

American Institute of Electrical Engineers

Tenth

Northeastern District Meeting

and

Student Branch Convention

Worcester, Mass.
May 16-18, 1934

Meetings at
Bancroft Hotel
and
Worcester Polytechnic
Institute



Boynton Hall on the campus of
Worcester Polytechnic Institute

Anniversary Year

1884  1934

Headquarters
Bancroft Hotel

North Eastern District Meeting and Student Branch Convention

THE TENTH annual meeting of the North Eastern District of the American Institute of Electrical Engineers will be held at Worcester, Mass., from Wednesday, May 16, to Friday, May 18, 1934. On Friday the meeting will be combined with the District Student Branch Convention.

Headquarters will be at the Bancroft Hotel, corner of Franklin and Portland Streets. This is one of the most comfortable hotels in Massachusetts with most adequate facilities for meetings of this character. The service is excellent, and the prices extremely reasonable. Special arrangements have been made with the management to provide rooms for the students on a dormitory plan at \$1 per day.

THE CITY OF WORCESTER

Worcester is located in the heart of the Commonwealth of Massachusetts. It is a city of 200,000 population, the third largest in New England, centrally located for industry and commerce. It is connected by rail and super-highways to the principal markets of the Atlantic seaboard.

Its industry is diversified covering over 500 different items of manufactured articles. Included in this long list are: American Steel and Wire Company, manufacturers of wire and cables; M. J. Whittall Associates, rugs and carpets; Norton Company, grinding wheels and machinery; Crompton and Knowles Loom Works, textile machinery; Heald Machine Company, automatic machines and tools; Leland-Gifford Company, crank shafts and forging; the Royal Worcester Corset Company; and the United States Envelope, all internationally known.

Historically, Worcester is rich in interest. Twice, once in 1654 and again in 1683, the settlement was abandoned after the inhabitants sustained savage attacks by the Indians which reduced their numbers and destroyed their homes and crops. It was not until 1713 that a permanent settlement was established. From Worcester went

forth General Artemas Ward, the first American to receive the commission of General under American authority; Colonel Timothy Bigelow, commander of the "Minute Men"; Isaiah Thomas in whose publication *The Massachusetts Spy* was printed the first copy of the Declaration of Independence to appear in a New England paper; General Rufus Putnam, Eli Whitney, George Bancroft, Elias Howe, Clara Barton, Edward Everett Hale, and a long list of names known to every child in the nation. The whole of New England abounds in historic shrines and natural beauty spots, all within an easy automobile ride of Worcester.

Worcester and the surrounding territory is served by the high voltage lines of the New England Power Company with local distribution made by companies operating under the New England Power Engineering and Service Corporation.

WEDNESDAY'S ACTIVITIES

A most interesting program has been mapped out for the meeting. Immediately following the address of welcome by Vice-President J. Allen Johnson at 9:30 a.m. on Wednesday morning, 4 technical papers will be presented. After recess for luncheon another group of technical papers will be read and discussed. No special arrangements are being made for dinner on the first day of the meeting so that members may be free to look up acquaintances and dine with them. The evening entertainment will start at 8 p.m. and will consist of moving pictures with other feature entertainment.

THURSDAY'S ACTIVITIES

On Thursday morning 3 most interesting papers of a non-technical or a semi-technical character will be presented. This session is made short in order to provide sufficient time for the meeting of the District execu-

tive committee during the luncheon period. The afternoon will be given over to an inspection trip at the South Works of the American Steel & Wire Company. A most interesting visit is assured. In the evening a buffet lunch will replace the usual dinner. This will be followed by an informal dance and get-acquainted period.

FRIDAY'S ACTIVITIES

The morning session on Friday will feature the student convention, as usual. This will be under the direction of Prof. L. W. Hitchcock of the University of New Hampshire, who is chairman of the Branch counselors committee.

The scene of activities of the day will be transferred from the Hotel Bancroft to the campus of the Worcester Polytechnic Institute. Plans in addition to presentation of student technical papers in the morning include a trip to the Millbury dispatching station of the New England Power Company in the afternoon.

ANNUAL DINNER

The annual dinner and presentation of prizes will be held at the Sanford Riley Dormitory of Worcester Polytechnic Institute at 6:30 p.m. on Friday. Following dinner both the student and senior sections will meet in the lecture room of the engi-



The building on the left is the Bancroft Hotel on the corner of Franklin and Portland Streets, Worcester, Mass., which will be the headquarters for the meeting. On the right is the Worcester Telegram-Gazette Building, and in the middle the Chamber of Commerce Building



South Works of the American Steel and Wire Company, Worcester, Mass., to which an inspection trip is scheduled on Thursday afternoon

neering laboratories where Dr. Robert J. Van De Graaff will give an illustrated lecture on "High Voltage and Its Application to Atomic Disintegration." If time permits, following Dr. Van De Graaff's lecture the local Student Branch will carry out some interesting experimental demonstrations of electrical apparatus.

STUDENT CONFERENCE

After the morning session, the annual luncheon conference of the Branch chairmen and counselors will be held at the Sanford Riley Dormitory of Worcester Polytechnic Institute.

SATURDAY'S ACTIVITIES

For those who can stay over on Saturday arrangements have been made for a visit to the substation of the New England Power Company at Tewksbury, Mass. This is a 220-kv station, and will be of considerable interest to both the senior and student members.

INSPECTION TRIPS

Worcester is particularly rich in features for entertainment of members and guests. In addition to the plant of the American Steel & Wire Company, Worcester is the home of the Norton Company, manufacturer of abrasive materials, grinding wheels, tools, etc., the Heald Machine Company, manufacturer of precision tools and automatic machinery, and the Worcester Pressed Steel Company, manufacturer of pressed

metal pieces as the name implies. Those wishing to do so may arrange for visits to any one or all 3 of these plants. The John W. Higgins Armory at the Worcester Pressed Steel Company will be of special interest. This is one of the most famous collections in the United States of armor from medieval time to the last of the armored knights. John W. Higgins, president of the Worcester Pressed Steel Company is an ardent student of arts in metals and has secured for his museum an elaborate collection depicting artistry in metal work from the 4 corners of the world.

In addition to these features of interest to the engineers in Worcester is found the internationally famous Worcester Antiquarian Society, a historical society of great interest to lovers of New England and an art museum exhibiting some of the world's famous masterpieces in painting and sculpture. As previously stated opportunity will be given to visit all of these points of interest.

WOMEN'S ENTERTAINMENT

A special women's committee has prepared a fine program for the entertainment of women visitors. On Wednesday afternoon a visit will be made to the Worcester Antiquarian Society and the Worcester Art Museum. A luncheon or tea at the John W. Higgins Armory, followed by bridge for those who desire, is planned for Thursday afternoon. On Friday there will be a luncheon at the Worcester Country Club with an opportunity to play bridge, tennis, or golf as desired.

Table I—Hotel Rates

Hotels	Single Room Running Water	Single Room With Bath	Double Room Running Water	Double Room With Bath
Bancroft*	\$2.00	\$2.50, 3.00, 3.50	\$4.00	\$4.50, 5.00
Aurora	\$1.75, 2.00	\$2.50, 3.00	\$3.00, 3.50	\$4.00, 5.00
Worcester	\$1.75, 2.00	\$2.50, 3.00	\$3.00, 3.50	\$4.00, 5.00

* Headquarters. Special rates for Students only—4 or more in room, individual cot beds, with bath, \$1 per person

SPORTS

Sports tournaments have not been scheduled but the committee will be glad to make arrangements for golf and tennis at any of the local clubs during the meeting.

REGISTRATION AND HOTEL RESERVATIONS

All planning to attend this meeting should register in advance, if possible, by writing to L. S. Leavitt, 11 Foster St., Worcester,

Mass. Members should complete their registrations after arrival so as not to miss the opening session. There will be no registration fees.

Hotel reservations should be made directly with the hotel preferred. Rates for the headquarters hotel, Hotel Bancroft, the Aurora Hotel, and the Worcester Hotel are given in Table I. Both of the last 2 named hotels are under the same management.



Worcester Memorial Auditorium floodlighted for dedication

An information desk will be open all day Wednesday and Thursday and during the morning of Friday for the convenience of members.

PARKING

Ample parking space will be found in the vicinity of the Bancroft Hotel. Special arrangements have been made whereby A.I.E.E. members, and visitors, will be able to park their cars in the Bancroft Garage, 24 Portland Street (just around the corner from the hotel) at \$0.75 per day. This includes the privilege of taking the car out as often as desired without additional charge. Open air parking space on Federal Street at the rear of the hotel also is available at a small fee.

Program

Most of the technical papers to be presented for discussion at the meeting have been published in this and preceding issues of ELECTRICAL ENGINEERING. For those papers which have been published, reference to the issue and page is given with the title in the following program. Members who wish to follow the presentation in detail and discuss the papers are urged to take the necessary issues to the meeting with them.

Because it is contemplated that the May 1934 issue of ELECTRICAL ENGINEERING will be devoted to the fiftieth anniversary of the A.I.E.E., those papers which have not been made available in time for inclusion in the April issue will not be published in advance. For this latter group, arrangements are being made with the authors to supply mimeographed copies.

All technical sessions, with the exception of those scheduled on Friday, will be held at the Bancroft Hotel. The sessions on Friday will be held in the lecture rooms of the Worcester Polytechnic Institute.

Daylight Saving Time will be in force at the time of the meeting.

Wednesday, May 16

9:00 a.m.—Registration

9:30 a.m.—Opening Session

OPENING ADDRESS, J. Allen Johnson, vice-president, North Eastern District, A.I.E.E.

Selected Subjects—Professor T. H. Morgan, chairman

A NEW TYPE OF WARBLE TONE OSCILLATOR, W. H. Bliss, University of Maine. April, p. 547-50

A VACUUM TUBE CONTROLLED RECTIFIER, C. B. Foos, General Electric Co. April, p. 568-70

THE BEHAVIOR OF DISTANCE RELAYS DURING SYSTEM OSCILLATIONS, E. H. Bancker and E. M. Hunter, General Electric Co. Not Published

THE M.I.T. POWER-FACTOR BRIDGE AND ASSOCIATED OIL CELL, AND THE POWER-FACTOR MEASUREMENT OF SMALL OIL SAMPLES, J. C. Balsbaugh, N. D. Kenney, and Alfred Herzenberg, Massachusetts Institute of Technology. Not published

2:00 p.m.—Transmission and Distribution, I. E. Moulthrop, chairman

SHUNT RESISTORS FOR REACTORS—II, F. H. Kierstead and L. V. Bewley, General Electric Co. March, p. 411-8

THEORY OF PRIMARY NETWORKS—PART II, F. M. Starr, General Electric Co. March, p. 426-31

DOUBLE UNBALANCES IN 3-PHASE NETWORKS AND THEIR SOLUTION ON THE A-C CALCULATING BOARD, E. W. Kimbark. Not published

EXPERIMENTS IN FATAL ELECTRIC SHOCK, A. G. Conrad and H. W. Haggard, Yale University. March, p. 399-402

8:00 p.m.—Special Entertainment Feature

Thursday, May 17

9:00 a.m.—General Session, Louis S. Leavitt, chairman

FIFTY YEARS OF THE A.I.E.E., by C. F. Scott, Yale University.

THE INSIDE WORKINGS OF THE A.I.E.E., J. Allen Johnson, vice-president, North Eastern District, A.I.E.E.

SPEED CONTROL PROBLEMS OF INTERCONNECTED OPERATION, Robert Brandt, New England Power Engineering and Service Corp.

12:00 noon—District Executive Committee Luncheon

1:30 p.m.—Assemble for transportation to South Works, American Steel and Wire Co.

2:00 p.m.—Inspection trip through South Works of the American Steel and Wire Co.

6:30 p.m.—Buffet luncheon followed by informal dancing

Friday, May 18

9:00 a.m.—Student Technical Session, Professor L. W. Hitchcock, chairman Student counselors' committee

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7 1/2
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2 1/4

Meeting held at Electrical Engineering Laboratory, Worcester Polytechnic Institute, corner of West and Salisbury Streets

12:00 noon—Luncheon Conference of Counselors and Branch Chairmen

2:00 p.m.—Student Inspection Trips

2:00 p.m.—Electrical Machinery, C. A. M. Weber, chairman

IRREGULAR WINDINGS IN WOUND ROTOR INDUCTION MOTORS, R. E. Hellmund and C. G. Veinott, Westinghouse Electric and Mfg. Co. Feb., p. 342-6

STRAY LOAD LOSS TEST ON INDUCTION MACHINES, T. H. Morgan, Worcester Polytechnic Institute, and P. M. Narbutovskih, Graduate Student, Stanford University. Feb., p. 286-90

SOME PROBLEMS INVOLVING ADJUSTED SYNCHRONOUS REACTANCE, H. B. Dwight, Massachusetts Institute of Technology. April, p. 566-8

TRANSFORMER REACTANCE AND LOSSES WITH NONUNIFORM WINDINGS, H. O. Stephens, General Electric Co. Feb., p. 346-9

6:30 p.m.—Dinner at Sanford Riley Dormitory, Worcester Polytechnic Institute

8:00 p.m.—Illustrated lecture—HIGH VOLTAGE AND ITS APPLICATION TO ATOMIC DISINTEGRATION," by Dr. Robert J. Van De Graaff.

Saturday, May 19

The committee will be glad to make arrangements for a visit to the 220-kv substation of the New England Power Company at Tewksbury, Mass., for any desiring to make this trip.



Floodlighting of this building in Worcester, Mass., makes possible the flying of the flag 24 hours a day. The building is the Soldier's Memorial on Lincoln Square

$2\frac{1}{4}$
 $2\frac{1}{2}$

published in 1935

$43\frac{1}{2}$
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 $7\frac{1}{2}$
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RULES ON PRESENTING AND DISCUSSING PAPERS

At the technical sessions, papers will be presented in abstract, 10 min being allowed for each paper unless otherwise arranged or the presiding officer meets with the authors preceding the session to arrange the order of presentation and allotment of time for papers and discussion.

Any member is free to discuss any paper when the meeting is thrown open for general discussion. Usually 5 min are allowed to each discussor for the discussion of a single paper or of several papers on the same general subject. When a member signifies his desire to discuss several papers not dealing with the same general subject, he may be permitted to have a somewhat longer time.

It is preferable that a member who wishes to discuss a paper give his name in advance to the presiding officer of the session at which the paper is to be presented. Each discussor is to step to the front of the room and announce, so that all may hear, his name and professional affiliations. Three typewritten copies of discussion prepared in advance should be left with the presiding officer.

Other discussions to be considered for publication should be typewritten and submitted in triplicate to C. S. Rich, secretary of the technical program committee, A.I.E.E. headquarters, 33 West 39th St., New York, N. Y., on or before June 1, 1934.

COMMITTEES

The District meeting committee in charge of this meeting consists of: J. Allen Johnson, *chairman*, vice-president, North Eastern District; A. C. Stevens, secretary-treasurer, North Eastern District; L. W. Hitchcock, chairman of Student Counselors, North

Eastern District; and L. S. Leavitt, R. P. Bullen, W. H. Timbie, J. S. Henderson, B. K. Northrop, and W. B. Hall.

Local

Louis S. Leavitt, *Chm.*
R. P. Bullen, Sec.-Treas.
H. E. Carson C. D. Knight
G. M. Hardy H. A. Maxfield
Mrs. Albert S. Richey

Hotel and Reservations

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D. S. Bennett C. M. Freeland
Wm. W. Locke, Jr.

Finance

R. P. Bullen T. H. Morgan
F. B. Crosby H. H. Newell

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G. M. Hardy, *Chm.*
A. H. Magnuson T. F. Peterson
H. G. Russell

Sports and Entertainment

H. E. Carson H. R. Tomlinson
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Wm. E. Barrows, Jr. A. R. Powers
C. L. Dawes F. M. Sebast
L. P. Dickinson W. L. Smith
W. B. Hall E. M. Strong
C. W. Henderson W. H. Timbie

Ladies Entertainment

Mrs. Albert S. Richey, *Chm.*
Mrs. H. E. Carson Mrs. T. H. Morgan
Mrs. L. S. Leavitt Mrs. H. O. Tilton

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