

acetone and alcohol, and chloroform and acetone; it is found that a mixture of benzene and alcohol with 33.5% alcohol distils unchanged at 66.7° under 737 mm. pressure; chloroform and alcohol with 7% alcohol distils without change at 58.5° under 732.5 mm.; and chloroform and acetone with 19% acetone distils unchanged at 63.4° under 737.1 mm.; the boiling points of all mixtures of alcohol and acetone lie between the boiling points of pure alcohol and pure acetone. 'Reversible Reactions,' by John Waddell: a mathematical paper on the conversion of ammonium cyanate into urea, criticising a recent paper by Walker and Hambly in the *Journal of the Chemical Society*.

'SCIENTIFIC vs. Poetic Study of Education' is the title of the opening article, by Charles DeGarmo, in the *March Educational Review* (Holt & Co.). Other articles in the number will be: 'The High School Principal,' by John Tetlow; 'A School-Garden in Thuringia' (Illustrated), by Herman T. Lukens; 'Educational Value of Bird-Study,' by Frank M. Chapman; 'Vacation Schools,' by Charles Mulford Robinson; 'Report of the Chicago Educational Commission'; 'Fraudulent Diplomas and State Supervision,' by Henry Wade Rogers; 'School Supervision in New York State,' by Walter S. Allerton.

THE Geographical Association of Great Britain, at its annual meeting, on January 11th, adopted the *Journal of School Geography*, edited by Professor R. E. Dodge, New York, as its medium for the publication of information of service to teachers of geography.

SOCIETIES AND ACADEMIES.

WASHINGTON BOTANICAL CLUB.

THE third regular meeting was held February 1, 1899, at the residence of Mr. J. G. Smith.

Mr. C. L. Shear exhibited and discussed a parasitic fungus found on *Abies concolor* and *Picea Engelmannii* in the subalpine regions of the Rocky Mountains. This fungus attacks the lower branches of the younger trees, first forming a brown, felt-like layer over the branch and gradually spreading until frequently a foot or more of the branch is enveloped and killed. The fungus is closely related to *Herpotricha*

nigra Hartig, which is frequent on conifers in similar regions in Europe. Though not agreeing exactly with the description, it seems to be what was first described by Professor C. H. Peck in Hayden's Report as *Sphaeria Coulteri*.

Under the title 'Plant Formations of Western Lake Erie' a brief account was given, by Mr. A. J. Pieters, of the swamp formation and of the aquatic plant formation of the Put-in-Bay region. The extensive swamps on the main land at East Harbor are made up of various plant associations in each of which there is a dominant species, while in the other, dominant species of the formation are nearly or quite excluded, though many smaller forms are present everywhere if the depth of water does not prevent. The *Scirpus Americanus* Association is characteristic of the beach either when this is subject to heavy wave action or on dry sand bars; it also occurs in lagoons behind the bars. Throughout the swamp the different associations succeed each other, their arrangement being sometimes dependent upon depth of water, while at other times no relation could be detected between depth of water or character of bottom and the presence of the dominant species.

The aquatic plant formation was classified provisionally into associations which were grouped under two headings: *a*, free swimming forms; *b*, attached species. Three associations were recognized under the first:

1. The Plankton. This includes the free swimming, microscopic forms in deep water.

2. The Utricularia Association. Rootless, fine-leaved phanerogams and masses of algæ floating free beneath the surface in quiet water.

3. The Lemna Association. Small phanerogams floating free on the surface of the water.

Five associations of attached forms were recognized:

4. The Cladophora Association. Algæ attached to stones on the bottom or to the submerged stems of plants.

5. The Desmid Association. Mostly unicellular algæ lightly attached to fine-leaved phanerogams in quiet water.

6. The Chara Association. Low-growing plants covering the bottoms of shallow bays or pools.

7. The Potamogeton Association. Plants reaching nearly or quite to the surface, with long internodes and variously shaped leaves rooting in the mud and growing in water from one to ten feet deep.

8. The Nelumbo Association. Plants rooting the bottom and having floating or both floating and aerial leaves.

Two or more of these associations often occupy portions of the same area, but the plants of each association differ in their habits and usually remain distinct from those of other associations; not infrequently new combinations arise, the species of any association not always remaining where it is commonly found. This arrangement, however, expresses in the main the grouping of the plants as found in the waters and swamps of western Lake Erie.

Mr. C. L. Pollard exhibited specimens of two proposed new species of *Viola*. One of these is from Vermont and is related to *V. blanda* Willd.; it is conspicuous, however, for its large flowers, robust habit and unusually-developed rootstock. The other plant comes from southern California and belongs to the *Chrysanthæ*; it has very glaucous foliage and flowers half the size of *V. Douglasii*, its nearest congener.

The Club devoted the remainder of the evening to a general discussion on certain questions related to ecology.

CHARLES LOUIS POLLARD,
Secretary.

TORREY BOTANICAL CLUB—ANNUAL MEETING,
JANUARY 10. /

NINETEEN new members were elected, and the previous board of officers, including, as President, Hon. Addison Brown; Treasurer, Maturin L. Delafield, Jr.; Recording Secretary, Edward S. Burgess; Editor, Lucien M. Underwood. Annual reports were presented, that of the Treasurer indicating a cash balance in hand.

The Recording Secretary, Professor Burgess, reported an average attendance of 39 at the 15 meetings held during the year, one death, a present active membership of 193, corresponding membership 140, honorary membership 3, total 336. The 27 scientific papers presented include 20 authors, among these non-resident

being Dr. Radlkofer, of Vienna, and Casimir De Candolle. About 20 new species have been described. Among the papers 6 were on taxonomic and other subjects relating to cryptogams, 2 on the nucleus, 2 were accompanied by lantern-views, and 2 by exhibits of photographs; 6 were followed by symposia for which general discussions had been prepared. Brief reports of collections and of botanical progress numbered 42. Two collations had marked the year's history, one tendered to the Club on March 8th, by the Teachers' College, and one tendered by the Club to visiting botanists, especially to members of the Society of Plant Morphology, at Columbia University, December 29th.

The editor, Professor Underwood, reported the regular monthly issue of the *Bulletin*, including 640 pages and 29 plates, with a balance to the credit of the *Bulletin*. Slight changes in the *Bulletin* include the introduction of author and subject head-lines, the arrangement of matter to begin each new article with a new page, and the use of improved plates. By discontinuing book reviews and miscellaneous notes more space has been gained for articles of research. The number of pages is itself 50 in excess of those of the preceding year. New numbers of the *Memoirs* are in preparation. A series of complete volumes of the *Bulletin* has been filed ready for sale, and surplus numbers inventoried and separated to supply the demand for single copies. An endowment fund is greatly desired, by which secure provision may be made for prompt publication and superior illustration of American botanical researches.

The report of the Field Committee, through its Chairman, Mr. W. A. Bastedo, enumerated 36 field meetings, all held in cooperation with the Brooklyn Institute; 3 of these were 3-day excursions in cooperation with the Philadelphia botanists, viz., at Decoration Day to Point Pleasant, N. J., at the Fourth of July to Stroudsburg, Pa., and at Labor Day to Whiting's, N. J.

In behalf of the Committee on Local Phanerogamic Flora, Dr. Britton referred to the work hitherto accomplished, as represented in Dr. Torrey's catalogue of 1819, and the two pre-

liminary catalogues published already by this Club, by Mr. W. H. Leggett in 1875-6, and by Britton, Sterns and Poggenburg in 1888. Local catalogues within our range include those of Suffolk County, L. I., by Miller and Young; of Staten Island, by Dr. Hollick and others; of New Jersey, by Dr. Britton, Dr. Rusby and others; of Long Island, by Dr. Jelliffe. Special interest attaches to Mr. Bicknell's work on the Westchester County Flora. It was desired that the new committee continue and combine the researches contributory to the ultimate publication of a comprehensive Flora of the Metropolitan District, adding such details as possible as to ecological and quantitative characters.

In behalf of the Committee on Local Cryptogamic Flora, Mrs. E. G. Britton reported that a catalogue of the Mosses of the Botanical Garden at Bronx Park is about to be published in its annual report.

Dr. Britton read a letter which he had received that morning from Mr. A. A. Heller, from Ponce, Porto Rico, announcing his arrival in health. He observed many interesting plants, as Crotons, in the vicinity of Ponce. Mr. Henshaw is about to join him, for further collections, particularly of living material for the Botanical Garden.

Dr. Britton also reported the formal opening of work on January 3d, toward the great range of Horticultural Houses for the Botanical Garden, which it is hoped may be ready for installation in October.

Dr. Rusby reported his possession of a manuscript catalogue of the economic plants of Cuba and Porto Rico, giving the botanic names, uses and common names, in about 8 volumes of 200 pages each. This is the work of our corresponding member, Professor De la Maza, of the University of Havana, who, although but a young man, has formed a large collection of plants there, comparing them carefully with the Charles Wright collection of Cuban plants, which is also in the University of Havana.

Dr. Britton also referred to the tour Dr. Fairchild is now taking along the Chilian coast in the hope of establishing some plant exchanges.

EDWARD S. BURGESS,

Secretary.

PHILOSOPHICAL SOCIETY OF WASHINGTON.

THE 495th meeting of the Society was held at 8 p. m., at the Cosmos Club, on February 4th. An informal communication was first presented by Dr. L. A. Bauer, read by Mr. J. F. Hayford, entitled 'Is the Principal Source of the Secular Variation of the Earth's Magnetism Within or Without the Earth's Crust?' The first regular paper was by Mr. J. H. Gore, on the 'Beginnings of Geodesy in the United States.' The second paper was by Mr. E. D. Preston, on 'Geodetic Operations in the United States.' Both of these papers will, probably, appear in full in SCIENCE within a short time.

E. D. PRESTON,

Secretary.

ALABAMA INDUSTRIAL AND SCIENTIFIC SOCIETY.

THE annual meeting of the Alabama Industrial and Scientific Society was held in the city of Birmingham, Ala., on Wednesday afternoon, February 1, 1899, with about twenty members in attendance. In the absence of the President, Professor M. C. Wilson, caused by a delayed train, the meeting was called to order by ex-President F. M. Jackson. After the reading of the minutes of the last meeting, the action of the Society at that meeting, recommending amendments to the State mining laws for the purpose of securing *monthly* returns of the production of the various minerals of the State, was reconsidered, and it was decided to recommend that the laws be amended so as to include only *yearly* returns of the production of coal, coke, iron ores, pig iron, limestone, dolomite, building stones, clays, bauxite, etc. The present law requires returns only from the producers of coal and coke.

Upon recommendation of the Council, three new members were elected and a number of papers accepted.

Under the head of new business, a resolution was adopted favoring the passage of United States Senate Resolution No. 205, 'To provide for a Division of Mines and Mining in the United States Geological Survey,' and the Secretary was instructed to communicate this resolution to the Alabama Senators and Congressmen, and also to bring the matter to the attention of the Commercial Club of Birmingham, with request that like action be taken by that body.

Upon the arrival of President Wilson, he read his address as retiring President, giving a general *résumé* of the work of the Society during the past year, and making some suggestions about its future work. The importance was also urged of establishing in the city of Birmingham a School of Natural Sciences, in which every youth in the limits of the city might have the opportunity of acquiring some scientific training, and especially in those branches of science which bear upon the manufacture of iron. The establishment of such a school would cause similar schools to spring up in the smaller towns and would be followed by industrial growth.

Papers were then read as follows: 'The Brown Ores at Leeds, in Jefferson County,' by J. W. Castleman, of the Sloss Iron and Steel Co. In this paper an account was given of the large deposits of brown ore recently developed by the Sloss company. 'On *Trichina spiralis*,' by Dr. John Y. Graham, of the State University. This paper, based upon original investigations by Dr. Graham, was illustrated by charts and by specimens under the microscope. 'On Roads and Road Making,' by Colonel Horace Harding. 'British Columbia and its Mineral Resources,' by Wm. M. Brewer. 'A Section through Red Mountain,' by A. W. Haskell.

The election of officers for the ensuing term was then taken up, with the following result: President, J. H. Fitts, of Tuscaloosa; Vice-Presidents, J. M. Garvin, of Rock Run, and J. H. McCune, of Woodward; Treasurer, Henry McCalley, of the University of Alabama; Secretary, Eugene A. Smith, University of Alabama. The Society then adjourned, to meet again on May 3d, next. After the adjournment the members of the Society and their invited guests partook of a banquet at the Morris Hotel.

EUGENE A. SMITH,
Secretary.

DISCUSSION AND CORRESPONDENCE.

ETHERION.

TO THE EDITOR OF SCIENCE: In a recent number of SCIENCE attention was called to what appeared to be an unreasonable attitude on the part of the editors of *Nature* towards

Mr. Charles F. Brush's paper on Etherion, an attitude, namely, which simply refused to accept Mr. Brush's results until they were demonstrated by the spectroscope. A recent criticism by M. Smoluchowski de Smolan in *Nature* for January 5th is, on the other hand, entirely reasonable, being, as it is, a fair criticism of Mr. Brush's work. The question whether heat conductivity can demonstrate the existence of an unknown thing, and the question whether Mr. Brush really found a gas which had one hundred times the thermal conductivity of hydrogen at the same pressure, are very different. It is this latter question which is raised by M. de Smolan. It seems probable, indeed, that the anomalous thermal conductivity found by Mr. Brush may have been due to his not having rigorously excluded water vapor, thus making his pressure determinations uncertain. We may soon expect an answer to this point from Mr. Brush himself.

W. S. FRANKLIN.

NOTES ON INORGANIC CHEMISTRY.

AN extended research has been made by E. Hintz on the effect of varying quantities of the rare earths on the luminosity of the mantels for the Welsbach burners. The results are published in the *Zeitschrift für analytische Chemie*. Comparing the oxids of thorium and cerium alone and mixed in varying proportions, and, using for comparison the number of liters of gas consumed per hour per Hefner light unit, it appears that the consumption for pure thoria is 50 and for pure ceria 61. With traces of ceria in thoria the consumption decreases, 0.1% ceria giving 6.7; 0.2%, 3.1, and 0.5%, 2.1. On the other hand, thoria added to ceria has much less effect, 30% thoria requiring 48; 60%, 31, and 80%, 12. The minimum consumption, that is, the greatest light efficiency, is reached with a mixture of 99% thoria and 1% ceria, with which the consumption of gas is only 1.4 liters per hour per Hefner unit. Some decrease of efficiency is noticed after several hundred hours' use. As regards the addition of other oxids to this 'normal' thoria-ceria mixture (99:1) 1% of neodymia, lanthana, yttria or zirconia has no effect; nor does 2% of the first three. Two per cent. of zirconia, however, diminishes