12. *Changes in the Drainage System in the Vicinity of Lake Ontario during the Glacial Period.* By DR. M. A. VEEDER, Lyons, N. Y. The paper noted sections of wells in buried river channels south of Lake Ontario, from the Niagara River eastward to the Mohawk Valley.

13. *Recent Severe Seismic Movements in Nicaragua.* By JOHN CRAWFORD, Managua, Nicaragua. Description of a series of earthquakes experienced in western Nicaragua from April 29th to May 12th of this year, as reported by the author in the *American Geologist* for July (Vol. XXII., pp. 56–58).

WARREN UPHAM,
Secretary of Section E, 1898.

(*To be Concluded.*)

THE BOTANICAL SOCIETY OF AMERICA.

THE fourth annual meeting was held at Boston, August 19 and 20, 1898, under the presidency of Dr. N. L. Britton.

In the absence of Professor C. R. Barnes, Secretary, Dr. B. L. Robinson was elected Secretary *pro tem.*

The following new members were elected: Robert A. Harper, University of Wisconsin, Madison; Edward A. Burt, Middlebury College, Middlebury, Vt.; Herbert J. Webber, Department of Agriculture, Washington, D. C.; L. H. Pammel, Iowa Agricultural College, Ames; Albert S. Hitchcock, Kansas Agricultural College, Manhattan; Herbert Maule Richards, Harvard University, Cambridge, Mass.; David G. Fairchild, Department of Agriculture, Washington, D. C.; David M. Mottier, University of Indiana, Bloomington.

In the absence of the retiring President, Professor John M. Coulter, his address, entitled 'The Origin of Gymnosperms and the Seed Habit,' was read by Dr. B. M. Davis. It has been published in this JOURNAL.

The following papers were presented:

1. On Sporogenesis in *Arisæma.* By Professor George F. Atkinson.

2. Symbiotic Saprophytism. By Professor D. T. MacDougal.

3. Sporogenesis in *Trillium.* By Professor George F. Atkinson.

4. The Structure and Development of the Centrosphere in *Corallina.* By Dr. B. M. Davis.

5. Relations Between the Forest Flora and Geological Formations in New Jersey. By Dr. Arthur Hollick.

6. Preliminary Notes on the Fertilization of the White Pine. By Miss M. C. Ferguson (by invitation of the Council).

7. Notes on a *Helianthus* from Long Island. By Dr. N. L. Britton.

8. Tetrad-formation in *Tsuga.* By W. A. Murrill. (Presented by Professor Atkinson.)

9. A Fossil Moss from the State of Washington. By Mrs. E. G. Britton and Dr. Arthur Hollick.

The following officers were elected for the ensuing year: President, Professor L. M. Underwood; Vice-President, Dr. B. L. Robinson; Treasurer, Dr. Arthur Hollick; Secretary, Professor Geo. F. Atkinson; Councillors, Professor C. E. Bessey and Dr. W. P. Wilson.

MEETING OF THE AMERICAN FORESTRY ASSOCIATION AT BOSTON.

THE meeting of the American Forestry Association, held in connection with the American Association for the Advancement of Science, was chiefly interesting for the reports of progress of the forestry movement. The sessions were held at Horticultural Hall, on Tuesday, August 23d, to Thursday, August 25th. The social features and excursions of interest, lavishly provided by a local committee and the Massachusetts State Forestry Association, formed a prominent part of the meeting. The opening session was mainly occupied by reports from delegates of various States as to the condition of the forestry movement. Forest Commissioner Rothrock, of Pennsylvania, reported progress in the establishment of State Forest Reserves. Mr. Austin Cary, of Maine, referred to his employment by a paper-pulp manufacturing company to direct the logging of their large forest

property according to forestry principles. Forest Commissioner Fox, of New York, reported on the acquisition of Adirondack lands by the State to the extent of one and a-half million dollars. On Tuesday afternoon the Association, in a body, drove through the Middlesex Fells, and the discussions in the evening, after a dinner at the hotel situated in the forest park, turned naturally on the application of silviculture to such parks. It appeared that the Metropolitan Park Commission had not yet formulated plans as to the management of the woodlands. Dr. Schenck, of Baltimore, and Mr. Olmstead, of the well-known firm of landscape architects, advocated sound measures for the replacing of the worthless coppice growth, which is bound to deteriorate, by a healthy seedling growth.

An important feature of the meeting was the discussion of the aims and objects of the newly established State College of Forestry at Cornell, by its Director, Dr. B. E. Fernow. This address will be printed in full in SCIENCE. In the discussion Professor Lazenby referred to a movement in similar direction which was shaping itself in Ohio. Among the usual resolutions which it is the custom to pass at these meetings the most important was one calling upon the federal government to place its forest reserves under technical non-political management.

The Association adjourned to hold another summer meeting at Omaha, in connection with the Trans-Mississippi and International Exposition.

NOTES ON PHYSICS.

GAY LUSSAC'S LAW AND ATMOSPHERIC NITROGEN.

A VERY curious deviation of atmospheric air from the Laws of Gay Lussac and Boyle has been studied by H. Teudt (Zeit. für Phys. Chem., XXVI., p. 113). When first heated, the expansion above 350° is excessive. The deviation from Gay Lussac's Law being 2 per cent. at 400° and 3 per cent. at 450°. This anomalous expansion is exhibited by atmospheric nitrogen alone, but not by oxygen, carbon dioxide, chemically prepared nitrogen, by air which has been previously heated, nor by air collected after a rain. Teudt suggests, in explanation, the existence of an allotropic form of nitrogen and points out that the close relationship between nitrogen and phosphorus supports this view; the allotropic form of nitrogen being changed to the ordinary form at high temperatures. Holborn and Wien, in connection with their work on the air thermometer, have pointed out that air at the first heating does not conform to Gay Lussac's Law.

LIQUID AMMONIA.

E. C. FRANKLIN (Paper read before Section C at Boston) has made an elaborate study of liquid ammonia, which has been known for some time to approach water in its properties as a solvent. He finds its heat of vaporization to be about 330, while the calculated value is 358 by Trouton's formula, 321 by the formula of Wood, and 330 by the formula of Peabody. He finds the constant of molecular elevation of the boiling point of liquid ammonia to be 3.4, which is lower than for any other known substance. He has measured the electrical conductivity of various substances dissolved in liquid ammonia, and he finds the conductivity to increase with temperature, reach a maximum and then decrease, becoming zero at the critical temperature of liquid ammonia.

H. M. Goodwin (Paper read before Section B at Boston) has determined the dielectric constant of liquid ammonia and finds it larger, indeed, than the dielectric constants of alcohol, ether and the like, but not so nearly equal to that of water as was