

NEW OR INTERESTING MOSSES FROM PANAMA.

By R. S. WILLIAMS.

The following mosses are from a collection made in the Province of Chiriqui, Panama, in the spring of 1911, by Mr. William R. Maxon, in connection with the Smithsonian Biological Survey of the Panama Canal Zone, and are here published in advance of a complete list which will appear later. Two of the species seem never to have been collected before. Of the other two, one was first obtained in Mexico by Schaffner in 1875, but has remained undescribed until now; the other was described as a *Porotrichum* by Carl Müller from sterile specimens collected in Guatemala.

Specimens of the species here described are in both the U. S. National Herbarium and the herbarium of the New York Botanical Garden; those in the latter institution having served for actual diagnosis, may stand as the type specimens.

Dicranoloma meteoroides R. S. Williams, sp. nov.

Apparently dioicous; in lax pendent tufts, with flexuous, somewhat branching stems up to 30 cm. long; leaves distant, three-ranked, 9 or 10 mm. long, 1 mm. wide a little above the base, spreading-flexuous, often spirally twisted above, distinctly serrulate three-fourths of the way down the margin or more, from an ovate base gradually narrowed to a slender, lanceolate, keeled point, with costa short-excurrent; costa just above the colored base of leaf 60 to 70 μ wide, smooth throughout, in cross section near the middle showing about 4 guide cells with thin stereid bands on either side; alar cells brown, extending to the costa, about 20 μ wide and from square to twice longer than wide, often with somewhat thickened walls; cells throughout the rest of the leaf mostly elongate, with thickened more or less sinuous and pitted walls, the median cells 8 to 10 μ wide and 12 to 20 μ long; perichæcial leaves costate, the inner three or four from a convolute base, mostly abruptly narrowed to a serrulate, setaceous, erect point 3 or 4 mm. long, inclosing 8 to 10 archegonia without paraphyses; seta smooth, 12 to 14 mm. long; calyptra (from very immature capsule) slightly rough above.

TYPE LOCALITY: Humid forest between Alto de las Palmas and top of the Cerro de la Horqueta, Chiriqui, Panama; altitude 2,100 to 2,268 meters, March 18, 1911, *Maxon* 5499.

DISTRIBUTION: Known only from the type locality, having been collected there also, at the same time, by Mr. H. Pittier.

The specimens, pendent from branches of trees and shrubs, are in very immature fruit.

Leucodon macrosporus R. S. Williams, sp. nov.

Dioicous, male flowers scarcely 1 mm. high, with numerous slender paraphyses and about 16 antheridia 0.5 or 0.6 mm. long; primary stems creeping, leafless, the secondary more or less erect, arcuate, 3 to 6 cm. high and about 3 mm. across, with somewhat spreading secund leaves; leaves ecostate, yellowish at base, about 2.5 mm. long, rather broadly ovate-lanceolate, acuminate, concave, 4-plicate, the borders more or

less recurved and slightly serrulate one-third the way down; cells throughout upper leaf elongate with somewhat unequally thickened, slightly sinuous walls; median cells about $5\ \mu$ wide by 20 to $35\ \mu$ long, toward the base rather larger and cell walls pitted near the insertion of the leaf toward the costa; cells at basal angles numerous, short, often transversely elongate and extending some distance upward; outer perichæcial leaves short; the inner oblong-lanceolate, 6 or 7 mm. long, convolute nearly to the acute entire apex and extending to above the middle of seta, sometimes nearly to the base of the capsule; seta 7 to 9 mm. long with erect oval capsule 2.5 mm long, bearing a conical-apiculate or short-rostrate lid about 1 mm. long; annules wanting; peristome double, the outer of pale, papillose to nearly smooth, rather irregular teeth with indistinct articulations, separate to below rim of capsule and solid, or more or less pertuse along median line; inner peristome a low, pale membrane scarcely one-fifth the teeth in height, with margin nearly entire; spores not quite smooth, roundish ($80\ \mu$ in diameter) to oblong (up to $120\ \mu$ long).

TYPE LOCALITY: Vicinity of Camp Aguacatal, eastern slope of Chiriqui Volcano, Chiriqui, Panama, altitude 2,100 to 2,300 meters, March 10 to 13, 1911, *Maxon* 5276. On tree trunks.

DISTRIBUTION: Chiriqui Volcano, Panama, to valley of Mexico (*Schaffner*, 1875) and San Luis Potosí, Mexico (*Schaffner* 340 in 1879).

This species in habit much resembles *L. cryptotheca*, but is rather smaller and with leaves more pointed.

Thamnum cobanense (C. Müller), R. S. Williams.

Porotrichum cobanense C. Müller, Bull. Herb. Boiss. 5: 202. 1897.

The specimens at hand were collected from tree trunks in a moist ravine above El Potrero Camp, Chiriqui Volcano, Chiriqui, Panama, altitude 2,890 to 3,025 meters, March 12, 1911, by William R. Maxon (no. 5330). They are in fine fruit, the fruiting state hitherto unknown, I believe. The species is dioicous. It has perichæcial leaves nearly or quite ecostate and entire, the inner abruptly narrowed to a smooth point about one-third the entire length; seta 15 to 18 mm. high, curved; capsule oblong, about 2.5 mm. long, slightly contracted under the mouth when dry; annulus of 2 or 3 rows of cells; lid convex, obliquely rostrate, about 1.5 mm. long; outer peristome with teeth finely cross-striate over half way up from base, in upper part paler and papillose; inner peristome pale brown like outer, the segments from high basilar membrane, pertuse along median line with one or mostly two smooth cilia between; spores nearly smooth, 12 to $14\ \mu$ in diameter.

TYPE LOCALITY: Guatemala.

DISTRIBUTION: Guatemala and Panama.

Cyclodictyon maxoni R. S. Williams, sp. nov.

Flowers and fruit unknown; plants in lax dusky brown tufts, green only at the tips of the branches, the stems mostly denuded of leaves below, 6 to 8 cm. long, and bearing rather numerous irregular branches; leaves, when dry, spreading-incurved or loosely imbricate, about 1.6 mm. long, broadly ovate, very concave, with flat, entire or nearly entire margins and with the apex broad and rounded or scarcely acutely pointed; leaves bicostate, the costæ nearly or quite smooth on the back, extending usually four-fifths the length of the leaf; leaf cells smooth on both sides, elongate-hexagonal to oblong or linear, a little below apex about $5\ \mu$ wide by $20\ \mu$ long, gradually longer below, up to 50 or $60\ \mu$ long toward base with about 2 rows of short brown cells extending across the base at insertion of leaf, the marginal cells a little longer and narrower than within but not forming a distinct border; cell walls thin, not pitted.

TYPE LOCALITY: Humid forest along the upper Caldera River, near "Camp I," Holcomb's trail, above El Boquete, Chiriqui, altitude 1,450 to 1,650 meters, March 22 to 24, 1911, *Maxon* 5619. On stones in bed of swift current, mostly submerged.

DISTRIBUTION: Known only from the type collection.

This species seems to be nearest *C. obscurifolium* (Mitt.) Broth., but the latter has a shorter, broader, and more pointed leaf with a distinct border.