

sel (347); Micklejohn for Meiklejohn (285); Laud for Land (21); and a few others even more insignificant than the above.

Volume II. will contain the remainder of the text, from Le to Z, Addenda, full indices of Greek, Latin, German, French, and Italian terms, while volume III. will be devoted exclusively to the general bibliographies.

The Macmillan Company deserve great credit for making such a publication possible and for the manner in which they have performed their part of the work. FRANK THILLY.

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Report on a Botanical Survey of the Dismal Swamp Region. By THOMAS H. KEARNEY. Contributions from the U. S. National Herbarium, VI.: 6. Washington, 1901. 8vo. Pp. 263, 12 plates, 39 figures and 2 maps.

The account of the Dismal Swamp vegetation here presented is both a valuable and a thoroughly readable one. The subject is handled from a number of viewpoints in such a way that the reader obtains a well-rounded conception of this particular vegetative covering and of the interrelations of its constituents. The author is especially to be commended for his careful inquiry into the causes which produce the characteristic modifications of the various vegetation forms, and for the histological investigation of certain species, a study which is altogether too rare as yet in ecological research.

Under 'Climate' the author discusses the usual physical factors, temperature, sunshine, humidity, precipitation and wind, though the data unfortunately could not be secured for the Swamp itself, but only for the neighboring meteorological stations, Norfolk and Cape Henry. The prominent physiographic features of the region, to which correspond, of course, certain plant formations, are (1) the beach and the dunes, (2) the salt marsh, (3) the plain and (4) the swamps. A very important discussion of the soils of these areas is contributed to this portion by Mr. F. D. Gardner, of the Division of Soils.

In the treatment of the vegetative covering of the region, the author recognizes a maritime and an inland group of formations.

The former comprises the saltmarsh formation and the sand-strand formations. Under the first are arranged a number of associations, *Spartina stricta* association, *Typha* association, *Juncus* association, which are, in fact, alternating areas of the formation, in which a certain facies or principal species is controlling. Little attention is given to the relative importance of the species constituting the formation, or to their sequence in time. The most important physical conditions which cause modification in saltmarsh plants are partial submersion at high tide, a soft yielding substratum and an excess of sodium chloride in soil and water. The resulting modifications are largely concerned with the reduction of the water loss, as is typical of halophytes, by thickening the cuticle and the epidermal walls, by the development of a dense hairy covering, the sinking of the stomata, the complication of the leaf, or its partial or complete reduction, the development of succulency, the presence of a considerable quantity of salts in the cell sap, and the development of palisade tissue. The value of the sheathing bases of the old leaves in preventing the access of salt water must be regarded as somewhat doubtful. The consideration of the sand-strand vegetation is clear and interesting. The beach and outer dunes are characterized chiefly by *Ammophila arenaria*, *Uniola paniculata*, *Iva imbricata*, *Panicum amarum minus*, *Cakile edentula* and *Salsola kali*. The vegetation of the middle dunes is much less open in nature. The most characteristic feature is, perhaps, the dense, often pure, thickets of *Myrica carolinensis*. Other thickets are constituted by *Prunus angustifolia*, *P. serotina*, *Salix fluviatilis* and *Cephalanthus occidentalis*. The inner dunes are wooded for the most part with *Pinus taeda*, but a number of deciduous trees and shrubs, *Quercus*, *Diospyrus*, *Sassafras* and *Juniperus*, occur here also. An excellent analysis of the effect of the mechanical action of the wind, and of the effect of excessive transpiration follows the floristic discussion.

The non-hygrophile inland formations are (1) forest formations, embracing the mixed forest and the pine barrens, (2) cleared-land formations, non-cultural and cultural, (3)

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. * * *