

# I. RECORDS PRELIMINARY TO A GENERAL TREATMENT OF THE EUPATORIEAE,—V.

BY B. L. ROBINSON.

IN the course of the past year the writer's attention to the *Eupatorium* tribe has been chiefly directed to the preparation of a keyed recension of the shrubby and arborescent species of the genera of *Eupatorium* and *Ophryosporus* for Mr. P. C. Standley's well known and very useful enumeration of the woody plants of Mexico. In the course of this work it has been necessary to reach at least provisional decisions regarding some of the early and obscure Mexican species, as well as to segregate certain inconsistent elements traditionally associated with broadly interpreted species like *Eupatorium calaminthaefolium* HBK.

The writer has also had the privilege of examining the entire material of the American *Eupatorieae* from the Botanical Museum of Copenhagen most kindly lent for study. This collection is exceptionally rich in the plants of southern Mexico, Costa Rica, portions of the West Indies, Venezuela, and Brazil, since it includes unusually complete sets of the valuable Liebmann, Oersted, Warming and Eggers series, as well as much West Indian and tropical American material of earlier date.

Another loan of *Eupatorieae determinandae* has been received from the Museum of Natural History in Paris, including highly interesting plants of Gaudichaud, d'Orbigny, Weddell, and Triana.

Further progress has been made on the identification of loans from the Royal Gardens at Kew, the University of Geneva, the New York Botanical Garden, the United States National Herbarium, the Missouri Botanical Garden, and the Field Museum of Natural History mentioned in previous papers of this series.

Prof. Hans Schinz, Director of the Botanical Garden and Museum at Zurich, has kindly supplied helpful specimens of the horticultural *Eupatoriums* cultivated at his establishment.

So far as diagnoses and notes have resulted from the study of these collections during the past year they are recorded below.

An extended and exceedingly interesting collection of *Eupatoriums*, obtained during Dr. Ekman's intensive exploration of Cuba, has been referred to the writer by Prof. I. Urban for identification, but arrived too late for the inclusion of its new species in the present paper. It is hoped that they may be put on record in the succeeding number of this series.



**PIQUERIA CUMINGII** Robinson, Proc. Am. Acad. xlii. 11 (1906). Further material of this little known species has been seen in a recent loan from the Paris Museum of Natural History. It consists of an unnumbered specimen collected at Cobija, Chile, by Gaudichaud in 1846 (Par., phot. Gr.). In habit and essential features it agrees closely with the type, but its leaves (sometimes 3-nerved) are as much as 8 mm. wide and the heads but 2-3-flowered.

**Ophryosporus petraeus**, comb. nov. *Eupatorium petraeum* Robinson, Proc. Am. Acad. xli. 275 (1905). From further study of the proper boundary between the genera *Eupatorium* and *Ophryosporus* it now seems clear that this and the following species are best referred to the latter genus. In both these species the summit of the connective is slightly expanded and thickened, but the anthers have no membranaceous appendage, a feature universal *Eupatorium*. Furthermore, the style-branches in these species are perceptibly knobbed at the tip, a trait characteristic of *Ophryosporus*. The occasional occurrence of one or two narrow and caducous pales on the outer portion of the very small disk has not been found a character of sufficient definiteness or constancy to be of use in the classification of this group. As to habit these species go quite as appropriately with *Ophryosporus* as with *Eupatorium*, for in the latter they approach only *E. polybotryum* DC. and *E. microcephalum* Gray, species which are not satisfactorily distinguishable from each other or from *Ophryosporus alternifolius* (DC.) Benth. & Hook. f. and which for similar reasons should be referred to *Ophryosporus* rather than *Eupatorium*.

**O. scabrellus** Robinson, comb. nov. *Eupatorium scabrellum* Robinson, Proc. Am. Acad. xxxv. 339 (1900).

**ALOMIA MYRIADENIA** (Sch.-Bip.) Bak. in Mart. Fl. Bras. vi. pt. 2, 192 (1876). To this well marked species belongs Glaziou's no. 15,154 (if one may judge from its representation in the Botanical Museum of Copenhagen), a number listed by Glaziou, Bull. Soc. Bot. Fr. lvi. Mém. 3, 391 (1909), as *Eupatorium betonicaeforme* Bak. Re-examination of several specimens of *Alomia myriadenia* shows that its achenes, which are black and shining, are consistently attached to the receptacle at their slightly incurved base by an unusually large yellowish-white somewhat hook-shaped, reniform or slightly sigmoid callosity 0.6-0.7 mm. in length. Baker, l. c., describes this species as suffruticose but a specimen collected on the Serra da Piedade by Reinhardt (Copenh.) shows it flowering and fruiting at a height of 3 dm. with a single erect essentially herbaceous stem and a root of the annual type. Other specimens show that the species attains a greater stature, but none thus far seen by the writer shows lignescence.



*Eupatorium angustissimum*, var. *goyazense* Glaziou, Bull. Soc. Bot. Fr. lvi. Mém. 3, p. 387 (1909), without diagnosis. In mentioning this undescribed variety in the list of his plants collected in central Brazil Glaziou indicates that it came from Vargem de Chico Costa in Goyaz, that it was based on his no. 21,615, and that it had been deposited in the herbaria of Paris, Berlin and Kew. Interpreted from the Kew isotype, kindly lent to the writer for examination, Glaziou's variety proves to have 8-10-ribbed achenes, which are rather densely short-villous. It is clear that these are not the achenes of *Eupatorium angustissimum* Spreng., nor indeed of the genus *Eupatorium* at all. On the other hand the specimen corresponds in all important characters and nearly all minor details with *BRICKELLIA BRASILIENSIS* (Spreng.) Robinson, var. *PERNAMBUCENSIS* Robinson, from which it appears to differ only in having somewhat shorter and uniformly entire leaves.

**E. (§ Subimbricata) Bakerianum**, nom. nov. *E. cinereum* Bak. Journ. Bot. xx. 226 (1882), not Linnaeus f., Raf., nor Griseb. The specific name used by Baker having homonyms of earlier date, at least one of which is still by some writers maintained as valid, must of course give place to some more distinctive designation. In selecting such a name it is a pleasure to commemorate in this species the notable work of Mr. J. G. Baker whose treatment of *Eupatorium* in the *Flora Brasiliensis* forms probably the most important single contribution to the knowledge of the genus since the publication of the fifth volume of De Candolle's *Prodromus* in 1836.

**E. calophyllum** (Greene), comb. nov. *Kyrstenia calophylla* Greene, *Lezfl.* i. 11 (1903). This plant of Coahuila, San Luis Potosi and Hidalgo has long passed as a mere form of *E. calaminthaefolium* HBK., but in the light of the material of both now available it appears probable that they are separable species rarely if at all intergrading. In *E. calaminthaefolium* the leaves are membranaceous or nearly so, and obscurely reticulated; in *E. calophyllum* they are coriaceous or firmly fleshy and curiously scrobiculate. In both species there is glandular punctation on the leaves but these glands tend to be differently arranged. In *E. calaminthaefolium* they are mostly found in the ultimate areolae of the netted veinlets, while in *E. calophyllum* the glands are nearly all along the (often elevated and slightly scored) veinlets. While in inflorescence and floral details, these species are much alike, such distinctness of foliage combined with difference of range, makes it pretty certain that they are best treated as distinct species.



**E. (§ EXIMBRICATA) ESPINOSARUM**, var. **doratophyllum**, nom. nov., formam typicam multis simulans differt foliis lanceolatis vel ovato-lanceolatis 2.5–3 cm. longis 9–13 mm. latis nec rite ovatis ut apud formam vulgarem.—*E. Robinsonianum* Greene, *Erythea*, i. 150 (1893).—MEXICO: cañon walls and ledges near Lake Chapala, Jalisco, 18 Nov. 1892, *Pringle*, no. 4353 (TYPE, Gr.); Tequixquiac, 30 Aug. 1903, *Rose & Painter*, no. 6625 (Gr.). This variety possesses the glutinous quality of the typical form, though perhaps in somewhat slighter degree.

**E. (§ Eximbricata) etlense** Robinson, spec. nov., fruticosum graciliter ramosum; ramis subteretibus brunnescente griseis; ramulis costulatis crispe puberulis vel granulatis; foliis oppositis ovatis obtusis vel breviter acuminatis crenatis vel crenato-serratis basi rotundatis vel subcordatis saepe obliquis 2.5–6 cm. longis 1.7–4.2 cm. latis membranaceis subconcoloribus vel distincte subtus pallidioribus supra parcissime pubentibus subtus villosis a basi 3–5-nervatis; venulis minute reticulatis pulcherrime translucentibus; venulis in areolis inclusis libris; petiolo gracili 7–32 mm. longo; corymbis (immaturis) subdensis valde convexis ca. 4 cm. diametro griseo-pubescentibus; capitulis pedicellatis 22–23-floris 8 mm. longis; involucris squamis ca. 20 lanceolato-linearibus acutis subaequalibus (1–3 extimis exceptis) ca. 4 mm. longis dorso griseo-pubescentibus; corollis albis glabris 4.5 mm. longis gradatim a tubo gracili in fauces paullo ampliatis; dentibus limbi patentibus deltoideis ca. 0.6 mm. longis; achaeniis 2 mm. longis obscure puberulis vel glabris; pappi setis ca. 20 albis capillaribus corolla distincte brevioribus.—MEXICO: Las Sedas, District of Etla, Oaxaca, alt. 1900 m., 20 Oct. 1907, *Prof. C. Conzatti*, no. 2071–2072 (TYPE, U. S. Nat. Herb., phot. and fragm. Gr.). A slender shrub of rather characteristic habit and with leaves exhibiting in transmitted light a close and striking pellucid reticulation in which there are free veintips in the areolae.

**E. (§ Eximbricata) eucosmoides**, spec. nov., fruticosum vel herbaceum et perenne (basi ignota) inflorescentia excepta glaberrimum; caule (vel ramo) tereti rubro-brunneo arcuato ca. 3 mm. diametro albo-meduloso; internodiis 3–4 cm. longis; foliis oppositis petiolatis anguste ovatis acuminatis obscure cuspidato-denticulatis basi acutis vel subacutis supra basin pinnatim ca. 7-nervatis firmiter membranaceis utrinque glaberrimis minute reticulatis (venis utrinque subimpressis) infra paullo pallidioribus 6–7 cm. longis 3–4 cm. latis; petiolo 9–15 mm. longo; panicula terminali breviter pyramidata ca. 1 dm. alta et 13 cm. crassa; paniculae ramulis obscure lanulosis; bracteolis



subulatis; inflorescentiae partialibus corymbiformibus rotundatis densiusculis; capitulis ca. 30-floris ca. 8 mm. longis et 9 mm. diametro; involucri squamis linearibus subacutis vix imbricatis subglabris firmiusculis; corollis 3.5–4 mm. longis subcylindratis sine faucibus distinctis; dentibus limbi ca. 0.4 mm. longis; achaeniis ca. 2 mm. longis paullo hispidulis; pappi setis ca. 20 capillaribus vix scabratis ca. 3 mm. longis.—PERU: *Mathews*, no. 1123 (Par., phot. and small fragm. Gr.). This sheet now in the Museum of Natural History at Paris is one of a collection of plants secured in the interior of Peru by Alexander Mathews and by him given or sold to Gaudichaud while, as botanist of the Bonite, he visited Peru in 1836–37. The species bears some habital similarity to the Bolivian *E. eucosmum* Robinson, but that has sharply toothed leaves, shorter, broader, phyllaries and fewer-flowered heads.

**E. (§ *Eximbricata*) hebes**, spec. nov., fruticosum ut videtur erectum (basi ignota) oppositirameum saltem post exsiccationem sordide vel fulvescente brunnescens; foliis oppositis deltoideo-ovatis vel rite ovatis subintegris apice et angulis lateralibus obtusissimis rotundatis supra rugulosis obscure puberulis subtus pallidioribus fulvo-brunneis minute reticulatis paullo supra basin 3-nervatis in venulis hirtellis et cum glandulis ornatis 2–3.2 cm. longis 1.5–3 cm. latis subchartaceis; petiolo foliorum caulinum maturorum ca. 12 mm. longo glandulari-hispido; corymbis terminalibus planiusculis ca. 8 cm. diametro; capitulis maturitate 8–9 mm. longis ca. 13-floris pedicellatis; involucri squamis lanceolatis acutis ca. 4.5 mm. longis vix imbricatis dorso puberulo-granulatis brunnescentibus; corollis ca. 5 mm. longis glabris; tubo proprio gracili ca. 1 mm. longo; faucibus gradatim ampliatis 3 mm. longis; dentibus limbi anguste ovatis ca. 0.7 mm. longis; achaeniis nigris deorsum attenuatis ca. 2.5 mm. longis sursum griseo-hispidulis; pappi setis ca. 30 corollam subaequantibus sordide albis capillaribus barbellato-scabratis.—MEXICO: “Meoatlan, S. Andres,” October, 1842, *Liebmann*, no. 75 in chief part (TYPE, Bot. Mus. Copenhagen, phot. and fragm. Gr.).

By Schultz-Bipontinus this was regarded as a variety of *E. calaminthaefolium* HBK., but it differs from that species in many respects, as for instance in its much larger flatter inflorescences, and subentire leaves of firmer texture without glandular punctation.

Two varieties of this plant were associated by Liebmann under his no. 75. These may be distinguished as follows:

Var. **typicum**, caule ramisque subteretibus; caule et ramis et inflorescentia minute granuloso-puberulis et cum pilis articulatis glan-



dulari-capitulatis patentibus dense vestitis.—Liebmann's no. 75 in greater part.

Var. **rasum**, var. nov., caule (juventate) sulcato-angulato; caule et inflorescentia minutissime pulverulo-puberulis sine pilis glandularibus patentibus.—Liebmann's no. 75 in small part.

These varieties correspond in other respects very precisely and their differences are of a nature frequently exhibited by plants of the same species. Although intergradation between them has yet to be demonstrated it can be confidently anticipated.

**E. (§ Eximbricata) hidalgense**, spec. nov., fruticosum 9–15 dm. altum primo aspectu glabrum sed in novellis minute crispeque purpureo-puberulum copiose ramosum saepe furcatum (axibus repetite abortivis et ab ramis superatis); caulibus ramisque fusco-griseis teretibus; foliis oppositis rhombeo-oblongis apice angustatis sed obtusis vel rotundatis basi acutis subintegris vel integerrimis minutissime puberulis supra viridibus subtus pallidioribus et minute punctatis supra basin 3-nervatis, 1.5–3 cm. longis 1–1.5 cm. latis; petiolo 2–5 mm. longo; corymbis numerosis planiusculis 3–6 cm. latis; capitulis pedicellatis 8–13-floris 8–10 mm. altis ca. 7 mm. diametro; involucri squamis linearibus ad apicem obtusum angustatis 4–5 mm. longis saepe purpurascentibus ciliolatis glandulari-granulatis; corollis albis glabris; tubo proprio 1.5 mm. longo; faucibus cylindratis 3–4 mm. longis; dentibus limbi ovato-oblongis acutis 0.8 mm. longis; achaeniis nigris ca. 3 mm. longis gracilibus cum glandulis globosis sessilibus numerosis ornatis; pappi setis ca. 40 inaequalibus saepissime roseis.—MEXICO: Sierra de Pachuca, alt. 2900 m., 22 Aug. 1902, *Pringle*, no. 9903 (TYPE, Gr., distributed as *E. calaminthaefolium*), and 8 Sep. 1899, *Pringle*, no. 7958 (Gr.); on rocky soil in mountain woods, El Chico near Pachuca, Sep. 1905, *Purpus*, no. 1490 (Gr., distributed as *E. erythropappum* and mixed with *E. lucidum*); Zimapan, *Coulter*, no. 269 (Gr., mixed with a *Stevia*); between Pachuca and Real del Monte, *Rose & Painter*, no. 6671 (Gr., U. S.).

This species has leaves either entire or undulately 3–5-toothed toward the apex. In shape they differ much from those of *E. calaminthaefolium* HBK. and in nervation and much smaller size are readily distinguishable from those of *E. erythropappum* Robinson, a plant which is probably only a form of the variable *E. ligustrinum* DC.

**E. (§ Eximbricata) irrasum**, comb. nov., fruticosum valde ramosum; ramis teretibus atrogriseis glabratis; ramulis crispe puberulis vel tomentellis; foliis parvis oppositis petiolatis ovatis vel suborbicularibus obtusissimis integris vel paucicrenatis basi rotundatis supra



viridibus breviter pubescentibus subtus griseo-tomentosis 7–15 mm. longis 5–16 mm. latis; corymbis numerosis in ramulis terminalibus plerisque 3–9-capitulatis valde convexis; capitulis ca. 10–12-floris ca. 11 mm. altis; involucris squamis ca. 11 lanceolato-linearibus acutis 5.5 mm. longis dorso griseo-pubescentibus purpurascentibus; corollis purpureis glabris ad 5.5 mm. longis; tubo proprio ca. 2 mm. longo; faucibus distincte ampliatis subcylindratis 3.5 mm. longis; dentibus limbi anguste ovatis acutis 0.7 mm. longis; achaeniis gracilibus 3.4–3.8 mm. longis argute pentagonis hispidis; pappi setis ca. 35 capillaribus scabratis corollam subaequantibus vel etiam paullo superantibus.—*E. calaminthaefolium*, var. *irrasum* Robinson, Contr. Gray Herb. lxviii. 11 (1923).—MEXICO: on the Cordillera in Oaxaca, alt. 2135 m., Galeotti, no. 2022 (TYPE, Par., phot. Gr.); barren hills about Esperanza, Puebla, alt. 2660 m., Pittier, no. 435 (U.S.); from same locality, Purpus, no. 2457 (Gr., U.S.).

Further study of this and the nearly related Eupatoriums of Mexico makes it clear that they are better treated as a group of independent species of close affinities rather than as varieties or forms of *E. calaminthaefolium* as they have long been referred in herbaria. They are differentiated and keyed in another paper now in press.

*E. LIGUSTRINUM* DC. Prod. v. 181 (1836). *E. micranthum* Lag. as doubtfully interpreted by Lessing, Linnaea, v. 138 (1830), but surely not *E. micranthum* Lag. Gen. et Spec. 25 (1816), which is stated to have had many-flowered heads, subimbricate involucre, and sky-blue corollas, and was presumably an *Ageratum* of the *A. corymbosum* group. *E. semialatum* Benth. Pl. Hartw. 76 (1840). *E. myriadenium* Schauer, Linnaea, xix. 721 (1847). *E. Weinmannianum* Regel & Koern. Ind. Sem. Hort. Petrop. 1857, p. 41 (1857). *E. biceps* Klotzsch ex Vatke, Bot. Zeit. xxx. 719 (1872), where many horticultural synonyms of this species are indicated. *E. popocatepetlense* "Schl." ex Hemsl. Biol. Cent.-Am. Bot. ii. 99 (1881), a binomial somewhat doubtfully ascribed to Schlechtendal by Hemsley but probably originating in a very similar though not precisely identical name used in herbaria but never published by Schultz-Bipontinus.—This species, extensively grown as a greenhouse plant, runs in cultivation into several horticultural forms differing in compactness of habit as well as in the texture, size, and contour of the leaves. Botanical varieties do not appear to have been described, but the following, occurring in nature and being readily distinguishable, may well be put on record.

Var. **typicum**, in inflorescentia breviter puberulum non villiferum; foliis subtus obscure puberulis penniveniis.



Var. **villiferum**, var. nov., in ramulis et petiolis et inflorescentia tum villiferum tum puberulum; foliis utrinque pubescentibus pinnatim 3-5-nervatis potius quam penniveniis.—MEXICO: on mountains near Carneros Pass, Coahuila, alt. 2600 m., 15 Sept., 1889, *Pringle*, no. 2465 (TYPE, in Gray Herb.), distributed as *E. popocatepetlense*; region of San Luis Potosi, 1878, *Parry & Palmer*, nos. 335 (Gr.), distributed as *E. glaucum* Sch.-Bip., and 346 (Gr.).

**E. (§ Praxelis) odontodactylum**, spec. nov. *E. capillare*, var. *Riedelii* (Sch.-Bip.) Bak. in Mart. Fl. Bras. vi. pt. 2, 341 (1876). *Praxelis Riedelii* Sch.-Bip. ex Bak. l. c., not *Eupatorium Riedelii* (Sch.-Bip.) Bak. In his studies of the Brazilian Eupatoriums the writer has seen many specimens of the delicate annual *E. capillare* (DC.) Bak. It has been found quite uniform in possessing entire and very narrow leaf-segments not 0.5 mm. in width and very obscurely if at all punctate; the heads are subcylindric and nearly always nodding on their capillary pedicels. From that plant the one called var. *Riedelii* by Baker seems to differ so clearly and constantly as to merit recognition as a separate species. It is a somewhat stouter plant with shorter internodes. Its leaf-segments, especially the middle ones, are distinctly toothed. They are lance-linear instead of filiform and become sometimes as much as 2 mm. wide. The heads are more campanulate in form and are in general erect. Furthermore the leaves are distinctly punctate. The name *Riedelii* employed by Schultz for this plant under *Praxelis* being already occupied in *Eupatorium*, it becomes needful to give the species a new name. Riedel's no. 1405 collected "in saxosis humidis prope Ypanema," Jan. 1826 (Gr.) may be taken as the type.

**E. (§ Subimbricata) Ortegae**, spec. nov., fruticosum oculo nudo laeve; caulibus ramisque teretibus gracilibus purpurascenti-griseis; internodiis 2.5-7 cm. longis; foliis oppositis graciliter petiolatis deltoideo-ovatis acuminatis basi abrupte angustatis vel subtruncatis lateraliter argute paucidentatis chartaceo-coriaceis utrinque laete viridibus et cum venulis prominentibus reticulatis ima a basi 3-nervatis supra glaberrimis subtus obscure in nervis granulato-puberulis 3.5-8.5 cm. longis 2.5-5 cm. latis; petiolo 1.5-3 cm. longo supra canaliculato; panicula terminali oppositifolia oboidea 5-14 cm. alta et crassa; capitulis ca. 28-floris ca. 7 mm. longis et 6 mm. diametro ad apices paniculae ramorum in corymbos valde convexos aggregatis; pedicellis cum bracteolis lineari-subulatis attenuatis ornatis; involucri squamis ca. 18 lanceolato-linearibus attenuatis subglabris dorso 1-sulcatis; corollis albis glabris; tubo sine faucibus



distinctis ca. 3 mm. longo; dentibus limbi anguste deltoideis ca. 0.7 mm. longis; achaeniis atrobrunneis glabris 2.8 mm. longis; pappi setis ca. 20–25 albis corollam subaequantibus.—MEXICO: La Bajada, Tamazula, Durango, alt. 300–600 m., Nov. 1921, *J. G. Ortega*, no. 4449 (TYPE, Gr. U.S.).

This neat and attractive shrub is most nearly related to *E. Haenkeanum* DC. but differs in its firmer brighter green strongly reticulated leaves and much narrower and attenuate phyllaries.

*E. PACHYPODUM* Robinson, Proc. Am. Acad. xxxvi. 481 (1901). This little known and presumably very local species was described from material collected by Pringle, 26 May, 1891, on rocky hills near Guadalajara. In this the leaves were subsessile and very small, not above 1.3–1.8 cm. in length, being much exceeded by the internodes. It has recently been possible for the author to re-examine the species in a specimen lent him from the Botanical Museum at Copenhagen. This was collected by Mr. Pringle also near Guadalajara but later in the season, being gathered 27 Oct., 1903. It shows leaves as much as 3 cm. in diameter, mostly equalling or somewhat exceeding the internodes, finely and prominently reticulated and of firm texture, their petioles being 3–3.5 mm. long.

*E. (§ Eximbricata) porriginosum*, spec. nov., copiose et fastigiatim ramosum fruticosum 9–15 dm. altum; caule tereti tardius glabrato a cortice grisea tecto; ramis ramulisque crispe puberulis erectis vel adscendentibus foliosis; foliis oppositis petiolatis parvis ovalibus vel integerrimis vel utroque latere 1–3-serrato-dentatis apice basique obtusis vel rotundatis membranaceis subtus paullo pallidioribus utrinque sparce puberulis et punctatis saepissime in pagina superiori obscure albido-maculatis quasi lepidotis 1–2 cm. longis 7–15 mm. latis; corymbis numerosis paucicapitulatis umbelliformibus; pedicellis 1–1.8 cm. longis saepe capitula longitudine superantibus; capitulis ca. 15-floris 10–12 mm. longis; involucris squamis anguste lanceolatis quam flosculi dimidio brevioribus acutis dorso crispe puberulis pallide viridibus saepe purpureo-tinctis; corollis vel albis vel roseo-purpureis glabris; tubo proprio gracili fauces cylindratas ampliatas subaequante; achaeniis brunneis dense breviterque hispidulis; pappi setis saepe roseis corollam subaequantibus.—MEXICO: bluffs of barranca above Santa Fe, Federal District, alt. 2440 m., *Pringle*, no. 6552; San Angel near Mexico, *Bourgeau*, no. 170 (Gr., Univ. Geneva); dry mesas near Metepec Station, Hidalgo, 22 June, 1904, *Pringle*, no. 13,047 (TYPE, in Gray Herb.); Cerro Verde, Oaxaca, *Purpus*, no. 3136 (Gr.). All these specimens have been distributed as *E. cala-*



*minthaefolium* HBK. They are manifestly close to that species in their affinities but differ in several traits. In *E. calaminthaefolium*, as shown by the original plate and by a photograph of the type, the leaves are of a broader more suborbicular form, in fact often broader than long. They tend to be somewhat larger and more deeply and crenately toothed, and of slightly more chartaceous texture. They lack the characteristic though somewhat faint maculation on the upper surface. There are perceptible differences also in the inflorescence and it seems probable that the plants, though in many respects similar, are distinct species. This group of low shrubs is keyed and described in another paper now in press.

**E. (§ Eximbricata) rhodopodum**, spec. nov., fruticosum verisimiliter erectum primo aspectu glabrum sed superne parce patenterque pilosum, pilis articulatis; caule tereti pallide brunneo; ramis oppositis adscendentibus atropurpureis; foliis oppositis brevissime petiolatis late ovatis vel ovato-oblongis acutis vel obtusiusculis aut integris aut undulatis aut in latere uno vel utroque 1-5-dentatis glaberrimis vel cum ciliis raris ornatis concoloribus paullo supra basin 3-nervatis impunctatis 2-3 cm. longis 1.3-2 cm. latis coriaceis; petiolo 1-2 mm. longo crasso purpureo-rubro; corymbis terminalibus planiusculis vel convexis 3-6 cm. latis fastigiatis; pedicellis 1-1.5 cm. longis rectiusculis hirtellis; capitulis ca. 25-floris, ca. 9 mm. longis et crassis; involucri squamis ca. 18 lanceolatis acutis glabris viridibus; disco planiusculo nudo; corollis albis vel paullo roseis glabris; tubo proprio ca. 1 mm. longo; faucibus subcylindratis distincte ampliatis 3.5 mm. longis; dentibus limbi ovatis subacutis 0.7 mm. longis; achaeniis nigris deorsum descrescentibus 2-2.5 mm. longis; pappi setis ca. 30 pulcherrime roseis ca. 3.5 mm. longis.—MEXICO: Minas de San Rafael, San Luis Potosi, Nov. 1910, Dr. C. A. Purpus, nos. 4792 (TYPE, in Gray Herb.), distributed as *E. popocatepetlense*; and 4796 (U.S.), distributed as *E. calaminthaefolium*.

From both the species to which this plant has been referred it can be readily distinguished by its scarcely petioled leaves. It is much more nearly related to *E. glaucum* Sch.-Bip. but that has much smaller mostly 1-nerved leaves of more elliptic form and about 14-flowered heads.

**E. STACHYOPHYLLUM** Spreng. Syst. iii. 420 (1826). In a loan of undetermined *Eupatorieae* recently received from the Paris Museum of Natural History for study and identification is a specimen of this species bearing the following data: Bolivia: Prov. Santa Cruz, Nov. 1845, H. Alg. Weddell, no. 3561. This is, it is believed, the first re-



corded occurrence of *E. stachyophyllum* in Bolivia. The species, while constant in essentials, is notably variable in leaf-breadth. The Bolivian plant here cited has broad elliptic-ovate leaves, of which the larger are 4.8–5.3 cm. long and 3–4 cm. wide.

**E. (§ *Eximbricata*) *subintegrum*** (Greene), comb. nov. *E. Espinosarum*, var. *subintegrifolium* Robinson, Proc. Am. Acad. xxvi. 165 (1891). *Kyrstenia subintegra* Greene, Leaf. i. 10 (1903). While closely related to *E. Espinosarum* Gray, this vernicose Mexican shrub, now known from several consistent collections, is found to differ in having longer heads fully 1 cm. high, more attenuate and relatively narrower phyllaries, as well as subentire and more gradually acuminate leaves. It is believed that Greene's treatment of it as an independent species is justifiable. However, *Kyrstenia* to which he referred this plant is merely a rather weak section of *Eupatorium*. The needed combination under *Eupatorium* is therefore here recorded. It will be noted that Greene is transferring *E. Espinosarum*, var. *subintegrifolium* to *Kyrstenia* changed the name to *subintegra*. This, being accordingly the first designation for the plant in the specific category, must be maintained by those who treat it as an independent species even though there is an earlier varietal name.

**E. (§ *Eximbricata*) *thysanolepis***, spec. nov., suffrutescens brunneo-tomentosum 3–5 dm. altum in parte superiori copiose ramosum; ramis patentem adscendentibus foliosis; caule tereti dense breviterque brunneo-tomentoso ad 5 mm. diametro; foliis oppositis vel ternatis (supremis aliquando subalternis) petiolatis ovatis subacutis vel saepius obtusis undulatis vel leviter serratis (dentibus paucis 0.2–0.8 mm. altis inter se 4–6 mm. distantibus) basi integris obtusis vel rotundatis firmiter membranaceis supra puberulis vel pulverulentis nigrescentibus subtus brunneo-tomentosis fere a basi 3-nervatis 1.5–5.5 cm. longis 1–4 cm. latis; petiolo dense tomentoso 3–10 mm. longo; corymbo terminali basi folioso composito; capitulis 50–60-floris ca. 15 mm. altis et crassis; involucri squamis ca. 25 subaequilongis oblongis vel lanceolato-linearibus dorso brunneo-pubescentibus apicem versus in margine laceratis et vel acutiusculis vel in appendicem paullo dilatatis et obtusis 5–8 mm. longis; corollis albidis (Glaziov) glabris ca. 6 mm. longis gradatim a basi ad limbum ampliatis sine faucibus distinctis; achaeniis gracilibus saepius curvatis minutissime granulatis ca. 3 mm. longis; pappi setis ca. 25 sordide albidis ca. 4 mm. longis.—BRAZIL: Itacolumy near Ouro Preto, Minas Geraes, Dec. to Jan., Glaziov, no. 8135 (TYPE, in Bot. Mus. Copenhagen, phot. and small fragm. Gr.); also nos. 15,152 and 20,369 both in Bot. Mus. Copenhagen; also Serra da Stabira do Campo, Lund (Copenh.).



This is the plant which Baker took for *E. hebecladum* DC. and his description in the Flora Brasiliensis clearly relates to it and not at all to the De Candollean type. The latter, photographed at Geneva by the writer in 1905, is quite a different plant with relatively narrower leaves, which, as originally described by De Candolle, are acuminate at apex, truncate at base, and coarsely many-toothed. The inflorescence is spherical and raised distinctly above the leaves. Though these plants possess some points of similarity their differences are of a pronounced nature and they are certainly distinct species.

**E. (§ Eximbricata) ymalense**, spec. nov., fruticosum vel arborescens; caule tereti ad 1.5 cm. vel ultra crasso; cortice pallide griseo aetate suberoso firmo longitudinaliter rugoso; ramis ascendentibus patentibus juventute flavido-brunneis costulatis pubescentibus; foliis oppositis petiolatis ovato-oblongis acuminatis primo aspectu integerimis sed remote obscurissime cuspidato-denticulatis utrinque parce pubescentibus vix subtus pallidioribus 7–11 cm. longis 3–6 cm. latis membranaceis 3-nervatis; petiolo gracili 7–9 mm. longo; corymbis plurimis valde convexis in paniculam laxiusculam elongatam vel ampliata foliaceo-bracteata dispositis; capitulis ca. 13-floris, 6–7 mm. altis graciliter pedicellatis saepe nutantibus; involucri squamis ca. 14 subaequalibus linearibus caudato-attenuatis; corollis subtubulatis 4–4.5 mm. longis albescentibus glabris limbum versus granulatis; antheris apice distincte appendiculatis; achaeniis atrogriseis sublaevibus cum costis pallidioribus; pappi setis ca. 40 capillaribus flavescente albidis vix scabratis corollas subaequantibus.—*E. albicaule*, var. *laxius* Robinson, Proc. Am. Acad. xxxv. 330 (1900).—MEXICO: Ymala, Sinaloa, 16–25 Aug., 1891, Dr. Edward Palmer no. 1474 (TYPE, Gray Herb.; ISOTYPE, Mus. Bot. Copenhagen). The membranaceous rather than coriaceous leaves of this plant as well as the attenuate involucreal scales show differences from *E. albicaule* Sch.-Bip. which seem amply to warrant its separation as a distinct species.

**Kanimia goyazensis**, spec. nov., herbacea virgata ubique breviter crispeque pubescens; radice fibrosa; caule virgato erecto vel brevissime imo ad basin subdecumbenti dense folioso ca. 3 dm. alto, internodiis plerisque vix 1 cm. longis; foliis numerosis ascendentibus imbricatis oppositis vel suboppositis subsessilibus lanceolato-oblongis integris vel apicem acutum vel obtusum vel etiam rotundatum versus obscure paucidentatis basi cuneatis penniveniis sed paullo supra basin obscure 3–5(–7)-nervatis utrinque breviter pubescentibus subtus prominenter reticulato-venosis 1.5–4 cm. longis 5–14 mm. latis; petiolo vix 2 mm. longo; inflorescentia juventute ovoidea maturitate



subcorymbosa et planiuscula ca. 8 cm. diametro basi foliaceo-bracteata; capitulis glomeratis sessilibus 4-floris 1 cm. vel ultra longitudine; bracteola lanceolato-lineari attenuata ca. 6 mm. longa ad capitulum arcte approximata; involucri squamis obovato-oblongis acutis ca. 8–9 mm. longis 2–2.6 mm. latis dorso tomentellis ca. 5-nervatis; corolla (immatura) ca. 6 mm. longa; tubo proprio gracili ca. 2 mm. longo; faucibus modice ampliatis ca. 1.8 mm. longis; dentibus limbi oblongis ca. 2.2 mm. longis; achaeniis (immaturis) breviter griseo-villosis 8–10-costatis 3.5 mm. longis 1.5 mm. diametro; pappi setis ca. 115 flavido-albidis ca. 7 mm. longis obscure scabratis.—*Eupatorium stachyophyllum* Glaziou, Bull. Soc. Bot. Fr. lvi. Mém. 3, p. 388, in part, not Spreng.—BRAZIL: between As Bracas and Os Ciganos, Goyaz, Glaziou, no. 21,635 (TYPE, K., phot. and fragm. Gr.). A well marked species with very leafy stems unbranched up to the inflorescence, sessile leaves strongly reticulated beneath, and rather large (though still immature) heads. *Eupatorium stachyophyllum* Spreng., under which name this plant was listed, is of course very different, with smaller heads, pluriseriate involucre and 5-angled achenes.

## II. THE OENOTHERAS OF NORTHWESTERN SOUTH AMERICA.

BY P. A. MUNZ AND I. M. JOHNSTON.

THE present paper is concerned with the Oenotheras of Bolivia, Peru, Ecuador, Colombia and Venezuela. The principal portion of the work upon it was done at the Gray Herbarium. Through the courtesy of Dr. N. L. Britton, Dr. W. R. Maxon and Mr. J. F. Macbride, we were allowed to examine, in addition to the available specimens in the Gray Herbarium (G), loans of material from the New York Botanical Garden (NY), United States National Herbarium (US), and the Field Museum of Natural History (FM). Subsequently the senior author visited, and studied the Oenotheras in, the herbaria at Yale University (Y), Philadelphia Academy (Ph), and Missouri Botanical Garden (Mo). Consequently the greater portion of the pertinent material available in the United States has been reviewed in the preparation of this synopsis. No pretense, however, is made to finality in the present treatment. Not until much more material is available from the area, and until the baffling complexities of the Argentine and Chilian species are understood can a satisfactory account of the northern Andean species be written.





Robinson, Benjamin Lincoln. 1925. "Records preliminary to a general treatment of the Eupatorieae,--V." *Contributions from the Gray Herbarium of Harvard University* (75), 3–15. <https://doi.org/10.5962/p.336087>.

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