BOTANICAL NOTES.

THE AMERICAN BREEDERS' ASSOCIATION.

A COUPLE of years ago, a number of botanists and zoologists joined interests with a number of practical growers of plants and animals and effected an organization of a new society under the name of 'The American Breeders' Association.' The purpose, as set forth in the constitution, adopted at St. Louis, December 29, 1903, is 'to study the laws of breeding and to promote the improvement of plants and animals by the development of expert methods of breeding.' With this object in view, about seven hundred members have been enrolled. These are, naturally, quite largely drawn from the ranks of practical breeders, but there are many scientific men also, and it is notable that the officers of the association have been very largely chosen from the professors in universities and colleges, and the scientific experts in the service of the United States Department of Agriculture.

Two meetings have been held, the first in St. Louis, December, 1903, and the second in Champaign, Illinois, February, 1905. In the first, seventeen papers were read, fully half of which possess more or less interest to the botanist. In the second meeting, twenty-eight papers were presented, with a still larger preponderance of papers relating to plant breeding. Among the papers of especial interest to botanists may be noted one by Professor DeVries on 'Investigations into the Heredity of Sporting Varieties,' another by Doctor Webber on 'Cotton Breeding,' one by W. A. Orton on 'Plant Breeding as a Factor in Controlling Plant Diseases,' one by Professor Hansen on 'Breeding Mildew-resistant Sand Cherries and Roses' and one by Dr. George T. Moore on 'Breeding Bacteria.' Other titles equally suggestive to the botanist might be cited, but these will show what the approaching meeting in Lincoln, January 17, 18 and 19, is likely to include. The program for this meeting is now being made out. It is understood that, in addition to general sessions of the association, there will be joint sessions with the State Horticultural Society, Corn Growers' Association, Live Stock and Dairymen's associations. The secretary is Professor W. M. Hays (assistant secretary of agriculture), Washington, D. C.

METHODS IN PLANT HISTOLOGY.

A LITTLE more than four years ago, the first edition of Dr. Chamberlain's 'Methods in Plant Histology' was noticed in these columns (SCIENCE, August 16, 1901). Now a second edition has appeared, much improved and considerably enlarged. In it so much new matter has been incorporated that the book is in fact a new one and must wholly replace the first edition. The extent of the enlargement may be estimated from the fact that, while the first edition contained 159 pages and 74 figures, the second contains 262 pages and 88 figures. Many new methods of work are described in this edition which were but briefly referred to, or were wholly omitted from the first. In the systematic part of the book many more suggestions as to collecting and growing material are given, thus greatly increasing its practical value. This edition must prove to be even more useful to botanical workers in high school, college and university laboratories than its predecessor.

FERNS OF THE PHILIPPINE ISLANDS.

DR. E. B. COPELAND has recently made an important addition to our knowledge of the flora of the Philippines by the publication of a descriptive list of the orders of ferns (*Polypodiaceae*) occurring in the islands. It appears as Bulletin 28 of the government laboratories at Manila, bearing date of July, 1905, and covers 139 octavo pages. The general nature of the fern flora as far as represented in this booklet may be understood from the following analysis. There are eight families represented, as follows: *Woodsieae* (with 1 genus, and 1 species); *Aspidieae* (9 genera, 117 species); *Davallieae* (12 genera, 72 species); *Asplenieae* (12 genera, 91 species); *Pterideae* (11 genera, 44 species); *Vittarieae* (3 genera, 14 species); *Polypodieae* (10 genera, 99 species); *Achrostichieae* (4 genera, 7 species). The largest genera are *Nephrodium* (with 60 species), *Lindsaya* (with 22 species), *Asplenium* (with 36 species), and

Polypodium (with 73 species). Two species of the interesting and curious 'staghorn ferns' (*Platycerium grande* and *P. biforme*) occur on the islands.

SOME NOTEWORTHY BULLETINS.

Professor B. M. Duggar's paper on 'The Principles of Mushroom Growing and Mushroom Spawn Making' has been issued as Bulletin 85 of the Bureau of Plant Industry, of the United States Department of Agriculture. It covers sixty pages and includes seven half-tone plates. It will be useful to botanists and especially so to the growers of mushrooms.—Bulletin 84 of the Bureau of Plant Industry, entitled 'The Seeds of the Bluegrasses,' contains a paper by Edgar Brown on the germination, growing, handling and adulteration of bluegrass seeds, and another by F. H. Hillman, consisting of descriptions of the seeds of the commercial bluegrasses, and their impurities. Illustrations in the text add much to the value of the bulletin.—O. F. Cook and W. T. Swingle discuss the 'Evolution of Cellular Structures' in Bulletin 81 of the Bureau of Plant Industry. It is a discussion of the mode of evolution, and lays particular emphasis upon *symbasis,* that is, diversity of descent with normal interbreeding. They say 'species are sexual phenomena; they have come where they are only through symbasis; that is, as groups of interbreeding individuals, traveling together along the evolutionary pathway.'—From the same bureau, we have in Bulletin 90, part II., a short paper by G. G. Hedgcock on 'The Crown-Gall and Hairy-root Diseases of the Apple Tree,' in which the author separates the two, establishes the non-contagious nature of the first, says that there is no proof that the second is contagious, and shows by experiments that the first affects the growth of the tree little if any. The paper is in the nature of a report of progress and is very suggestive to plant pathologists and practical orchardists.—Bulletin 64 of the Forest Service, by Raphael Zon, deals with the characteristics, growth, distribution and uses of the loblolly pine (*Pinus taeda*) in eastern Texas. Especial attention is given to its use in the production of railway ties.—In Bulletin 28 of the Bureau of Soils, B. E. Livingston, J. C. Britton and F. R. Reid give the results of their 'Studies on the Properties of an Unproductive Soil,' and reach the rather startling conclusion that the particular soil studied (at Takoma Park, Md.) 'contains a water-soluble, non-volatile substance or substances, probably organic in nature, which are toxic to wheat plants, causing a stunting of their growth.'—From the United States National Herbarium we have (Vol. VIII., pt. 4) the fourth of a series of 'Studies of Mexican and Central American Plants' by Dr. J. N. Rose, the result of a fourth journey to Mexico, made by the author. It contains many descriptions of new species, and critical notes upon old ones. It is illustrated by ten plates and six text figures.

Charles E. Bessey.
The University of Nebraska.

CURRENT NOTES ON METEOROLOGY.

KITE-FLYING OVER THE TROPICAL OCEANS.

Reference has frequently been made in Science during the past two or three years to the project for exploring the atmosphere over the tropical oceans by means of kites, suggested by Mr. A. Lawrence Rotch, of Blue Hill Observatory, in 1901. It is pleasant to be able to chronicle, in these notes, the successful ending of a preliminary expedition undertaken during the past summer under the joint auspices of Mr. Rotch and of Mons. L. Teisserenc de Bort. Preliminary reports have appeared in the *Comptes Rendus,* October 9, 1905, 'Sur les Preuves de l'Existence du Contre-Alizé,' by Rotch and de Bort, and in *Nature,* November 16, 1905, 'The Exploration of the Atmosphere over the Tropical Oceans,' by the same authors. One of the chief objects of the expedition was to study the anti-trade winds from the southwest, which, according to a report by Dr. Hergesell, based on his observations in 1904, do not exist. The work last summer was done on board the *Otaria,* a steamer equipped with an electric kite-reel already used by de Bort for kite-flying at sea. Messrs. Clayton, of Blue Hill, and Maurice, assistant at the observatory at Trappes, carried out the exploration.