

fresh-water formations, comprising the hygrophile forest, with its two types, the black gum swamp and the juniper swamp, and the fresh-water marsh formation, with the reed marsh and the low-marsh types. The phytogeographical affinities of the flora are discussed at some length, touching upon the position of the species in the various vegetation zones. The northern limit of Dismal Swamp species is tabulated in an exhaustive manner. The broader relationship of the flora receives some attention also, a number of interesting comparisons being made. The agricultural products of the region are touched upon briefly, special consideration being given to the influence of drainage and soil composition upon the native and cultural vegetation.

Anatomical notes upon the leaf structure of a number of the most interesting species ecologically constitute a very important feature of the work. The notes treat chiefly of the adapted structures of the leaf, embracing a brief description of the leaf, the epidermis, mesophyll, mestome and stereome. Much is to be said in commendation of thorough histological work of this sort, a field of investigation which must come to play an increasingly important part in all comprehensive ecological work. The text closes with a list of the plants of the region, a bibliography of the books and papers consulted, and a full index.

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*Monographie der Termiten Afrikas.* By Yngve Sjöstedt. K. ögl. Svenska Vetenskaps-Akademiens Handlingar, Vol. xxxiv., No. 4, 1900 (received late in 1901). Pp. 236. Plates IX.

Africa, the classic land of Termites, has, in recent years had its termitid fauna quite thoroughly explored. New species have been coming thick and fast from the pens of Sjöstedt, Wasmann, and Haviland; and now the work is capped by an excellent monograph from the hands of the Swedish student.

The author has had at his disposal practically all of the available material, and with great care has produced a work that will always be the basis for the future study of

African white ants. Descriptions are given of 82 species, arranged in six genera; and tables are given for the determination of the species. One of the notable features of the work is the attention paid to biology. The habits of each species, when known, are detailed at considerable length, and four of the plates represent nests or parts of them. We are accustomed to think of Termite nests as being pyramidal in shape, but this applies only to certain species of *Termes*; the nests of *Eutermes aurivilli* and *E. fungifaber*, which are illustrated, are larger at the top than at the base, and have the appearance of some gigantic mushroom. The tree-nests of *E. arborum* and *E. arboricola* are also figured, the former attached to the twigs, the latter to the trunk of a tree. Accounts are given of how the natives collect certain species for eating, and of how other species collect grass and leaves, and conduct their mushroom gardens. Two bibliographies are appended: One, a list of papers on African termites; the other, a list of termitid literature published since Hagen's 'Monograph of the Termites' in 1855.

NATHAN BANKS.

#### SCIENTIFIC JOURNALS AND ARTICLES.

THE January number of the *Botanical Gazette* (the first of Volume XXXIII.) opens with an article on 'Binucleate Cells in Certain Hymenomycetes,' by R. A. Harper, of the University of Wisconsin. Dr. Harper confirms and extends the results of Maire, finding the young cells of numerous Hymenomycetes to be binucleate. On the basis of these and other observations he then discusses the relationship of the Basidiomycetes with the Ascomycetes, controverting the conclusions of Masee, and holding that "the widespread occurrence of regularly binucleated cells in the Basidiomycetes, with the additional evidence that these cells reproduce by conjugate division and constitute the reproductive series in each individual through at least a considerable part of its life-history, leading up to the formation of basidia, while no such binucleated cells are found in Ascomycetes, in either vegetative or ascogenous hyphæ, shows that the two groups are widely separated phylogenetically. \* \* \*

On the other hand, it is quite clear that the binucleated condition in the hyphæ of both groups still further strengthens the evidence for the relationship between the rusts and Basidiomycetes."

Judson F. Clark, of Cornell University, discusses the 'Toxic properties of some copper compounds, with special reference to Bordeaux mixture.' Clark shows that solution of such of the  $\text{Cu}(\text{OH})_2$  in Bordeaux mixture as is of fungicidal value, is chiefly accomplished by the solvent action of the fungus spores themselves, the total amount of copper necessary being probably not more than one part in 80,000. The amount of injury done to the host, which also has the power of absorbing the copper hydroxid deposited on its leaves, depends on the specific susceptibility of the protoplasm, the solvent properties of the cell sap, the permeability of the epidermis, and the weather conditions following spraying.

G. P. Clinton, of the University of Illinois, announces the discovery of *Cladochytrium Alismatis* Büsg. on *Alisma Plantago*, near Cambridge, Massachusetts. This is the first time this fungus has been found in America. He describes also a peculiar temporary sporangial stage which it had not been previously known to possess. He was also successful in germinating the resting sporangia, which had not been accomplished before.

J. C. Arthur, of Purdue University, discusses briefly 'Clues to Relationships among heteroecious Plant Rusts,' and Leslie N. Gooding describes six new species of plants from the Rocky mountain region.

Fifteen pages of reviews of current literature and four pages of news complete the number.

THE December number of the *American Geologist* contains a portrait and a short biographical sketch of the late Ralph D. Lacey of Pittsburg, Pa., by the Rev. H. F. Hayden. Also the scientific work of the late W. H. Barris of Davenport, Iowa, is described briefly by C. H. Preston and the article accompanied by a portrait. Neither of these men were professional scientists but their contributions to paleontology are valuable and lasting. 'The Loess

of Iowa City and Vicinity' is discussed by B. Shimek. He describes the fossils found in the loess and compares them with the forms now living in the vicinity and other loess deposits. E. R. Cummings discusses 'A Section of the Upper Ordovician at Vevay, Indiana,' accompanying the article with two plates of fossils. 'The Cleveland Water Supply Tunnel,' by S. J. Pierce. From the evidence furnished by this tunnel and other work done in the vicinity the author describes a deep V-shaped preglacial valley emptying into Lake Erie, about nine miles long and at its greatest depth 450 feet below the lake level.

*The Journal of Physical Chemistry*. November. 'Equilibrium between Carbonates and Bicarbonates in Aqueous Solution,' by Frank J. Cameron and Lyman J. Briggs; 'Solubility of Gypsum in Aqueous Solutions by Sodium Chlorid,' by Frank K. Cameron. These papers are communications from the Bureau of Soils of the United States Department of Agriculture. 'Mathematical Expression of the Periodic Law,' by S. H. Harris; 'The Optical Rotatory Power of Cane Sugar when Dissolved in Pyridin,' by Guy Maurice Wilcox.

December. 'Oxidation of Ferrous Solutions by Free Oxygen,' by J. W. McBain. It is found that the oxidation of ferrous solutions by free oxygen is unexpectedly slow and that it increases with the concentration of the ferrous salt. 'Some Applications to Chemistry of J. J. Thomson's Work on the Structure of the Atom,' by Felix Lengfeld; 'Solubility of Gypsum in Aqueous Solutions of Certain Electrolytes,' by Frank K. Cameron and Atherton Seidell. A further study from the Bureau of Soils. In dilute solutions the solubility curves follow the direction indicated by the application of the mass law to the hypothesis of electrolytic dissociation. For high concentrations this is not generally the case, but in such solutions ionic complexes seem to be formed.

#### SOCIETIES AND ACADEMIES.

THE NORTHEASTERN SECTION OF THE AMERICAN CHEMICAL SOCIETY.

THE regular monthly meeting of the Section