

BRIEFER ARTICLES

PRELIMINARY NOTE ON CERATUZAMIA

With the aid of a grant made by the Botanical Society of America at the New Orleans meeting in December 1906, the writer has been able to secure material for a study of Ceratozamia in most phases of its life history. In September 1906 a trip was made to the barrancas of the Almolonga Valley near Xalapa, Mexico, where the plant is quite abundant. Photographs and field notes were secured and material was fixed for a detailed morphological and cytological study. Arrangements were also made for obtaining material at frequent intervals.

In habitat Ceratozamia differs decidedly from Dioon, for Dioon is in the open, exposed to blazing sunlight, while Ceratozamia is in densely shaded places. The difference in light will be appreciated from the fact that a photographic plate which would be well exposed for Dioon in one-fifth of a second would require three minutes exposure for Ceratozamia. On the whole, Dioon and the plants associated with it are xerophytic; while Ceratozamia, though not found in wet situations, is associated with a luxuriant vegetation.

Staminate cones which arrived in Chicago on March 10, 1906, shed their pollen within a week. Fertilization takes place more than a year after pollination. The first motile spermatozoids were observed June 9, 1906, and in the last week of June nearly every nucellus showed one or more pollen tubes in which spermatozoids were swimming. The spermatozoids were observed with diminishing frequency during the first two weeks in July. Swimming spermatozoids had previously been observed in *Cycas* by IKENO and in *Zamia* by WEBBER. Our observations add Dioon and Ceratozamia to the list. A section by LANG proves that the spermatozoid of *Stangeria* is also motile. Nothing is known of the pollen tube structures of the other four genera of cycads.

The ovulate cones disintegrate and free the seeds soon after fertilization, while the embryo is still of the same diameter as the filamentous suspensor. The seed has no resting period, but growth is continuous from fertilization to the leafy plant.—CHARLES J. CHAMBERLAIN, *The University of Chicago*.