electrical Equipment for the War Emergency Pipeline Projects. E. E. Thomas, W. G. Taylor, General Elec. Co.; Oscar Wolfe, War Emergency Pipelines, Inc. 25 cents by mail.
- ✓ 44-40. The Capacitor—An Aid to Electric Power Service for Pipe Lines. M. A. Hyde, R. E. Marbury, Westinghouse Elec. & Mfg. Co. 25 cents by mail.

"Oil for War"—a colored motion picture, by courtesy of the Barrett Div., Allied Chem. and Dye Corp.

**8:00 p.m.—Joint IRE-AIEE Session**

Address: "Enemy Army Communications Equipment." Major General Roger B. Colton, Chief, Engineering and Technical Service, Signal Corps, United States Army.

Captured equipment will be on display at the conclusion of the address.

(Continued on middle of page 5)



# I.R.E. WINTER TECHNICAL MEETING

Hotel Commodore

## Friday, January 28

- 9:00 a.m.—Registration**
- 10:30 a.m.—Address of Welcome**  
B. E. Shackelford, Chairman, 1944 Winter Technical Meeting Committee
- 10:40 a.m.—Annual Meeting**  
Ceremony of "Passing the Gavel" from Retiring President Wheeler to Incoming President Turner  
Amendment of Institute's Charter
- 11:15 a.m.—Technical Papers Session**
- 12:30 p.m.—President's Luncheon**
- 2:30 p.m.—Symposium on Work of the Radio Technical Planning Board**  
W. R. G. Baker, Chairman, RTPB; several panel chairmen
- 4:30 p.m.—Technical Papers Session**
- 7:00 p.m.—Banquet (informal)**  
George Lewis, Master of Ceremonies  
Presentation of Awards by President Turner  
1943 Medal of Honor—to Haraden Pratt  
1943 Morris Liebmann Memorial Prize—to W. L. Barrow

1943 Fellowship Awards—to S. L. Bailey, C. R. Burrows, M. G. Crosby, C. B. Feldman, Keith Henney, D. O. North, K. A. Norton, S. W. Seeley, D. B. Sinclair, Leo Young

Annual Address of Retiring President L. P. Wheeler  
Prominent Speaker on Timely Subject (to be announced)

## Saturday, January 29

- 10:00 a.m.—Symposium on Engineering Work of the Federal Communications Commission**  
E. K. Jett, Ch. Engr., FCC  
Timely Broadcast Matters. G. P. Adair, Ass't Ch. Engr., FCC  
Police Aviation and Maritime Services. W. N. Krebs, Cf. of Safety and Special Serv. Div., FCC  
International Point-to-Point and Allocation Problems. P. F. Siling, Ch. of Internatl. Div., FCC Engg. Dept.
- 12:30 p.m.—Students' Luncheon**
- 2:30 p.m.—Technical Session**  
It is also expected to have prominent American, British, Russian, and Chinese authorities outline radio engineering in their respective countries.

# A.I.E.E. WINTER TECHNICAL MEETING

(Continued from page 4)

## Friday, January 28

- 9:30 a.m.—Electrical Machinery**
- 44-35. The Asymmetrical Stator As a Means of Starting Single-Phase Induction Motors. John L. Baum, Chillicothe, Ohio. 25 cents by mail.
- 44-1. Design of Starting Windings for Split-Phase Motors. T. C. Lloyd, Robbins and Myers, Inc.; J. H. Karr, Purdue Univ. 15 cents by mail.
- 44-2. Some Aspects of Electric Motor Design, Part I—Polyphase Induction Motor Design to Meet Fixed Specifications. T. C. Lloyd, Robbins and Myers, Inc. 30 cents by mail.
- 44-63. A Design Method for D-C Machines. M. I. Beers, Robbins and Myers, Inc.; J. H. Karr, Purdue Univ. 20 cents by mail.
- 44-64. Starting Windings for Single-Phase Induction Motors. C. G. Veinott, Westinghouse Elec. & Mfg. Co. 30 cents by mail.
- 9:30 a.m.—Conference on Automatic Stations**
- 2:00 p.m.—Transformers**
- 44-6. Asymmetrical Loading of Three-Phase, Three-Winding Transformer Banks. P. K. Denisov, Academy of Science of the U.S.S.R. 15 cents by mail.

- 44-65. Thermal Protection of Transformers under Overload Conditions. V. M. Montsinger, G. Camilli, General Elec. Co. 20 cents by mail.
- 44-66. Overloading of Transformers—Cases Not Covered by the General Rules. W. C. Sealey, J. B. Hodtum, Allis-Chalmers Mfg. Co. 15 cents by mail.
- 44-67. Effect of Altitude on Impulse and 60-Cycle Strength of Electrical Apparatus. P. L. Bellaschi, Paul Evans, Jr., Westinghouse Elec. & Mfg. Co. 20 cents by mail.
- 2:00 p.m.—Conference on Administrative Problems in Army and Navy Specialized Training Programs**
- 44-3. Cultural Training of the Engineer. A. Boyajian, General Elec. Co. 15 cents by mail.
- 8:15 p.m.—Teaching Aids for Navy Specialized Training Programs**  
Address: "Electricity on Shipboard." Captain H. G. Rickover, Head, Electrical Section, Bureau of Ships, United States Navy.

## Saturday, January 29

- 9:30 a.m.—Special Lecture at, and Inspection Trip through, the Brooklyn Navy Yard, under the direction of Captain H. G. Rickover, and open only to a specially selected and invited teaching personnel from the colleges in which Navy Specialized Training Programs are conducted.**

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# WINTER MEETING, JANUARY 24-28, 1944



Cordless Switchboard Used in Connection with the Crossbar Toll Switching System

## OTHER MEETING FEATURES

### General Session

The Edison Medal will be presented to Dr. Vannevar Bush at the general session on Wednesday morning, January 26. Dr. Bush was awarded the medal "for his contribution to the advancement of electrical engineering, particularly through the development of new applications of mathematics to engineering problems, and for his eminent service to the Nation in guiding the war research program."

At the conclusion of the medal presentation ceremonies a featured talk on a timely topic to be of interest to many members will be given.

### Smoker

In order that those attending the Winter Technical Meeting may have an opportunity to get together with their friends under conditions where all may relax and pass a thoroughly enjoyable evening it has been decided this year to stage a "Smoker." It is scheduled for Tuesday evening, January 25, at the Hotel Commodore. In so far as possible all conditions surrounding the popular affairs of previous years will be provided. Ticket, including dinner and show, will be \$5.00 per person. Tables for ten can be reserved by advance payment. Checks should be made out to "Special Account, National Secretary, AIEE."

## Theatre Tickets

As an accommodation to our out-of-town members attending the meeting, a limited number of theatre tickets to popular shows will be available for purchase. Preference will be given to out-of-town orders. All tickets will be for Wednesday evening, January 26, not the 27th, as previously announced. Orders must be accompanied by checks made out to "Special Account, National Secretary, AIEE." Tickets at \$4.40 each for the following shows have been reserved:

1. "One Touch of Venus"
2. "Winged Victory"
3. "Ziegfeld Follies"

If acceptable, an alternate selection should be named. You will be advised of the disposition of your order, and tickets will be held at AIEE headquarters.

## Patent Exhibition

A catalog of some 45,000 United States patents and patent applications in the mechanical, electrical, and chemical fields, formerly enemy-owned or enemy-controlled, will be on exhibit during the meeting. These patents and patent applications are available for licensing under liberal terms, and Leo T. Crowley, Alien Property Custodian of the United States Government, under whose authority they are being shown, hopes that American engineers will realize the full potentialities of the inventions covered by these vested patents and patent applications by employing them in the war effort wherever possible, and developing them for the post-war period. A member of the Custodian's staff will be present to answer your questions.

## Registration and Hotels

Please fill in and return promptly the enclosed Advance Registration Card. Upon arrival at the meeting do not fill out another card—just ask for your badge. A registration fee of \$2.00 will be charged all nonmembers except Enrolled Students and the immediate families of members.

Hotel reservations should be made by writing directly to the hotel preferred.

H. H. HENLINE, *National Secretary*

## Winter Technical Meeting Committee

J. F. FAIRMAN, *Chairman*

W. J. BARRETT	M. D. HOOVEN	R. A. JONES
F. A. COWAN	C. R. JONES	F. V. MAGALHAES
J. L. CALLAHAN		C. S. PURNELL

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