the Department of Agriculture for 1898. Pp. 201–212. Pls. I. Figs. 9.

Description of the standard Weather Bureau kite and apparatus, with illustrations.

Proceedings of the Convention of Weather Bureau Officials held at Omaha, Nebraska, October 13–14, 1898. Prepared under the direction of Willis L. Moore, Chief of Weather Bureau. U. S. Department of Agriculture, Weather Bureau. Bulletin No. 24. 8vo. Washington, D. C., 1899. Pp. 184.

This Bulletin contains a large number of papers on a wide range of subjects connected with the work of the Weather Bureau and with the relations of the Bureau to the public.

R. DeC. Ward.

Harvard University.

BOTANICAL NOTES.

THE VARIETIES OF CORN.

Several years ago the lamented Dr. Sturtevant published privately the results of his studies of Indian Corn, with especial reference to the varieties which have been created by man since he has had it under cultivation. The value of the original paper was such that the Department of Agriculture has done wisely in determining to bring out this considerably enlarged and improved edition as one of the publications of the Office of Experiment Stations (Bulletin No. 57). It is an attempt to treat in a scientific manner the whole problem of the varieties into which the originally single species has developed under man's selection. It is thus a contribution to our knowledge of the evolution of a species under cultivation.

The paper opens with a technical description of the Family *Gramineae*, the tribe *Maydeae* and the genus *Zea*, and then follow descriptions of 'the one recognized species,' *Zea mays* L., and the 'species groups.' In discussing the variations in the species the author says: "The species *Zea mays* includes exceedingly divergent forms. The height of the plant in varieties and localities has been reported from 18 inches for the Golden Tom Thumb pop to 30 feet or more for varieties in the West Indies, and single stalks in Tennessee at 22¼ feet. I have seen ears 1 inch long in the pop class and 16 inches long in the dent class. The rows in varieties may vary from 8 to 24 or more, and in individual ears are reported from 4 to 48. A hundred kernels of Miniature pop weighed 46 grains, of Cuzco soft 1,531 grains. In some varieties the ears are long and slender; in others, short and thick; in the Bear Foot pop, flat. Some varieties have flat kernels; other varieties have spheroidal kernels; yet others, conical kernels. The summits of the kernels may be flat, rounded, pointed or indented. These kernels, usually upright on the cob, may be sloping or imbricated, firm or loose, usually sessile, yet sometimes stalked. In structure some are corneous throughout; others are partly corneous and partly farinaceous, others entirely farinaceous. * * * The season also varies. A variety that ripens in one month is mentioned from Paraguay, and seven months are said to be required in some southern countries. * * * In one group of corn each kernel is surrounded by a husk and the ear thus formed is itself enveloped in husks. In all our field and garden corns, however, the seed is naked on the cob."

With all these variations before him the author finds little difficulty in dividing the 'polymorphic species *Zea mays*' into a number of groups, "which, on account of their well-defined and persistent characters, may be considered as presenting specific nomenclature." Accordingly, the author proposes six 'species groups,' each having the value of species in process of formation (if we understand the author aright). These species of a lower order are as follows:

1. *Zea tunicata*, the pod corns, in which each kernel is enclosed in a pod or husks. This is thought by some to be the type of the primitive maize, but Dr. Sturtevant very shrewdly suggests that "a more complete study, with more ample material, may possibly bring this group under the classification of abnormalities, the pod being but a proliferous condition."

2. *Zea everta*, the pop corns, in which the excessive proportion of corneous endosperm and the small size of the kernels and ears are characteristic. Twenty-five varieties are recognized.

3. *Zea indurata*, the flint corns, in which the corneous endosperm encloses a mass of starchy endosperm, the summit of the kernel being in all cases covered by the corneous layer. Sixty-nine varieties are recognized, among which the common 'Eight-rowed corn of New England' is a familiar example.

4. *Zea indentata*, the dent corns, in which the corneous endosperm occurs at the sides only of the kernel, the starchy endosperm extending to the summit. By the drying and shrinkage of the starchy matter the summit of the kernel becomes indented, whence the name 'dent' corn. No less than 323 varieties are recognized as belonging to this 'species group,' of which the common corn of the Central States, North and South, furnishes many examples.

5. *Zea amylacea*, the soft corns, characterized by the absence of corneous endosperm. Twenty-seven varieties are recognized. Tuscarora, Cuzco and Zuni are examples. "The mummy corns, from Peru and Chili, that I have examined have been soft corns in four varieties."

6. *Zea Zaccarata*, the sweet corns, characterized by the translucent, horny appearance of the kernels, and their more or less crinkled, wrinkled or shriveled condition. Sixty-three varieties are recognized.

While we may not be willing to accept these 'species groups' as species in the ordinary sense, it is fair to say that, in our opinion, they are as much entitled to specific rank as many of those which have been described recently. If the systematic botanists ever turn to such plants as Maize, Wheat, etc., we may expect not only the acceptance of the forms indicated above as good species, but also the addition of many more.

THE AGRICULTURAL GRASSES OF KANSAS.

A RECENT Experiment Station Bulletin (No. 87) issued by the Kansas Station contains some matter of more than usual interest to botanists. It deals with the grasses of importance to agriculture, and on that account might be supposed to contain little, if anything, of value to the scientific botanist, but it requires only an examination of this bulletin to show that one cannot judge of the value of a paper by the title. Professor Hitchcock has made a paper of much interest to the botanist, and we dare say that it is not one whit less useful to the farmers for whom, primarily, it was written. Twenty-six species of wild grasses are mentioned, and, by means of illustrations and popular descriptions, their identity will not be difficult for the farmer and stockman. To the botanist the neat little maps which show the distribution of the species are full of interest, as are also the paragraphs which indicate, popularly, it is true, the main phytogeographic features of the State. The latter are as follows: Wooded regions; sloughs, swales and wet meadows; bottom lands; prairies of eastern Kansas; sandy regions; stony hills; salt plains and alkali spots. One cannot but regret that the text is disfigured by the spelling 'thru' and 'thruout,' but we surmise that this is not to be laid at the door of the writer of the Bulletin.

DISEASES OF THE SWEET POTATO.

THAT delicious vegetable, the sweet potato, is affected most grievously by diseases which must make life a burden to the grower, whatever they may do to the unfortunate plants themselves. In a recent bulletin issued by the Maryland Experiment Station, Dr. C. O. Townsend described eight diseases of the sweet potato. These are known under the following names: Black Rot, Soil Rot, Soft Rot, Stem Rot, White Rot, Dry Rot, Scurf, Leaf Mould. In every case the disease is produced by a fungous parasite which attacks the tissues. Thus Black Rot is caused by *Ceratocystis fimbriata;* Soil Rot by *Acrocystis batatas;* Soft Rot by the ubiquitous 'black mould' *Rhizopus nigricans;* Stem Rot by *Nectria ipomœæ;* White Rot by some *Penicillium;* Dry Rot by *Phoma batatæ;* Scurf by *Monilochætes infuscans;* Leaf Mould by *Albugo* (*Cystopus*) *ipomœæ-panduranæ*. Nine years ago Dr. Halsted, of the New Jersey Experiment Station, published a similar paper (Bulletin 76) in which he described still another disease of this sorely afflicted plant, viz., Leaf Blight caused by *Phyllosticta bataticola*, making nine diseases in all. The remedies to be employed by the growers include the following: Discard all diseased sets; spray with Bordeaux mixture; rotate crops; treat the soil with sul-

phur, four hundred pounds to the acre; gather and burn all diseased roots at the time the crop is harvested; destroy all related weeds, avoid bruising the tubers; store in dry places at a temperature of about 70°; remove and burn diseased tubers as soon as they begin to decay. Surely the grower of the sweet potato must be alert to bring his crop to a successful issue.

CHARLES E. BESSEY.

UNIVERSITY OF NEBRASKA.

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

THE preliminary announcement of the forty-eighth meeting of the American Association for the Advancement of Science has been issued by the local committee. It will be remembered that the meeting will be held at Columbus, Ohio, from the 21st to the 26th of August, under the presidency of Professor Edward Orton. The first general session will as usual be held on Monday morning, when the President elect will be introduced by the retiring President, Professor F. W. Putnam, and addresses of welcome will be made by the Governor of Ohio and the Mayor of Columbus. The addresses of the Vice-Presidents will be given on Monday afternoon, and the address of the retiring President in the evening. The several sections will meet as usual during the week, and Saturday will be devoted to an excursion, probably to the mounds at Fort Ancient, the coal mines in Hocking Valley and the natural-gas fields. Further information may be obtained from the Permanent Secretary of the Association, Dr. L. O. Howard, Cosmos Club, Washington, D. C., and from the Local Secretary, Professor B. F. Thomas, Ohio State University.

The societies meeting in affiliation with the Association are as follows:

The American Forestry Association will meet on Tuesday and Wednesday, August 22d and 23d, in Horticultural Hall. Hon. James Wilson, Washington, D. C., President; G. P. Whittlesey, Washington, D. C., Secretary.

The Geological Society of America will meet on Tuesday, August 22d, at the same time and place with Section E. B. K. Emerson, Amherst, Mass., President; H. L. Fairchild, Rochester, N. Y., Secretary.

The American Chemical Society will hold a general meeting on Monday and Tuesday, August 21st and 22d, and the remainder of the week will be given to Section C. Edward W. Morley, Cleveland, Ohio, President; Albert C. Hale, 551 Putnam Avenue, Brooklyn, N. Y., Secretary.

The Society for the Promotion of Agricultural Science will meet on Friday and Saturday, August 18th and 19th. B. D. Halsted, New Brunswick, N. J., President; C. S. Plumb, Lafayette, Ind., Secretary.

The Association of Economic Entomologists will hold its eleventh annual meeting on August 18th and 19th. C. L. Marlatt, Washington, D. C., President; A. H. Kirkland, Malden, Mass., Secretary.

The American Mathematical Society will meet on Friday and Saturday, August 25th and 26th. R. S. Woodward, Columbia University, New York, President; F. N. Cole, Columbia University, New York, Secretary.

The Society for the Promotion of Engineering Education will hold its meeting on August 17th, 18th and 19th. Albert Kingsbury, Durham, N. H., Secretary.

The American Folk-Lore Society will probably meet with Section H on Thursday, August 24th. W. W. Newell, Cambridge, Mass., Secretary.

The Botanical Society of America will meet on Friday and Saturday, August 18th and 19th. On Friday, at 4 p. m., business meeting; 8 p. m., address of retiring President; on Saturday, 9 a. m., business meeting; 9:30 a. m., and 2 p. m., sessions for reading papers. G. F. Atkinson, Ithaca, N. Y., Secretary.

The American Microscopical Society will meet August 16th, 17th and 18th. Henry B. Ward, Lincoln, Neb., Secretary.

THE CENTENARY OF THE ROYAL INSTITUTION.

THE celebration of the centenary of the foundation of the Royal Institution, London, took place in accordance with the plans we have already announced. Commemorative addresses were made by Lord Rayleigh and Professor Dewar, and at the banquet on June 5th