

III. NEW AMERICAN SPECIES OF TRICHOMANES.

By C. A. WEATHERBY.

(Plate VIII.)

TRICHOMANES daguense, spec. nov. Rhizoma breve erectum, pilis tenuibus brunneis onustum. Frondes plures caespitosae 5.5–16.5 cm. longae. Stipes viridis 2–4.5 cm. longus quam lamina $\frac{1}{3}$ brevior usque ad basim alatus. Lamina lanceolata basi paullo angustata apice sensim attenuata 3.5(plerumque 5)–12 cm. longa 2–3.5 cm. lata ad alam 1–1.5 mm. latam secundum rachin pinnatifida nervis margineque pilis brunneis simplicibus rigidis sparse instructa. Lacinae plus minusve remotae sinubus rotundatis interstinctae 10–18-jugae lineari-oblongae medianae 1–2 cm. longae 3–4 mm. latae adscendenti-patulae, fertiles apice excepto subintegrae vel leviter undulatae truncato-obtusae apice 2–4 soros gerentes, steriles crenato-serratae ad apicem angustum obtusum angustatae. Nervi crassiusculi, nervilli catadromi 3–10-jugi plerumque simplices recti e costula angulo acuto exeuntes. Cellulae plerumque oblongae c. 0.2 mm. longae, parietibus crassis, luminibus parvis hyalinis. Indusia cylindrica basi angustata 1.6–1.8 mm. longa sub orificio 0.5–0.6 mm. lata in limbum angustissimum sed distinctum suberectum vel patulum 0.2 mm. latum dilatata, in dentibus apicalibus prominentibus laciniarum immersa sicut alata. Receptaculum aetate longe exsertum.—COLOMBIA: forest, alt. 80–100 m., Dagua Valley, Cordoba, Dept. El Valle, May 6–8, 1922, *Killip*, no. 5251, TYPE in U. S. Nat. Herb.; another sheet of the same number in Gray Herb.; same place and date, *Killip*, no. 5098.

Species *T. delicato* v. d. Bosch affinis, a quo differt laciniis longioribus angustioribus minus dentatis, cellulis latis, indusiis longioribus anguste cylindricis, venis simplicibus.

TRICHOMANES Killipii, spec. nov. Rhizoma c. 2 cm. longum erectum, apice pilis brevibus brunneis lucidis tenuibus onustum. Frondes plures caespitosae 8–13 cm. altae, stipitibus rachi nervis marginibusque pilis simplicibus rigidis brunneis sparse obsitae. Stipes 2–4 cm. longus lamina multo brevior fuscus superne alatus basim versus nudus. Lamina lanceolata basi paullo angustata apice gradatim attenuata 5–9 cm. longa 1.3–2.5 cm. lata ad alam 1–1.5 mm. latam secundum rachin pinnatifida, rachis plus minusve fusca. Lacinae 9–15-jugae approximatae vel subremotae sinubus rotundatis interstinctae oblongae vel fere quadratae obtusae leviter adscendentes integrae vel leviter undulatae vel apice paucidentatae medianae

0.7–1.3 cm. longae 3–5 mm. latae, fertiles apice 1–3 soros gerentes. Nervi tenues; nervilli catadromi 2–4-jugi 1–2-furcati imi e costula angulo lato exeuntes deinde arcuati superiores adscendentes recti angulo acutiore exeuntes. Cellulae laciniarum basi quadratae, apicem versus oblongae 0.1–0.2 mm. diametro vel longae, parietibus crassis, luminibus hyalinis majusculis. Indusia anguste cylindrica 1.8–2 mm. longa, orificio 0.4–0.5 mm. lato truncato vel in limbum angustissimum bilabiatum erectum producto, immersa vel si in dentibus solitaria sicut exserta alata. Receptaculum aetate longe exsertum.—

COLOMBIA: epiphytic in coastal thickets, alt. 0–10 m., Buenaventura, Dept. El Valle, Oct. 5–10, 1922, *Killip*, no. 11727, TYPE in Gray Herb.

Species *T. holoptero* affinis, quod differt praecipue venis fertilibus simplicibus, indusiis in limbum conspicuum latum dilatatis. *T. Galeottii* etiam similis, quod tamen rhizomate vix erecto, lamina latiore, stipite longiore, laciniis crebris subimbricatis patulis, venulis crassioribus crebris differt.

T. delicatum v. d. Bosch appears to have been curiously misunderstood. It was based on a specimen of *Cuming* 21 from Quito in "H. Berol." and was explicitly described as having fasciculate fronds, once-pinnatifid lamina with undulate-toothed segments, simple hairs and very elongate, linear cells. Yet Baker (Syn. Fil. 79), followed in the Index Filicum and even by Domin (Mem. Czech Soc. Sci. n. s. no. 2. 51 (1929)), referred it to the mainly West Indian *T. alatum*, a species in which even dwarfed fronds are strongly bipinnatifid, with forked hairs and mostly quadrate cells. Hieronymus, who should have had access to the type specimen, after remarking that *T. delicatum* was "a Hooker et Baker perverse ut synonymum *T. alati* Swartz citatum" (Engler Bot. Jahr. xxxiv. 421 (1904)), himself disposes of it, even less convincingly, as a form of *T. Poeppigii* Presl. This last is closely related to and has been regarded by many authors as synonymous with, *T. polypodioides*; like that species, it has a filiform, repent rootstock, scattered fronds, branched hairs and quadrate cells.

There are no specimens of *Cuming* 21 in the Gray Herbarium; there are, however, two sheets of a plant from Quito (*Jameson* 104) remarkable for its greatly elongate cells and otherwise agreeing well with van den Bosch's description and with his drawings of details, published in Med. Rijks Herb. Leiden no. 38. 3 (1919). Here also the citation "*Jameson* (Herb. Hook.)" is added to the republished description. In all probability the collection above mentioned is meant; I am accordingly taking the Gray specimens of it as authentically representing the species.

The following key attempts to define the American species of *Trichomanes*, so far as known to me, which share the characters of low stature, cespitose, once-pinnatifid fronds, spreading-ascending subremote segments and unbranched hairs. *T. macilentum* and *T. ornatulum* are known to me only from v. d. Bosch's rather brief descriptions and his posthumously published, fragmentary drawings. They are included without entire confidence that they really belong here, but for the purpose of indicating wherein the two species above proposed as new differ from them, as described.

Indusium with subtruncate orifice or narrow spreading limb not over 0.2 mm. wide.

Veins mostly simple; segments linear to rather narrowly oblong; cells of the leaf-tissue oblong, not more than three times as long as wide, nor more than 0.2 mm. long.

Indusium with narrow spreading limb 0.2 mm. wide; veinlets making an acute angle with the costule; stipe winged to base. Colombia..... *T. daguense* Weatherby.

Indusium with subtruncate orifice; veins making a "rounded" angle with the costule; stipe naked at base. Brazil (Para)..... *T. macilentum* v. d. B.

Veins mostly forked; segments broadly oblong or nearly quadrate.

Segments prominently undulate-toothed; cells of the leaf-tissue mostly elongate, 4-6 times as long as wide, up to 0.4 mm. long, thin-walled; indusium rather broadly cylindric-ventricose with narrow more or less spreading limb. Ecuador..... *T. delicatum* v. d. B.

Segments (except sometimes at apex) entire or very shallowly undulate; cells of the leaf-tissue quadrate at base of segments, crowded and oblong between the veins above, not over 0.2 mm. long; indusium narrowly cylindric with truncate orifice or narrow bilabiate erect limb. Colombia..... *T. Killipii* Weatherby.

Indusium with conspicuous spreading limb 0.5 mm. wide; cells thick-walled.

Segments oblong or broader, coarsely 3-4-undulate-dentate with often narrow but rounded sinuses; veins of fertile segments mostly simple; cells quadrate to oblong, 1-2 times as long as broad; indusium infundibuliform. West Indies..... *T. holopterum* Kze.

Segments "suboblong," entire or 1-2-dentate, with acute sinuses; cells 3-6 times as long as broad; indusium cylindric. Brazil (Rio)..... *T. ornatulum* v. d. B.

TRICHOMANES crassipilis, spec. nov. Rhizoma repens gracile (indumento excluso diametro c. 0.75 mm.) trichomatibus flavo-brunneis crassis submoniliformibus ex cellulis pluribus oblongis ad 0.4 mm. longis valde compressis cujusque plano planis proximarum angulum rectum formante cellulaque terminali ensiformi decidua compositis onustum. Frondes distantes 4-11 cm. altae. Stipes 1.5-4 cm. longus, lamina paullo brevior ala viride superne 0.5-1 mm.

lata basim versus gradatim angustata marginatus. Lamina deltoidea vel late ovata vel rite ovata 2.5–6 cm. longa 2–3.5 cm. lata ad alam 1–2 mm. latam secundum rachin pinnatifida nervis margineque pilis simplicibus rigidis brunneis ensiformibus prope basim articulatis sparse obsita. Lacinae 3–6-jugae adscendentes oblongae late obtusae basim versus integrae ad apicem grosse sparseque crenato-dentatae subremotae sinibus rotundatis interstinctae, medianae 1–2 cm. longae, c. 5 mm. latae. Venae crassae, venulae catadromae c. 5-jugae simplices vel saepius 1–2-furcatae angulo acuto e costula exeuntes. Cellulae plerumque oblongae ad nervos marginemque irregulariter quadratae ad 0.2 mm. longae, parietibus crassis, luminibus parvis hyalinis. Sori 1–3 in apice laciniarum superiorum immersi; indusia subcylindrica basi angustata 2–2.4 mm. longa sub orificio 0.8–1 mm. lata in limbum angustum patulum dilatata; receptaculum aetate longius exsertum.—SANTO DOMINGO: alt. 400–1000 m. Quita Espuela, vicinity of San Francisco de Macoris, Prov. Pacificador, April 5–17, 1922, *W. L. Abbott*, no. 2114a, TYPE in U. S. Nat. Herb., sheet no. 1,145,256; high ridges, c. 1100 m. alt., rare, Loma la Campana, Cordillera Central, Prov. Sto. Domingo, Feb. 2, 1929, *E. L. Ekman*, no. H 11507, U. S. Nat. Herb.

Species rhizomate longe repente, trichomatibus singularibus, lamina pinnatifida, laciniis paucis, nervis crassis distinctissima, ut videtur in Hispaniola endemica. Fortasse ad gregem *T. trigoni* adducenda, cujus species trichomata similia sed minus evoluta habent, caetera tamen totae diversae sunt.

TRICHOMANES **Curranii**, spec. nov. Rhizoma breviter repens tortuoso-ramosum trichomatibus crassis compressis articulatis pallide brunneis onustum. Frondes subdistantes 14–18 cm. altae omnibus partibus pilis rigidis e basi tuberculosa 2–4-ramosis deciduis plus minusve obsitae. Stipes 5–7 cm. longus lamina brevior usque vel fere ad basim alatus. Lamina ovata 9–11 cm. longa 5–6 cm. lata bipinnatifida basi vix angustata apice pinnatifido acuta, ala secundum rachin 1.5–2 mm. lata. Lacinae c. 10-jugae lineari-oblongae medianae 3–4 cm. longae 0.8–1.2 cm. latae obtusae subremotae sinibus latis rotundatis interstinctae profunde pinnatifidae; lacinulae oblongae linearesve sparse crenato-denticulatae obtusae. Venae crassiusculae ultimae in lacinulis valde adscendentes simplices vel 1-furcatae. Sori in lacinulis singulis plerumque singuli; indusia (post maturitatem tantum visa) late cylindrica subventricosa 1–1.4 mm. longa 0.6–0.8 mm. lata sub orificio ut videtur subtruncato vel leviter bicornae; receptaculum breviter exsertum. Cellulae minimae quadratae vel oblongae, parietibus crassis, luminibus plerumque vix ultra 0.05 mm.

latis.—VENEZUELA: common at 300–600 m. alt., Cerro Sta. Ana, Paraguana Peninsula, April 13, 1917, *Curran & Haman*, no. 672, TYPE in Gray Herb.

T. fimbriato affinis a quo differt textura densiore, cellulis minoribus, lacinulis obtusis neque appendiculo capillari apicali ornatis.

The following key may serve to distinguish *T. Curranii* from the species which are apparently its nearest relatives, sharing with it the characters of erect or short-repent rootstock with coarse, articulate, pale-brown trichomes, bipinnatifid lamina and branched hairs.

Lamina lance-elliptic, 15–30 cm. long, attenuate at base, broadest at about the middle, segments often only shallowly toothed, if pinnatifid the lobes produced into capillary appendages; indusium with narrow spreading limb. West Indies..... *T. trigonum* Desv.

Lamina ovate, mostly less than 15 cm. long, broadest below the middle, only the lowest one or two pairs of segments reduced, deeply bipinnatifid.

Lobes of segments acute, the sterile usually produced into a capillary appendage; texture thin, the rather thin-walled cells with lumina 0.1 mm. in diameter; indusium with narrow spreading limb. Trinidad..... *T. fimbriatum* Backh.

Lobes obtuse, without capillary appendages; texture firm, the thick-walled cells with very small lumina (0.05 mm.); indusium apparently subtruncate. Venezuela... *T. Curranii* Weatherby.

I am indebted to Dr. William R. Maxon of the United States National Herbarium for the loan of indispensable material.

EXPLANATION OF PLATE VIII.

Fig. 1. *TRICHOMANES CRASSIPILIS* Weatherby, spec. nov. a. Habit $\times 0.4$; b. sterile segment $\times 0.8$; c. fertile segment $\times 0.8$; d. indusium $\times 6$; e. trichome $\times 8$.

Fig. 2. *TRICHOMANES DAGUENSE* Weatherby, spec. nov. a. Habit $\times 0.4$; b. sterile segment $\times 0.8$; c. fertile segment $\times 0.8$; d. indusium $\times 6$.

Fig. 3. *TRICHOMANES DELICATUM* van den Bosch. $\times 0.4$

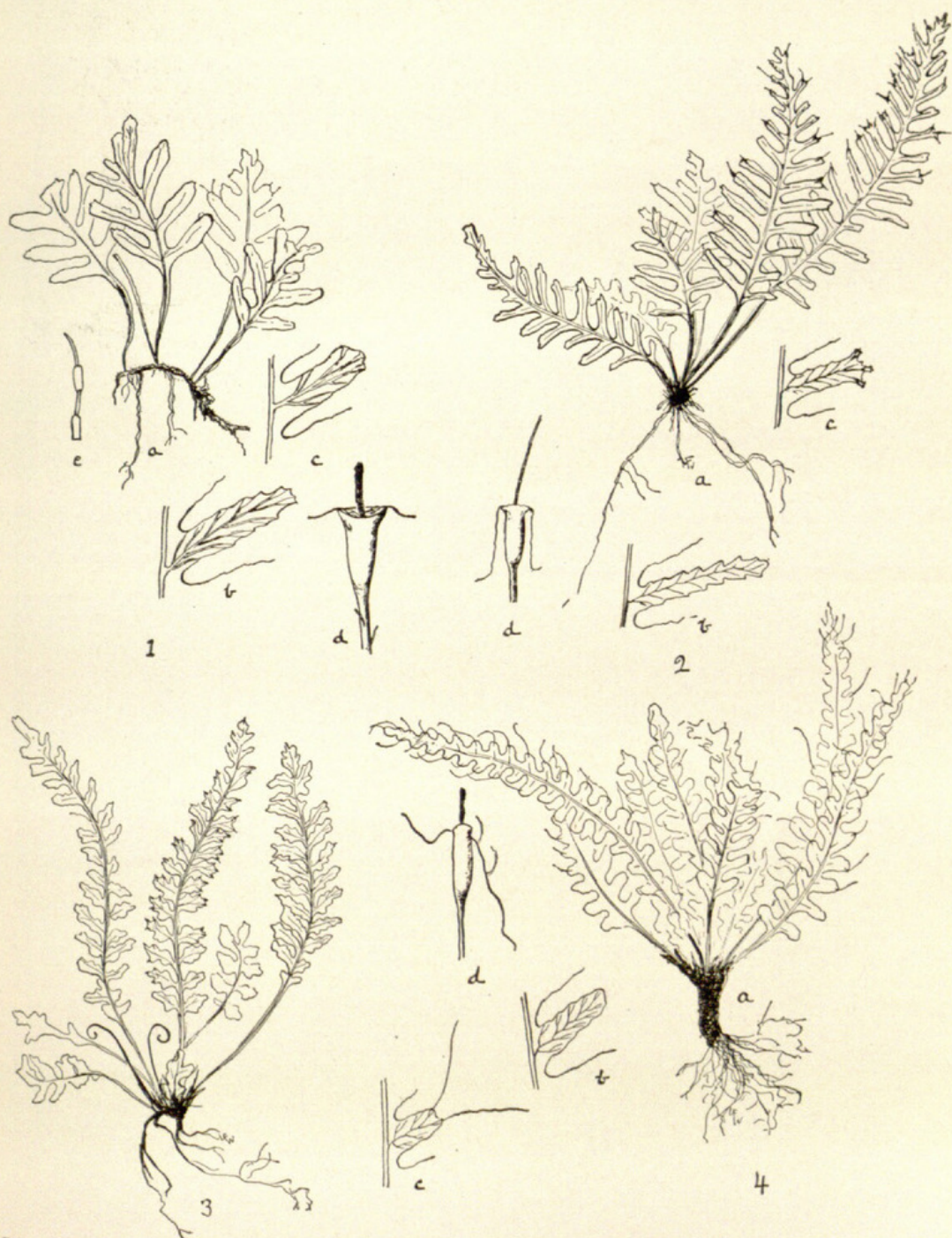
Fig. 4. *TRICHOMANES KILLIPII* Weatherby, spec. nov. Habit $\times 0.4$; b. sterile segment $\times 0.8$; c. fertile segment $\times 0.8$; d. indusium $\times 6$.

IV. STUDIES IN THE BROMELIACEAE,—II.

BY LYMAN B. SMITH.

(Plates IX–XI.)

DURING the past year many points of taxonomic significance have come to my attention in the course of further study on the *Bromeliaceae*, and since no immediate revision covering these matters is contemplated it seems best to put them on record here. I am indebted to the following institutions for the opportunity to examine valuable



Una F, Weatherby ad nat. del.

- Fig. 1. *TRICHOMANES CRASSIPILIS* Weatherby, spec. nov.
 Fig. 2. *TRICHOMANES DAGUENSE* Weatherby, spec. nov.
 Fig. 3. *TRICHOMANES DELICATUM* van den Bosch.
 Fig. 4. *TRICHOMANES KILLIPPII* Weatherby, spec. nov.



Weatherby, Charles Alfred. 1931. "New American species of Trichomanes." *Contributions from the Gray Herbarium of Harvard University* (95), 36–40.
<https://doi.org/10.5962/p.336137>.

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