

IV. DIAGNOSES OF NEW SPERMATOPHYTES FROM MEXICO.

BY M. L. FERNALD.

Carex ciliaris Fernald, n. sp., laxe caespitosa, caudice duro; culmis duriusculis 4–5 dm. altis acute triquetris superne ciliatis; foliis quam culmo brevioribus lineari-attenuatis 2.5–3.5 mm. latis, nervis marginibusque ciliatis marginibus revolutis; spicis 3–5, terminali clavellata subsessili 1–1.5 cm. longa vel omnino mascula vel apice foeminea; squamis masculis lanceolato-attenuatis pallide brunneis; spicis foeminiis breviter oblongis 0.6–2 cm. longis 0.5 cm. crassis, superioribus approximatis, inferioribus remotis et a bractea inflorescentiam aequanti vel superanti subtentis; squamis foemineis anguste ovatis acuminatis media parte viridibus 3-costatis levibus marginibus pallidis; perigyniis viridescentibus squamas aequantibus vel superantibus 4 mm. longis ellipsoideo-triquetris, faciebus planis 3–5-nerviis, rostro breviter conico-subulato hyalino bidentato. — Oak woods, Lena Station, Hidalgo, Mexico, alt. 2530 m., 26 August, 1905, *C. G. Pringle*, no. 10,039 (type, in hb. Gray). Nearest related, apparently, to *C. anistostachys* Liebm., which, according to the description, has scabrous culms, the staminate scales red-punctate, and the pistillate scales ciliolate.

Carex perlonga Fernald, n. sp., culmis 6 dm. altis laevissimis basi a vaginis ferrugineis tectis; foliis quam culmo plerumque brevioribus 4–5 mm. latis valde 1–3-nerviis serrulatis basi ferrugineis; bracteis inferioribus elongatis quam culmo longioribus, superioribus abbreviatis setaceis; spicis 7 solitariis inferioribus remotis superioribus approximatis laxe ascendentibus vel pendulis lineari-cylindricis 5–10 cm. longis 3–4 mm. latis apice masculis; squama mascula oblonga subacuminata fulva medio viridi, foeminea oblongo-lanceolata acuminata albo-fulva medio viridi; perigynio viridi trigono-fusiformi striato 4 mm. longo, ore obliquo subintegro. — Barranca below Trinidad Iron Works, Hidalgo, Mexico, alt. 1585 m., 2 June, 1904, *C. G. Pringle*, no. 8863 (type, in hb. Gray). A species of the *Polystachyae*, unique in its solitary not clustered spikes, thus closely approaching the *Debiles*.

Alnus firmifolia Fernald, n. sp., arborea vel fruticosa 6–12 m. alta; ramis ramisque atrobrunneis glabris cum lenticellis numerosis munitis; foliis elliptico-oblongis obtuse acuminatis vel apice rotundatis basi angustatis 5–17 cm. longis 2–5.5 cm. latis firmis duriusculisque supra glabris sublucidis subtus pallidis piloso-hispidis in nerviis prominentibus; petiolo crassiusculo glabro 0.7–1.2 cm. longo; inflorescentiis

fertilibus 6-9 cm. longis, amentis maturis 3-5 oblongo-cylindricis atrobrunneis pedunculatis 7-14 mm. longis 5-7 mm. diametro; nuculis cuneato-obovatis vel suborbicularibus rufobrunneis lucidis 1.5-2 mm. longis. — Mountains about Cima Station, Mexico, alt. about 3000 m., 30 August, 1905, *C. G. Pringle*, no. 10,040 (type, in hb. Gray). Resembling large-leaved *A. jorullensis* HBK., but quite lacking the close covering of waxy or granular atoms which characterizes the lower leaf-surface of that species.

Alnus Pringlei Fernald, n. sp., arbor parva; ramis ramulisque angulatis, juvenitissimis cinereo-puberulis mox glabratis; foliis late elliptico-ovatis 4.5-9 cm. longis 3-7 cm. latis apice breviter acuminatis basi rotundatis, marginibus regularibus vel paulo sinuatis crebre serrulatis, venis subtus prominentibus rufescentibus pilosis; petiolis 0.5-1 cm. longis piloso-ciliatis; ramis floriferis elongatis; amentis ♂ 4-7 terminalibus anthesi 5-6 cm. longis; pedunculis fructiferis 2 valde divergentibus crassis; amentis ♀ 3-4 sessilibus maturitate cylindricis 2.2-2.7 cm. longis 0.9-1.1 cm. diametro atrobrunneis; nuculis crassis late cuneatis et angulatis 2.5-3 mm. longis obscuris pallide brunneis. — By streams, near Uruapan, Michoacan, Mexico, alt. about 1525 m., 13 November, 1905, *C. G. Pringle*, no. 10,125 (type, in hb. Gray). Most nearly related to *A. acuminata* HBK., which has larger oblong-ovoid ashy-brown strobiles 1.5 cm. thick, and larger thick-winged lustrous nutlets.

EUPHORBIA ARIENSIS HBK., var. *villicaulis* Fernald, n. var. *Eumecanthus Benthamianus* Kl. & Garcke, in Kl. Tricocc. 42 (1860), not *Euphorbia Benthami* Hiern, Cat. Welw. Afr. Pl. i. 943 (1900). *Euphorbia ariensis* Benth., Pl. Hartw. 51, no. 387 (1840), not HBK. Nov. Gen. et Sp. ii. 57 (1817). Caulibus in parte inferiore valde villosis; foliis quam eis formae typicae aliquid latioribus; inflorescentia laxiore. — In pine forests at Coru Station, Michoacan, Mexico, alt. 1970 m., 29 October, 1905, *C. G. Pringle*, no. 10,116 (type, in hb. Gray). This locality is only about 48 km. to the west of Patzcuaro, which was Hartweg's original station.

Heliotropium calcicola Fernald, n. sp., frutex gracilis 6-15 dm. altus; cortice brunneo exfolianti; ramulis albido-strigoso-puberulis; foliis lanceolatis utroque attenuatis breviter petiolatis apice mucronatis cum pilis minutis et lucidis utrinque obtectis 2-4.5 cm. longis 3-10 mm. latis margine revolutis; spicis terminalibus et lateralibus geminis 0.5, maturitate usque ad 2, cm. longis; pedunculis gracilibus 1.3-2 cm. longis canescentibus; calyce 1.5-2.5 cm. longo cum pilis minutis adpressis canescenti, lobis lanceolatis; corolla anguste urceolata 3 mm. longa adpresse setulosa, lobis ovatis acuminatis; stylo nullo;

nuculis subglobosis 1.3 mm. altis albidis adpresse setulosis. — Limestone cliffs, Iguala Cañon, Guerrero, Mexico, alt. 760 m., 28 September, 1905, *C. G. Pringle*, no. 10,062 (type, in hb. Gray). Not closely related to other Mexican species, perhaps nearest *H. coriaceum* Lehm., which is much coarser, densely villous, with broader rugose villous leaves and larger flowers and fruits.

SALVIA HISPANICA L., var. *chionocalyx* Fernald, n. var., foliis bracteisque supra viridibus et minute pubescentibus subtus paulo pallidioribus et praesertim in nerviis breviter pilosis; spicis pertenuibus 5–10 cm. longis 1–1.5 cm. crassis; floribus adpresse ascendentibus; calycibus conspicue denseque albo-pubescentibus. — Fields, Uruapan, Michoacan, Mexico, 16 October, 1904, *C. G. Pringle*, no. 8837½ (type, in hb. Gray). A striking extreme of *S. hispanica*, the typical form of which differs in its ordinarily thicker spikes of less appressed cinereous calyces.

SALVIA HISPANICA L., var. *intonsa* Fernald, n. var., foliis et partibus superioribus caulis tomentosis; spicis brevibus crassis 1.5–5.5 cm. longis 1.5–2 cm. crassis; calycibus tomentosis patentibus. — Buena Vista, Department of Santa Rosa, Guatemala, alt. 1680 m., December, 1892, *Heyde & Lux*, no. 4401, in exsicc. J. D. Smith. Differing from *S. hispanica* in the dense tomentum of its leaves, stems, and calyces.

7 *Salvia* (Vulgares) *mucidiflora* Fernald, n. sp., herbacea (?) alta; caule cinereo-pulverulento obtuse angulato faciebus profunde sulcato; foliis rhomboideo-ovatis 3.5–10 cm. longis crenato-serratis subtus albidis et tomento brevi densoque obtectis supra griseo-viridibus cum pilis brevibus albis, basi cuneato integro in petiolum puberulum gradatim angustato; ramis brevibus patentibus; racemis laxis 3.5–10 cm. longis; rhachi et pedicellis et etiam calyce dense albovillosis paene lanatis; verticellis 3–6-floris subdistantibus; bracteis late ovatis mucronatis 4–7 mm. longis subpersistentibus laxe albo-villosis; pedicellis 1–3 mm. longis; calyce anguste campanulato anthesi 7 mm. fructifero 8–9 mm. longo, labio superiore acuminato ascendenti, inferiore rectiusculo cum lobis 2 deltoideis aristatis; corolla azurea et alba 13–14 mm. longa, labio superiore villosa oblongo 6 mm. longo, inferiore violaceo patenti paulo longiore; stylo villosa. — San Ramón, Durango, Mexico, 21 April–18 May, 1906, *Edw. Palmer*, no. 187 (type, in hb. Gray). Nearest related to *S. longispicata* Mart. & Gal. but differing in its crenate-serrate leaves and the long pubescence of the inflorescence.

Salvia (Vulgares) *arthrocoma* Fernald, n. sp., caulibus superne pilosis, pilis pallidis nodulosis; foliis rhomboideo-ovatis 4–8 cm. longis supra basin cuneatam crenato-serratis apice acuminatis supra pilis compressis adpresse setulosis et in venis pilis gracilibus nodulosis mu-

nitis subtus in venis venulisque pilis gracilibus nodulosis pubescentibus; petiolis gracilibus 1.5–4 cm. longis; racemo brevi, rhachi a pilis nodulosis peculiaribus tecta; verticellis 3–6-floris demum 1–1.5 cm. distantibus; bracteis late ovatis longe acuminatis et calycibus in nervis marginibusque pilis gracilibus nodulosis munitis; pedicellis 3 vel usque ad 5 mm. longis; calyce campanulato anthesi 5 fructifero 8 mm. longo tubo valde costato, labiis deltoideo-acuminatis valde patentibus superiore ascendenti 2–3 mm. longo quam lobo recto inferioris brevior; corolla 1 cm. longa, tubo faucibusque albidis, labiis obtusis ringentibus apicem versus purpureo-tinctis, galea pilosa 4 mm. longa labium inferius latius paulo superante. — Barranca below Trinidad Iron Works, Hidalgo, Mexico, alt. 1620 m., 16 July, 1904, *C. G. Pringle*, no. 8940 (type, in hb. Gray). Somewhat suggesting *S. fluviatilis* Fernald, but clearly characterized by its slender jointed hairs.

Salvia (Vulgares) *Lozani* Fernald, n. sp., caulibus herbaceis gracilibus decumbentibus basi saepissime radicanibus aliquid ascendentibus demum 5–6 cm. longis minute glanduloso-setulosis, pilis patentibus; foliis regulariter remotis, jugis 4–6 cm. distantibus, foliis infimis suborbicularibus 1.2–1.6 cm. longis superioribus ovatis vel oblongis 1.5–2.5 cm. longis integris margine paulo revolutis basi rotundatis vel subcordatis apice rotundatis supra viridibus glabris pallide nervatis subtus pallidioribus et glandulis atrorubris punctatis; pedunculo 4.5–7 cm. longo; verticellis 3 remotis 2-floris; bracteis ovatis obtuse acuminatis glanduloso-setulosis 2–3 mm. longis; pedicellis 1–2 mm. longis; calyce anthesi campanulato glanduloso-setuloso rubropunctato 4–5 mm. longo, labio superiore obtuso 2-dentato nigrescenti 2 mm. longo, inferiore pallidiore lato brevissimo; corolla 17–18 mm. longa, tubo infundibuliforme leviter ventricosa 8 mm. vel ultra longo, galea breviter pubescenti 3–4 mm. longa, labio inferiore cyaneo albo-maculato 1 cm. longo, lobo medio 12 mm. lato. — Wet grassy places in pine forests near Trinidad Iron Works, Hidalgo, Mexico, alt. 1770 m., July–August, 1904, *C. G. Pringle*, no. 8928 (type, in hb. Gray). Named for Filemon L. Lozano, for several seasons Mr. Pringle's able field companion. A unique species, nearest related perhaps to *S. villosa* Fernald.

Salvia (Candicantes) *chionophylla* Fernald, n. sp., fruticosa depressa; ramis laxis gracilibus prostratis 3–6 dm. longis; cortice pallide brunneo pilis brevissimis crebris stellatis canescenti; foliis elliptico-ovatis vel breviter oblongis integris vel obscure crenatis utroque angustatis 0.5–1.5 cm. longis cinereis dense stellato-puberulis juventate canescentibus; petiolis gracilibus 2–4 mm. longis; racemis 0.5–1 dm. longis; verticellis 3–6-floris demum 2–2.5 cm. distantibus; pedicellis

2-4 mm. longis; calyce tubuloso-campanulato anthesi 6-7 fructifero 8-9 mm. longo valde costato, tubo lobis latis obtusis breviter acuminatis duplo longiore; corolla 1.5 cm. longa, tubo paulo exserto; galea azurea et alba pilosa 6 mm. longa a labio inferiore cyaneo superata. — On shelving rocks and gravelly slopes of the cañon-wall, Chojo Grande, Coahuila, Mexico, 29 August, 1904, *Edw. Palmer*, no 368 (type, in hb. Gray). Nearest related to the upright narrow-leaved *S. thymoides* Benth., which has a glandular calyx.

Salvia (*Scorodoniae*) *chalarothyrsa* Fernald, n. sp., ramis gracilibus retrorse molliterque pilosis; foliis cordato-ovatis acuminatis dentatis superioribus 2.5-4.5 cm. longis 2-3.5 cm. latis vix rugosis utrinque adpresse pubescentibus, pilis planis; petiolis 0.5-1.5 cm. longis dense pilosis; inflorescentia cylindrica laxa thyrsioidea 1.5-6 dm. longa; rhachi necnon pedunculis pedicellisque cum pilis mollibus patentibus glanduloso-capitulatis tectis; cymis 3-10-floris usque ad 3-4 cm. distantibus, pedunculis 0.5-2 cm. longis; bracteis lanceolatis vel linearibus tarde deciduis; calyce pedicellos aequante anguste campanulato anthesi 4 fructifero 5-6 mm. longo glanduloso-hirsuto, lobis alte deltoideis subaequalibus apice subulatis; corolla cyanea 12-13 mm. longa, tubo pallido glanduloso-punctato paulo exserto, galea brevissima breviter pilosa, labio inferiore multo longiore, lobo intermedio magno emarginato 7-9 mm. lato. — Hills about Tuxpan, Jalisco, Mexico, alt. 1220 m., 27 October, 1904, *C. G. Pringle*, no. 8856 (type, in hb. Gray). A remarkable species in its thyrsiform inflorescence, related only to *S. thyrsoflora* Benth., a species also from the Jalisco mountains, from Tepic to western Michoacan.

Salvia (*Inflatae*) *muralis* Fernald, n. sp., fruticosa 1-2 m. alta; ramis gracilibus firmis subteretibus cinereo-puberulis; foliis anguste ovatis 6-9.5 cm. longis 2-4.7 cm. latis remote crenato-dentatis obtuse acuminatis basi subcuneatis vel rotundatis supra pallide viridibus adpresse setulosis subtus pallidioribus et glanduloso-punctatis dense albo-pilosis in costa media et in nervis principalibus; petiolo gracili cinereo-puberulo 2-3 cm. longo; ramis floriferis gracilibus brevibus ex axillis superioribus inferne foliatis; floribus saepissime geminis; pedicellis gracilibus 3-5 cm. longis; calyce anthesi curvato tubiformi 1.5-2 cm. longo inferne constricto viridique superne patente expanso et rubro-tincto sparse piloso, lobis deltoideis 5 mm. longis; corolla cinabarina 4.5-6 cm. longa valde exserta pilosa tubulari-infundibuliformi, faucibus paulo gibbosis, galea pilosa 1.5-1.7 cm. longa labium inferius subaequante; staminibus styloque exsertis illo piloso. — Hanging from fissures in limestone-cliffs, Iguala Cañon, Guerrero, Mexico, alt. 762 m., 28 September, 1905, *C. G. Pringle*, no. 10,072 (type, in hb.

Gray). Nearly related to *S. pubescens* Benth., which has a shorter, broader, and more colored calyx, shorter corolla, and nearly or quite glabrous style.

Salvia (Cyaneae) *atrocaulis* Fernald, n. sp., caulibus nigrescentibus vel purpurascentibus 1.8–2.4 m. altis basi 2–3 cm. crassis in partibus inferioribus glabris inflorescentiam versus puberulis; foliis late cordato-ovatis utrinque viridibus supra sparse adpresso-setulosis et in nerviis puberulis subtus glabris sed glanduloso-punctatis regulariter dentato-serratis, limbo 7.5–15 cm. longo 5–12 cm. lato apice caudato-acuminato; petiolo 4–14 cm. longo; inflorescentia racemosa 1.5–3 cm. vel ultra longa, rhachi puberula, verticellis 5–12-floris inter se denique 2–2.5 cm. disjunctis; pedicellis puberulis anthesi 7 mm. fructiferis 12 mm. longis; calyce anthesi 14 mm. fructifero 22 mm. longo glanduloso-punctato, in nervis cum pilis caducis moniliformibus pubescenti, lobis subulato-mucronatis deltoideis tubo anguste campanulato triplo brevioribus; corolla 5 cm. longa violacea fere vel omnino glabra, tubo aliquid ventricosus labiis paulo longiore; stylo barbato. — Wet banks, barranca below Trinidad Iron Works, Hidalgo, Mexico, alt. 1650 m., 22 August, 1904, *C. G. Pringle*, no. 8887 (type, in hb. Gray). Near-est related to *S. recurva* Benth., but differing in its dark stems, broader firmer leaves, less pubescent calyx, and essentially glabrous corolla.

Salvia (Cyaneae) *flaccidifolia* Fernald, n. sp., verisimiliter fruticosa; ramis gracilibus superne decussatim bifariam pilosis; foliis graciliter petiolatis; petiolis supra pilosis inferioribus limbum superantibus; laminis ovatis cordatis caudato-attenuatis tenuissimis 3.5–9 cm. longis crenato-serratis supra atroviridibus adpresse setulosis subtus pallide viridibus fere glabris in venis adpresse setulosis; racemis 6–8 cm. longis, verticellis 6–8 remotis 3–6-floris; bracteis ovatis aristatis caducis; pedicellis 2–5 mm. longis puberulis; calyce anthesi 5–6 mm. longis, labio superiore ovato aristato inferiore bilobo biaristato; corolla 2–2.3 cm. longa cyaneo-purpurea, tubo valde ventricosus, labio superiore recto 1 cm. longo, inferiore longiore pendulo valde dilatato. — Barranca below Trinidad Iron Works, Hidalgo, Mexico, 1906, *C. G. Pringle*, no. 10,298 (type, in hb. Gray). Nearly related to *S. recurva* Benth., which it resembles in its very thin long-petioled leaves, but with much smaller calyx and corolla.

Salvia (Tubiflorae) *simulans* Fernald, n. sp., caulibus glabris; ramis erectis brevibus; foliis ovatis abrupte acuminatis basi rotundatis vel rotundato-cuneatis regulariter dentato-serratis 0.5–1 dm. longis 3.2–6.5 cm. latis supra adpresse setulosis et resinoso-punctatis subtus glabris; petiolis paulo pilosis 4–8 cm. longis gracilibus; racemo principali 1.5 dm. longo; rhachi glanduloso-pulverula; verticellis 5–15-floris

demum 2 cm. distantibus; pedicellis gracilibus glanduloso-pruinosis 1.5 usque ad 7 mm. longis; calyce purpureo-tincto tubiformi anthesi 7–8 mm. fructifero 1 cm. longo, tubo basi valde costato pruinoso, faucibus paulo dilatatis levius costatis glabratis, labiis aristato-acuminatis 3–4 mm. longis inferiore bifido recto superiore sursum curvato; corolla rubro-purpurea 2.2–2.6 cm. longa, tubo et faucibus anguste cylindricis sursum curvatis 1.5–1.7 cm. longis 2–3 mm. diametro, labiis approximatis, galea dense pilosa labium inferius aequanti; stylo barbato. — Wet barranca below Trinidad Iron Works, Hidalgo, Mexico, alt. 1680 m., 22 August, 1904, *C. G. Pringle*, no. 8927 (type, in hb. Gray). Strongly suggesting *S. Martensii* Gal., which, however, has the ventricose corolla-tube of the *Cyaneae*. From that species, *S. simulans*, which has the cylindric corolla-tube of the *Tubiflorae*, is further distinguished by its rounded-cuneate leaf-bases, and especially by the elongate galea.

Castilleja Conzattii Fernald, n. sp., suffruticosa; caulibus simplicibus erectis glanduloso-puberulis; foliis linearibus vel lineari-lanceolatis 3–5-nerviis 2–7 cm. longis dense puberulis, inferioribus integris, superioribus pectinatis, laciniis linearibus patentibus; bracteis oblongis 1.5–2.5 cm. longis, summis coccineis trifidis, lobis lateralibus linearibus vel spatulatis, intermedio majore anguste obovato integro vel obsolete trilobo; pedicellis 1 mm. longis; calyce mediam tantum corollam paululo superante 1.5–1.8 cm. longo viridi et albo, antice et postice aequaliter fisso, lobis oblongis subtruncatis 5–6 mm. longis; corolla viridi et rubella 2.2–2.5 cm. longa, tubo 1.2–1.3 cm. longo, galea elongata, labii lobis obtusis 1 mm. longis. — Sta. Ines del Monte, Zimatlan, Oaxaca, Mexico, alt. 820 m., 8–9 December, 1905, *C. Conzatti*, no. 1360 (type, in hb. Gray). Nearest related, apparently, to the variable *C. angustifolia* (Nutt.) Don, of the northwestern United States, from which it differs chiefly in the broad middle lobe of the bracts.

Ruellia (Ophthalmacanthus) Pringlei Fernald, n. sp., fruticosa; ramis gracilibus flexuosis subteretibus glanduloso-villosis cinereis; foliis ovatis 3–10 cm. longis 1.5–4.3 cm. latis tenuibus utrinque mollior pubescentibus basi cuneatis apice longe attenuatis; petiolis gracilibus sublanatis 1.5–3.5 cm. longis; pedunculis 1.5–3 cm. longis cinereo-pubescentibus unifloris; bracteis lineari-spatulatis acutis 2.5–5 cm. longis; calyce 3–4 cm. longo, laciniis lineari-lanceolatis 2.3–3 cm. longis ciliatis; corolla alba 7–8 cm. longa anguste infundibuliformi valde exserta, limbi 5–6 cm. lati lobis breviter oblongis vel suborbicularibus retusis; capsula immatura angusta 2.5–3 cm. longa 7 mm. crassa glabra. — Hillsides, Balsas Station, Guerrero, Mexico, alt. 610 m., 27 September, 1905, *C. G. Pringle*, no. 10,071 (type, in hb. Gray).

Apparently nearest *R. rosea* (Nees) Hemsl., which is said, however, to have the obtuse leaves short-petioled, the stem angled, and the rose-colored corolla 2 inches long.

BIDENS ROSEA Sch. Bip., var. *aequisquama* Fernald, n. var., involucri squamis subaequalibus, eis seriei exterioris elongatis 5-8 mm. longis. — Thickets near Uruapan, Michoacan, Mexico, alt. 1525 m., 1 November, 1905, *C. G. Pringle*, no. 10,109 (type, in hb. Gray). Differing from *B. rosea* in the very elongate segments of the outer involucre, which in the original description of the species is said to be shorter than the inner, and which in herbarium specimens measures 2-4 mm. long.



Fernald, Merritt Lyndon. 1907. "Diagnoses of new Spermatophytes from Mexico." *Contributions from the Gray Herbarium of Harvard University* (34), 61–68. <https://doi.org/10.5962/p.335952>.

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