MARSILIACEÆ.

Marsilia macropoda Englm. In ponds in the southwest.

Marsilia tenuifolia Englm. Collected by Lindheimer on Pierdevales. I have a specimen collected in western Texas by J. Boll that seems to be this species.

Marsilia uncinata A. Br. Swamps, Dallas and eastward, common.

Marsilia vestita Hook. Swamps at Dallas.

SALVINIACEÆ.

Azolla Caroliniana Willd. On waters, Dallas and eastward.

IOSETACEÆ.

Isoetes melanopoda J. Gay. In wet sands, Dallas, rare.

NOTES ON AMERICAN FERNS—VI.*

By William R. Maxon.

A Cristate Form of the Giant Chain-fern.—Not long ago I received from Mr. W. G. Watkins a specimen of *Woodwardia spinulosa* which I suppose to be very similar to a ramose form described by Mr. A. A. Eaton (Fern Bulletin, IX: 87. 1901). The present specimen, collected by the sender on the banks of the El Dorado canal, near Placerville, California, December 5, 1902, showed the unusual feature of having the tips of all the pinnæ and the apex of the frond itself many times divided, the former within the space of about an inch, forming divaricate crests. Mr. Watkins states that plants of this sort were numerous, growing in full sunlight, often to a height of more than five feet and in clumps fully three feet in diameter, in a light lava soil overlying an ancient river bed. The canal, it seems, was dug about forty years ago for mining purposes; the branch where the ferns grow having fallen into partial disuse, a considerable amount of vegetation has sprung up along its banks.

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Aside from the cristation I cannot see that the plant differs from ordinary *spinulosa,* and it is quite likely that this peculiarity has been induced by the abnormal conditions of habitat. Ferns deprived of their natural environment and grown under unusual exposure to sunlight or in excessive moisture or drought often take on odd forms; or to put it a little differently, inherent tendencies toward variation gain remarkable impetus directly upon modification of food supply, light supply and drainage. Oftentimes when sports occur in a wild state there is no unusual condition of environment apparent, nor need we assume that such a feature is *necessary;* but there are many instances in which evidently changed conditions appear as the *immediate* cause of unique forms. The present case seems such an one. Of common examples of this, one of the best known occurs in the Christmas fern (*Polystichum acrostichoides*), of which variously lobed and incised forms are known to be developed upon deforestation of the natural habitat.

ADIANTUM MODESTUM IN ARIZONA.—Specimens in the U. S. National Herbarium, collected by Mr. J. B. Leiberg (No. 5,968) in Arizona, "along the Bright Angel Trail; alt. 1,100 meters; September 10, 1901," agree well with the material from Roswell, New Mexico (F. S. and Esther F. Earle, No. 261) on which Dr. Underwood recently founded his *Adiantum modestum.* Other specimens from the same region seem to indicate that the line separating this from much of the other southwestern material still referred to *A. Capillus-veneris* is at best a doubtful boundary.

POLYSTICHUM MUNITUM SOLITARIUM, subsp. nov.—Similar to *P. munitum;* distinguished by the *dark* persistent chaff which very thickly covers the rachis throughout, and by the narrower and extremely coriaceous pinnæ which are more scurfy below, somewhat glaucous in appearance and possessed of *abbreviated* decidedly *cartilaginous* appressed incurved teeth.

Type in the Gray Herbarium; collected by A. W. Anthony on Guadelupe Island, Mexico (off the coast of Lower California) July to October, 1896 (No. 9). An imperfect sheet of the same collection and number is in the U. S. National Herbarium (No. 279,439), and Dr. Edward Palmer's No. 102, also from Guadelupe Island, is the same plant (Gray Herbarium).

The three specimens show such marked divergence from any of the material of the Pacific coast mainland that they might, perhaps, with more propriety be regarded as a distinct species. Indeed, the logic of naming the plants as a subspecies rather than a species may well be questioned, inasmuch as it is doubtful if intermediate specimens are extant. Certainly none have been seen. The darker, more copious chaff and the stiff texture and peculiar cartilaginous margins of the pinnæ are very marked characters; and several competent botanists to whom I have shown the material have not hesitated to express the opinion that it should be regarded as of specific rank. Nevertheless, the differences are only of degree and such as are to be expected of plants grown under the conditions.

Dr. Edward Palmer was the first collector to visit the island. His note on this species, published by Dr. Watson (*Proc. Am. Acad.,* XI: 120. 1876), in a report on the collection, runs as follows: "In large bunches; only two seen at the northern end in a rocky place inaccessible to goats, and constantly damp from the prevalent fogs." Dr. Edward L. Greene, in his study of the island's flora some ten years later, failed to detect the fern and lists (*Bull. Calif. Acad. Sci.,* I: 228. 1886) only the previous record. That it still persists is proven by Mr. Anthony's still more recent specimens.

THE GENUS EQUISETUM IN NORTH AMERICA.

By A. A. Eaton.

THIRTEENTH PAPER.

E. Laevigatum A. Br.

Rootstock granular, dull blackish, without felt; sheaths and young radicles densely felted or nearly naked; stems annual, from a few inches to four feet high, usually 12-18 inches, 1 to 4 lines in diameter, 10-30 angled, single or clustered, smooth or slightly roughened, commonly unbranched; angles rounded, with or without cross-bands of silex; no carinal groove; stomata in a single regular row on each side of the ridges, rarely double for a short distance, the grooves unarmed or with variously disposed cross-bands and dots of silex, or in one variety with rosu-