

CONTRIBUTIONS FROM THE GRAY HERBARIUM OF HARVARD
UNIVERSITY.—NEW SERIES, No. LV.

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Presented May 8, 1918.

Received June 18, 1918.

I. DIAGNOSES AND NOTES RELATING TO TROPICAL
AMERICAN EUPATORIEAE.

DURING the past year, in the course of further work toward a comprehensive treatment of the *Eupatorium* tribe, the following plants have been encountered, which appear to need description as novelties, readjustment of rank, or further record as to standing or synonymy.

Several types of new species and varieties here proposed are hitherto unclassified specimens (notably those of Triana, of Lobb, and of Kalbreyer) kindly lent to the writer some time ago from the Royal Gardens at Kew for investigation as opportunity permitted. These are indicated by the abbreviation (K.). For the privilege of examining and publishing upon others the writer is similarly indebted to the botanists of the New York Botanical Garden (N. Y.), the United States National Herbarium (U. S.), Missouri Botanical Garden (Mo.), Field Museum (Field Mus.), and University of California (Calif.). Plants in the Gray Herbarium are indicated by (Gr.). During the preparation of this paper much aid has been derived from photographs which the writer was permitted to take of types in European herbaria during his journeys in 1900, 1905, and 1910. In some cases fragments of types or authenticated specimens have been supplied to the Gray Herbarium in return for similar bits from types in this or other groups. Occasionally tracings or sketches have also been made. The nature of such reference material is briefly indicated by abbreviations which will be self-explanatory (phot., fragm., trac., sk., &c.).

The writer is specially indebted to Drs. H. H. Rusby & F. W. Pennell for the privilege of studying the Eupatoriums of their recent and extensive collection from Colombia. Dr. Rusby has also permitted the inclusion here of his *E. Squiresii*, a hitherto unpublished novelty discovered on an earlier expedition to Venezuela. Prof. N. L. Britton has aided the writer by the loan of valuable material and by information, from time to time as solicited, regarding specimens in

the extensive herbarium of the New York Botanical Garden. He has furthermore brought to the attention of the writer a well marked and highly interesting novelty from Jamaica, *E. hammatocladum*, and has consented to join in its publication. Mr. W. R. Maxon of the United States National Museum has sent to the Gray Herbarium for study many *Eupatorieae* collected by himself in Panama, by Prof. H. Pittier in Costa Rica, Panama, Colombia, and Venezuela, and by Bros. Apollinaire & Arthur in the neighborhood of Bogotá. Mr. T. S. Brandegee has sent many *Eupatoriums* collected by Dr. C. A. Purpus, chiefly from Vera Cruz and vicinity. Prof. C. F. Millspaugh of the Field Museum has brought to the writer's attention and lent for study a small but interesting collection made by Dr. Arthur Schott in Colombia just south of the Panama boundary. Miss Mary A. Day, librarian of the Gray Herbarium, has assisted in the bibliography and proof-reading, and in tracing many minor geographic localities of which the correct placing has involved much discriminating search in maps, atlases, and works of travel of very different periods. Mr. Percy Wilson has most kindly contributed a detailed transcription of the field data accompanying the *Eupatoriums* and *Mikanias* of the H. H. Smith collection from the region of Santa Marta. To all these persons the writer wishes here to express his thanks and cordial appreciation of their valued aid.

Eupatorium* (§ *Eximbricata*) *Apollinairei, spec. nov., ut videtur herbaceum vel mollissime lignescens sordideque glanduloso-tomentosum; caule tereti medullosa valde flexuoso fortasse plus minusve scandente; ramis oppositis patentibus; foliis oppositis late ovatis obtuse acuminatis crenatis basi sinu angusto profundo cordatis a basi 5-9-nervatis supra subglabris subtus pallidioribus praecipue in nervis venisque glanduloso-tomentosis 7-13 cm. longis aequilatis; petiolis subteretibus densissime glanduloso-tomentosis 3.5-7 cm. longis; corymbis terminalibus planiusculis pluricapitulatis; capitulis 7 mm. altis ca. 58-floris graciliter pedicellatis; involucri campanulati squamis ca. 24 subaequalibus lineari-lanceolatis longissime attenuatis dorso pubescentibus 3-nerviis subherbaceis viridibus; corollis albis 5 mm. longis, faucibus cylindricis 2.5 mm. longis, tubo proprio gracillimo 2.5 mm. longo, limbi dentibus 5 patentibus dorso longiuscule hispidis; achaeniis nigris 5-angulatis deorsum decrescentibus basi callosis in costis patenter hispidulis (pilis non glandulosis); pappi setis ca. 16 albis tenuiter capillaribus vix scabratis corollam subaequantibus basi in cupulam coroniformem connatis; styli ramis filiformibus; antheris

apice cum appendice ovato-oblongo munitis basi distincte subsagittatis; receptaculo plano glabro.— COLOMBIA: near Bogotá, alt. 2700 m., *Bros. Apollinaire & Arthur*, no. 94 (TYPE Gr., dupl. U. S.).

This species in many respects closely approaches *E. viscosissimum* Rolfe, Gard. Chron. ser. 3, xxxix. 274 (1906), a plant of Lower California. It shows, however, a variety of minor differences which together with its very different habitat and widely separated range indicate clearly that it is to be regarded, at least for the present, as a distinct species. In *E. viscosissimum* the style-branches are strongly clavate, and the corolla has a throat distinctly exceeding the proper tube into which it passes very gradually, while in the present species throat and tube are the same length and the demarcation between them is rather sharp and definite. The achenes in *E. viscosissimum* have the ribs provided with ascending short bristles while in the present species the bristles are divaricate. Furthermore, the involucre scales in *E. viscosissimum* have the 3 nerves more or less branched in many instances, which does not appear to be the case in the Colombian plant. Somewhat nearly related is the Mexican *E. cardiophyllum* Robinson, but notwithstanding many points of resemblance it is clearly distinct, having fewer-flowered heads, leaves of firmer texture, and a glabrous corolla.

E. (§ Subimbricata) arcuans, spec. nov., fruticosum; ramis teretibus valde flexuosis glabris, ramulis arcuatis angulatis ferrugineo-tomentosis; foliis parvis (1.5–3 cm. longis 1–1.5 cm. latis) oppositis petiolatis ovatis subacuminatis basi rotundatis supra mediam partem utroque 2–3-dentatis paullo crassiusculis vix membranaceis a basi conspicue 3-costatis supra subglabris cum nervis depressis, subtus olivaceis in nervis prominulentibus sparse pubescentibus; petiolo gracile ca. 5 mm. longo; capitulis 7 mm. altis; ca. 10-floris; involucri subcylindrici squamis ca. 16 sub-3-seriatis valde inaequalibus oblongis obtusis vel apice rotundatis 3–5-costatis obscure ciliolatis aliter glabris; corollis glabris 4 mm. longis, tubo proprio 2.4 mm. longo gracili, faucibus 1.3 mm. longis primo sensim ampliatis deinde paullo contractis; achaeniis glabris gracilibus 2.5 mm. altis.—“NEW GRENADA” without more exact locality, *Triana*, no. 1191 (TYPE K., phot. Gr.).

E. BALLOTAEFOLIUM HBK., Nov. Gen. et Spec. iv. 121 (1820). Study of the available Colombian material of this species discloses two pretty readily distinguishable varieties, which may be characterized as follows:

Var. **typicum**, involucri squamis lanceolatis modice firmis fere ad

apicem costatis, exterioribus gradatim brevioribus et angustioribus.— COLOMBIA: without precise locality, *Humboldt & Bonpland* (Par., phot. Gr.); also later collected by many others; see p. 321.

Var. **caucense**, var. nov., involucri squamis subaequalibus plerisque oblanceolatis apicem versus tenuioribus et magis herbaceis vix costatis dorsaliter magis pubescentibus; aliter var. *typico* simillimum.— *E. ballotaefolium* Hieron. in Engl. Bot. Jahrb. xxviii. 575 (1901), not exactly of HBK.— COLOMBIA: in the upper Cauca Valley, under low isolated thickets on savannahs near Anserma Nueva, alt. 1000 m., *Lehmann*, no. 3279 (TYPE Gr.); common in scattered bushy places on savannahs along the Rio Paez, *Lehmann*, no. 5675 (U. S.).

E. CELTIDIFOLIUM Lam., var. **hirtellum**, var. nov., arborescens 3–6 m. altum; inflorescentiae ramis et ramulis et pedicellis crispe hirtellis, pilis brevibus flexuosis; achaeniis non solum in costis sed etiam in faciebus hirtellis; aliter omnino ut apud var. *typicum* Antillum.— COLOMBIA: Dept. Magdalena, locally common in dry forest near Bonda, below alt. 150 m., May, 1852, *L. Schlim*, no. 909 (K., phot. Gr.).

In the typical variety, as it grows in Martinique and Dominica, the subdivisions of the inflorescence are glabrous and the achenes are hairy almost exclusively on the ribs and very slightly if at all on the faces.

E. (§ Eximbricata) chiriquense, spec. nov., fruticulosum 2.5–3 dm. altum; caule fusco paullo decumbente vel suberecto fastigiatim dichotome vel trichotome ramoso; ramis erectis foliosissimis atropurpureis strigillosis infra post foliorum delapsum nudis fuscis nodulosis lignescentibus; internodiis 3–9 mm. longis; foliis oppositis subsessilibus ovatis 1–2.5 cm. longis 6–15 mm. latis acutatis vel acuminatis ad apicem verum obtusiusculum crenato-serratis subcoriaceis supra viridibus glabris rugulosis subtus vix pallidioribus in nervis venisque pubentibus a basi 3-nerviis; petiolo vix 1 mm. longo; corymbis ramos terminantibus multicapitulatis densiusculis 3–5(–8) cm. diametro convexis; pedicellis filiformibus longiusculis glandulari-pubescentibus; capitulis ca. 26-floris 9 mm. altis 8 mm. diametro; involucri campanulati squamis ca. 14 linearibus obtusis subaequalibus (1–2 extimis brevioribus exceptis) dorso glandulis minutis stipitatis praeditis; corollis ut videtur albis vel forsitan roseis 5 mm. longis, tubo proprio 1.7 mm. longo, faucibus campanulatis distincte ampliatis 2.5 mm. longis, dentibus limbi 5 deltoideis 0.8 mm. longis; achaeniis atropurpureis 2 mm. longis in costis hispidulis; pappi setis ca. 19 capillaribus vix scabratis 3.5 mm. longis roseis.— PANAMA: among rocks,

summit of Chiriqui Volcano, alt. 3374 m., *William R. Maxon*, no. 5360 (TYPE U. S.); dry sunny places, upper belt of Chiriqui Volcano, northern slope, alt. 3374 m., *Pittier*, no. 3089 (U. S.); on the same mountain but without number or indication of locality or altitude, April, 1899, *C. Sapper* (U. S.).

A characteristic and probably local species.

E. (§ *Eximbricata*) *choricephalum*, spec. nov., herbaceum perenne erectum 3–7 dm. altum; radice e fibris longis numerosis subsimplicibus nigrescentibus composita; caule pubescente gracili basin versus simplici superne laxè paniculatim ramoso; foliis suborbiculari-ovatis acuminatis grosse crenatis (dentibus 1.5–4 mm. altis 3–8 mm. basi latis) basi late cordatis ad insertionem petioli acuminatis membranaceis utrinque viridibus supra subglabris vel sparse hirtellis (pilis saepius adpressis) subtus vix pallidioribus in nervis venisque hirtellis ima a basi 3-nerviis 3–7.5 cm. longis 2.5–6 cm. latis; petiolo 1.5–3 cm. longo; panicula laxissima 4–6 dm. longa 2–3 dm. diametro foliaceo-bracteata; bracteolis lanceolatis parvis vel minimis; pedicellis filiformibus pubescentibus 8–18 mm. longis; capitulis dissitis ca. 34-floris 6.5 mm. altis 6 mm. diametro cymoso-dispositis; involucri campanulati squamis subaequalibus (una vel duabus multo minoribus) oblongo- vel lanceolato-linearibus acutis 4.5 mm. longis, exterioribus dorso villosulis, interioribus longiuscule ciliatis aliter subglabris saepius 2-costatis et 3-nerviis; corollis albis 3–4 mm. longis, tubo proprio gracili glabro 1.6–2 mm. longo, faucibus turbinato-subcylindricis 1.2–1.8 mm. longis extus sparse hirtis, dentibus limbi 5 (vel rariter 4) 0.3 mm. longis deltoideis obtusiusculis intus papillosis extus hirsutulis; antheris brevibus basi distincte sagittatis apice cum appendice ovato-oblonga munitis; achaeniis nigris 1.5–2 mm. longis in costis et etiam in faciebus hispidulis basi callosis apice cum disco cupulato coronatis; pappi setis ca. 28 albis 4 mm. longis paullo scabratis.—*E. grandidentatum*, var. *laxiflorum* Gray in Pringle, Pl. Mex. [list of 1886] on first (unnumbered) page, as a name only. *E. guadalupense* Gray ex Wats. Proc. Am. Acad. xxii. 421 (1887), not Spreng.—CHIHUAHUA: southwestern part, Aug.–Nov., 1885, *Palmer*, no. 276; shaded ravines, Mapula Mts., 30 Oct., 1886, *Pringle*, no. 747. DURANGO: *Palmer*, no. 857. JALISCO: shaded hillsides, Chapala, 1886, *Palmer*, no. 712; ravines near Guadalajara, 14 Oct. 1903, *Pringle*, no. 11,924 (TYPE Gr.). MICHOACAN: oak woods near Uruapan, alt. 1464 m., *Pringle*, no. 10,099. MORELOS: barranca near Cuernavaca, alt. 1982 m., 23 Nov. 1902, *Pringle*, no. 11342. VERA CRUZ: Orizaba, *Botteri*, no. 494.

This is the plant which has in recent years been passing as *E. Muelleri* Sch. Bip., the identity of which is discussed below.

The plant here described as *E. choricephalum*, although for many years well represented in herbaria, appears never to have been characterized. Dr. Gray evidently glimpsed the plant as a separable entity and gave it a manuscript name as a variety of *E. grandidentatum* DC., but he may have lost confidence in it or altered his conception of *E. grandidentatum* (which has subsequently proved a synonym of the older *E. pazcuarense* HBK.), for he never published a description of this variety.

Dr. Gray's varietal name, *laxiflorum*, notwithstanding its morphological inaccuracy, as well as its lack of characterization and consequently negligible nature, would have been here taken up in the specific rank, except for the circumstance that it would have necessitated making Pringle's no. 747 the type of the species, since it would have been the type of the name-bringing synonym. It happens, however, that this particular number, while pretty clearly conspecific with the others here referred to the new species, is by no means central or typical among them, being in fact a little firmer in general texture and having slightly more rigid pedicels. It therefore seems ill-fitted to function as the type of the group (otherwise pretty uniform) in which it seems a trifle exceptional.

E. (§ *Cylindrocephala*) *chrysostictum*, spec. nov., scandens vel in frutices vicinos incumbens 3-3.6 m. altum perenne vel fruticosum subglabrum, caule tereti laevi; internodiis 8 cm. vel ultra longis; foliis oppositis petiolatis ovatis caudato-acuminatis basi rotundatis margine revolutis subintegris (denticulis minimis obscuris callosis ca. 5-7 mm. distantibus instructis) usque ad 10 cm. longis 5 cm. latis a basi 3-nerviis et cum nervulis intramarginalibus undulatis munitis supra laevissimis lucentibus laete viridibus subtus vix pallidioribus glabris cum punctis aureis numerosis translucetibus instructis, venis inter costas subregulariter transientibus; petiolo gracili 1-1.5 cm. longo glabro; panicula 3-4 dm. longa 1.5-2 dm. diametro foliaceo-bracteata oppositiramea; ramis divaricatis ca. 8-10-capitulatis, pedicellis plerisque 1 cm. longis patentibus paullo sulcatis minutissime papillois; capitulis ca. 12 mm. altis ca. 26-floris 7 mm. diametro; involucri cylindrici 9 mm. alti squamis ca. 37 oblongis 3-5-nerviis obscure ciliolatis apice rotundatis mucronulatis stramineis apicem versus viridescentibus; corollis albis vel pallide purpureis glabris 6 mm. longis graciliter tubulosis a basi ad limbum plerumque 4-dentatum sensim ampliatis sine faucibus distinctis; achaeniis 3.5 mm. longis gracilibus deorsum

paullo decrescentibus in costis obscure subremoteque papillosis; pappi setis ca. 40 stramineo-albidis 5.5 mm. longis.—COLOMBIA: Las Nubes near Santa Marta, alt. 1372 m., 7 Feb., expedition of 1898-'99, *H. H. Smith*, no. 660 (TYPE Gr.).

A species which appears very clearly distinct in habit and many technical characters from any previously attributed to Colombia. Said to be common in thickets near streams, alt. 1220–1830 m.

E. CONYZOIDES Mill. Dict. ed. 8, no. 14 (1768). Although this species is by Hooker f. & Jackson, Ind. Kew. i. 916 (1893), referred to *Vernonia arborescens* (L.) Sw., it is entirely clear from Miller's description stating that the leaves were 3-nerved and hastate in form, as well as by his reference to the "*Conyza fruticosa, folio hastato, flore pallide purpureo*" of Sloane's Cat. Jam. 124, that the plant he had in mind was certainly not *Vernonia arborescens* (L.) Sw., which has lance-oblong essentially entire pinnately veined leaves. Both from Miller's description and from his direct reference to Sloane, who in his turn cites Plukenet's plate 177, fig. 3, which forms the primary basis of the Linnaean *E. odoratum*, there is no reason to suppose that Miller's *E. conyzoides* was other than *E. odoratum* L., as was the later *E. conyzoides* of Vahl.

E. (§ Eximbricata) cuencanum, spec. nov., herbaceum perenne decumbens gracile usque ad inflorescentiam glaberrimum; caule tereti purpureo-brunneo laevissimo flexuoso ca. 3 dm. alto apice trichotomo-cymoso; foliis oppositis ovatis cordatis ad apicem obtusiusculum angustatis serrulatis firmisscule membranaceis 2–2.5 cm. longis 1.2–1.6 cm. latis a basi 3(–5)-nerviis in siccatione fusciscentibus; petiolo gracillimo 8–10 mm. longo; inflorescentiae ramis pedunculisque cum glandulis atropurpureis stipitatis munitis aliter glabris; capitulis paucis laxissime cymosis ca. 7 mm. altis 3–4 mm. diametro 16–19-floris; involucri anguste campanulati squamis lanceolato-linearibus ca. 18 ca. 5 mm. longis acutis vel paullo erosis non ciliatis dorso 2-costatis 3-nerviis cum glandulis paucis stipitatis munitis; receptaculo parvo plano glabro; corollis ut videtur albis 3.5 mm. longis in limbo 5-dentato extrorsum paullo villosulis, tubo proprio 1.7 mm. longo fauces cylindricas mediocriter ampliatas aequante; achaeniis pallide brunneis glaberrimis 3 mm. longis basi callosis apice cum disco coronatis; pappi setis ca. 14, 3.5 mm. longis fragilibus caducis basi brevissime connatis.—ECUADOR: Cuenca, *Sallé*, communicated to the herbarium at the Kew Gardens by Mr. W. W. Saunders, Oct. 1874 (TYPE K., trac. Gr.).

A species with the habit of *E. gracile* HBK., *E. caducisetum* DC., and

E. epilobioides HBK. but differing from all these in its more cordate leaves and particularly in the presence of numerous tack-like glands on the inflorescence, the plant being otherwise entirely glabrous.

E. (§ *Cylindrocephala*) *diaphanophlebium*, spec. nov., *E. chrysostictum* habitu glabritate simillimum; caule gracili tereti 2.5 m. alto; foliis oppositis ovatis apice caudato-acuminatis basi rotundatis 5-7 cm. longis 2.8-3.5 cm. latis paullo supra basin 3-nervatis margine paullo undulatis obscure subremoteque calloso-denticulatis utrinque viridibus subtus paullulo pallidioribus impunctatis sed pulcherrime pellucido-reticulatis; panicula ca. 2.5 dm. longa 1.5 dm. diametro foliaceo-bracteata oppositiramea, ramis trichotomis multicapituliferis; capitulis ca. 8 mm. altis 4 mm. diametro; pedicellis 1-5 mm. longis sulcato-angulatis; involucri graciliter cylindrici ca. 6 mm. alti squamis ca. 25 oblongis 3-5-nerviis 4-5-seriatim imbricatis ciliolatis apice rotundatis; corollis 4 mm. longis glabris cum tubo proprio ca. 1 mm. longo et faucibus vix ampliatis cylindraceis; achaeniis 2.5 mm. longis glabris et etiam in costis laevibus; pappi setis ca. 35 albidis capillari-bus vix scabratis.—COLOMBIA: in thicket, Las Nubes near Santa Marta, alt. 1372 m., expedition of 1898-'99, *H. H. Smith*, no. 1990 (TYPE Gr.).

A species at first sight suggesting a possible small-headed form of *E. chrysostictum*, but clearly distinct through a variety of characters not likely to be intergradient, as, for instance, the impunctate leaves with pellucid veins, the much more extensive branching (attaining to the third and fourth order) of the panicle, etc.

E. (§ *Conoclinium*) *diplodictyon*, spec. nov., verisimiliter herbaceum; caule tereti flexili ca. 4 mm. crasso fusco-tomentoso, pilis patentibus articulatis; foliis oppositis graciliter (1.5-3.3 cm. longe) petiolatis deltoideo-ovatis longiuscule acuminatis dentatis (dentibus ca. 3 mm. altis ca. 5 mm. latis saepe plus minusve denticulatis) basi profunde sinu angusto sed non clauso cordatis 7-10 cm. longis 4-6.5 cm. latis a basi 3-5(-7)-nerviis utrinque prominenter reticulatis lucidulis laete viridibus supra glabriusculis vix in venis hirtellis subtus in venis venulisque laxius pilosis; corymbo terminali densiusculo valde convexo ca. 7 cm. diametro ad 1 dm. longe pedunculato, ramulis pedicellisque fusco-tomentellis, pilis et articulatis et glanduloso-capitatis; capitulis ca. 30-floris 13 mm. altis; pedicellis ca. 7 mm. longis; involucri campanulati squamis ca. 13 lanceolatis herbaceis striatulis acute acuminatis 7 mm. longis dorso patenter pilosis; receptaculo distincte conico apicem versus rudimenta flosculorum aliquorum abortivorum gerente; corollis 5.5 mm. longis glaber-

rimis, tubo proprio 3 mm. longo sensim in fauces 2.5 mm. longas ampliato, dentibus limbi 5 ovato-lanceolatis patentibus 0.7 mm. longis; achaeniis stramineo-olivaceis 2.8 mm. longis lucidulis deorsum decrescentibus angulis praesertim apicem versus sparse hispidulis, faciebus nigro-punctatis; pappi setis ca. 40 stramineo-albidis 5.5 mm. longis vix scabratis.—COLOMBIA: *Lobb* (TYPE K., phot. Gr.).

A species obviously related to *E. lamiifolium* HBK. of middle altitudes on the Ecuadorian Andes, which, however, has considerably smaller heads with more numerous and very unequal involucral scales of much smaller size. Its leaves are, furthermore, rugose above and very shallowly cordate instead of being penetrated by a deep narrow sinus as in the species here described. Unfortunately the specimen is accompanied by no data in regard to the precise locality, habitat, habit, or flower-color.

E. (§ Eximbricata) droserolepis, spec. nov., herbaceum vel paullo lignescens subglabrum exsiccatione fuscescens; caule subtereti gracili leviter costato-angulato superne oppositirameo primo purpureo-fusco maturitate griseo-brunneo; foliis oppositis graciliter petiolatis ovato-lanceolatis caudato-acuminatis basi rotundatis vel subcordatis grosse serratis vel undulato-dentatis utrinque glabris viridibus obscuris opacis subtus paullo pallidioribus nigro-punctatis 5-7 cm. longis 2-4 cm. latis a basi vel vix supra basin 3(-5)-nerviis apicem versus saepe falcatis; petiolo 4-12 mm. longo; bracteis foliaceis gradatim reductis lanceolatis petiolatis, supremis linearibus minutis sessilibus; panícula ampla 1-3 dm. alta et crassa laxè ramosa; pedicellis filiformibus sub lente obscure puberulis 5-25 mm. longis; capitulis ca. 11-floris 8 mm. altis; involucri squamis ca. 10 lineari-oblongis laxè imbricatis obtusis 1-costatis subcarinatis ad 5 mm. longis margine sub lente obscure eroso-fimbriatis dorso cum glandulis lucidis globosis sessilibus dense obsitis, extimis paucis brevioribus; corollis 3.5 mm. longis sursum a media parte gradatim ampliatis, dentibus limbi brevissimis recurvatis; styli ramis longis filiformibus recurvatis fuscis apice brevissime incrassatis; achaeniis 3 mm. longis primo sursum in angulis hispidulis sed maturitate glabris non glanduliferis nigrescentibus; pappi setis ca. 37 sordidis inaequalibus basi subconnatis sursum scabratis.—PORTO RICO: summit of Monte Torrecilla, alt. 1100 m., 19-20 March, 1915, *N. L. Britton, J. F. Cowell, & S. Brown*, no. 5608 (TYPE N. Y., phot. Gr.); Utuado, 8 November, 1913, *F. L. Stevens & W. E. Hess*, no. 4575 (N. Y., phot. Gr.).

E. (§ Hebeclinium) erioclinium, spec. nov., ut videtur herbaceum

elatum; caule tereti fulvido-tomentello medullosa; foliis oppositis suborbiculari-ovatis magnis acuminatis crenato-dentatis basi rotundato-truncatis vel subcordatis integriusculis 14–16 cm. longis 10–12 cm. latis membranaceis utrinque glabriusculis in nervis venisque fulvo-tomentellis prope basin cum 2 jugis nervorum munitis supra basin palmatim 3-nervatis; petiolo 3.5–5.5 cm. longo; paniculis amplis terminalibus et lateralibus ovato-pyramidalibus trifidis laxiusculis usque ad 2 dm. altis et crassis multicapitulatis; capitulis ca. 20-floris subsessilibus in glomerulos subsphaericos collectis; involucri campanulati 2 mm. longi squamis ca. 16 ovato-oblongis valde inaequalibus obtusis vel apice rotundatis 3–4-costatis ciliatis; receptaculo valde convexo densissime niveo-villoso, pilis 0.6–0.8 mm. longis erectis; corollis graciliter cylindraceis sine faucibus distinctis breviter 5-dentatis 3 mm. longis limbum versus paullo hispidulis ut videtur albis; styli ramis longissimis gracillimis filiformibus; achaeniis nigris glabris 5-costatis deorsum decrescentibus 1.3 mm. longis basi callosis; pappi setis 30–35 albis tenuiter capillaribus.—COLOMBIA: occasional in thickets near water at Las Nubes, near Santa Marta, alt. 1373 m., 15–20 Dec., *H. H. Smith*, no. 625 (TYPE Gr.).

A species with the habit of *E. guapulense* Klatt, to which it is very close in many of its characters. In that species, however, the stem is described as notably tetragonal, the leaves are more distinctly cordate at base and are 3-nerved from the very base instead of being provided with two pairs of pinnately disposed nerves before the palmate divergence of the three principle nerves which occurs no less than 1.5–2 cm. above the actual base of the leaf. If one may judge from description as well as from an excellent photograph of the type of *E. guapulense* in the Gray Herbarium, the leaves in that species are somewhat thicker and are covered with more copious pubescence.

E. (§ *Eximbricata*) flavisetum, spec. nov., fruticosum; caule tereti firme lignoso cum cortice griseo-brunnescente tecto; ramis suberectis flexuosis conspicuiter nodosis; ramulis foliosissimis cum pilis setiformibus patentibus fulvo-flavidulis densissime instructis; foliis oppositis brevissime petiolatis ellipticis subcoriaceis utroque obtusis vel rotundatis crenato-serratis 3–3.5 cm. longis 1.3–2 cm. latis utrinque crebre reticulatis (venulis prominulentibus non sulcatis supra sparse subtus copiose setosis; petiolo 1–3 mm. longo dense setoso; corymbis terminalibus folia subtendentia vix superantibus parvis (2–3 cm. diametro) paucicapitulatis; pedicellis brevibus tomentoso-setosis; capitulis ca. 7 mm. altis et 5 mm. diametro ca. 14-floris; involucri campanulati paullo imbricati 1–2(–3)-seriati

squamis lanceolatis dorso pubescentibus; corollis verisimiliter purpurascens glabris 5 mm. longis; tubo proprio 2 mm. longo leviter gradatimque in fauces 3 mm. longas ampliato; antheris apice cum appendice brevi obtusa vel retusa munitis; achaeniis 3.5 mm. longis deorsum decrescentibus in faciebus et praesertim in angulis hispidulis; pappi setis ca. 31 inaequalibus plerisque ca. 5 mm. longis paullulo rigidiusculis flavidulo-albidis.—“VENEZUELA &c.,” coll. of 1842-3, *Funcke*, no. 520 (TYPE K., phot. Gr.).

E. (§ Eximbricata) glischrum, spec. nov., fruticosum ramosum; ramis teretibus oppositis flexuosis nodosis atrogriseis; ramulis papilloso-scabridulis atropurpureis; foliis oppositis oblongo-lanceolatis breviter petiolatis obtusis leviter cuspidatis basi cuneatis integerrimis trinerviis (nervis lateralibus anastomosantibus) utrinque glabris et vernicosis 2-3.5 cm. longis 5-10 mm. latis, levissime reticulatis subtus paullo pallidioribus, petiolis 2-6 mm. longis; inflorescentiis dense cymosis 2-3 cm. diametro terminalibus vernicoso-viscosis oppositi-rameis; capitulis 4-6-floris sessilibus vel brevissime pedicellatis 1 cm. altis; involucri subcylindrici squamis ca. 7 subaequalibus anguste oblongis obtusis 4.8 mm. longis apicem versus eroso-ciliolatis dorsaliter convexis 2-3-striato-nervatis marginibus valde involutis; corollis purpurascens glabris 5.5 mm. longis, tubo proprio ca. 1.5-2 mm. longo in fauces cylindricas ca. 4 mm. longas leviter expanso, dentibus limbi 5 ovato-triangularibus; styli ramis vix clavellatis; achaeniis 5-angularibus stramineo-olivaceis deorsum decrescentibus 3 mm. longis in faciebus et praesertim in costis hirtellis; pappi setis 27-34 substramineo-albidis et saepissime purpureo-tinctis valde inaequalibus sursum scabridulis.—MEXICO: on summit of Sierra de Parras, Coahuila, October, 1910, alt. 2745-3050 m., *Dr. C. A. Purpus*, no. 4655 (TYPE Gr., authenticated duplicate Calif.).

E. (§ Eximbricata) glyptophlebium, spec. nov., fruticosum; ramis teretibus flexuosis striatulis fulvo-tomentellis; internodiis 5-7 cm. longis; foliis oppositis petiolatis oblanceolato-oblongis grosse crenato- vel serrato-dentatis basi (quarta parte longitudinis) integerrimis paullulo angustatis imam ad basin rotundatis vel subcuneatis 1.5 dm. longis 5 cm. latis coriaceis penniveniis utrinque viridibus et reticulatis in costa venisque principibus pilosulis aliter glabris, venulis subtus (sub lente) sulcatis; petiolo 1.5 cm. longo; corymbis terminalibus compositis usque ad 12-14 cm. diametro convexis multicapitulatis fulvo-tomentellis; capitulis pedicellatis ca. 14-floris 10-11 mm. altis; involucri subcylindrici 5 mm. alti squamis 10-12 anguste oblongis subaequalibus molliter pilosis; corollis ut videtur albis vel roseis

5 mm. longis glabris, tubo proprio 2 mm. longo gradatim in fauces 3 mm. longas ampliato, dentibus limbi 5 lanceolatis patentibus; achaeniis 3.8–5 mm. longis atrobrunneis in costis cum granulis sparsis scabratis in faciebus glabris; pappi setis ca. 28 roseis 5.5 mm. longis.—COLOMBIA: hillside near Tequendama, alt. 2500–2700 m., *Pennell*, no. 2641 (TYPE Gr.).

E. (§ Eximbricata) hammatocladum Britton & Robinson, spec. nov., fruticosum 2–3 m. altum; ramis teretibus flexuosis foliosis fusco- vel fulvo-tomentellis post foliorum delapsum cum cicatricibus majusculis prominentibus conspicue nodosis; internodiis 1–2 cm. longis; foliis oppositis vel ternis vel quaternis petiolatis obovatis obtusis supra mediam partem repando-dentatis basi integerrimis rotundatis supra laete viridibus minute sparseque punctatis glabriusculis subtus paullo pallidioribus densius punctatis in costa venisque plus minusve fulvo-tomentellis 4–6.5 cm. longis 3–4.5 cm. latis coriaceis penniveniis; petiolo 1 cm. longo; corymbis terminalibus compositis planiusculis fulvo-tomentellis; capitulis ca. 7-floris pedicellatis ca. 7 mm. altis; involucri campanulati squamis ca. 9, interioribus subaequalibus oblongis apice rotundatis ciliolatis 1–3-nerviis, 1–3 extimis brevioribus lanceolatis dorso puberulis; corollis albidis 4 mm. longis sparse papillois, tubo proprio 1.5 mm. longo gradatim in fauces 2.5 mm. longas paullo ampliato; achaeniis 2.5 mm. longis cum granulis in faciebus sparse asperatis; pappi setis ca. 21 lutescenti-albidis firmiusculi-capillaribus ca. 4 mm. longis.—JAMAICA: Peckham Woods, Upper Clarendon, alt. 762 m., 28 December, 1917, *William Harris*, no. 12,795 (TYPE Gr., N. Y.).

An attractive and clear-cut species with bright-green thickish repand-dentate leaves in texture, contour, and tothing recalling those of *Hamamelis*.

E. (§ Eximbricata) hylibates, spec. nov., fruticosum 1.2–2.4 m. altum; caule robusto tereti medullosa fulvo-tomentoso (pilis crispis cum glandulis sessilibus globosis numerosis intermixtis); foliis oppositis longe petiolatis oblongo-ovatis acutiusculis vel breviter acuminate basi rotundatis vel leviter cordatis margine crenato-serratis (crenaturis ca. 1 mm. altis et 4 mm. latis) supra viridibus et in costa et venis principibus paullo fulvido-puberulis subtus multo pallidioribus et crispe fulvo-pubescentibus penniveniis 1.1–1.8 dm. longis 7–12 cm. latis; petiolo robusto fulvo-tomentello subtereti 5 cm. vel ultra longo; corymbo composito trichotomo multicapitulato leviter convexo denso 1.5–2 dm. diametro foliaceo-bracteato; capitulis ca. 7 mm. altis ca. 14-floris; involucri squamis ca. 12 lanceolato-linearibus

acutiusculis subaequalibus (1-2 extimis brevioribus exceptis) ca. 4.5-5 mm. longis vix nervatis dorso paullo granulatis; corollis albis 4.7 mm. longis; tubo proprio gracili 2 mm. longo cum glandulis paucis globosis sessilibus instructis; faucibus campanulato-cylindricis 2.7 mm. longis glabris; dentibus limbi 5 recurvatis; styli ramis sub-filiformibus; achaeniis brunneo-nigrescentibus in faciebus glabris in costis (pallidioribus) paullo hispidulis apice cum annulo flavidulo pappifero coronatis et cum nectario cupuliforme crenatulo instructis; pappi setis ca. 25 flavido-albis paullo scabridis.—COLOMBIA: in open places in the border of the forest, Rio Frio, Dept. Magdalena, alt. 2300-2750 m., *Kalbreyer*, no. 1956 (TYPE K., phot. Gr.).

E. (§ *Eximbricata*) *intercostulatum*, spec. nov., fruticosum puberulum; ramis teretibus post exsiccationem angulato-costatum adscendentibus; foliis oppositis petiolatis deltoideis acutis basi sub-truncatis sed ad insertionem breviter acuminatis, ima e basi 3-nerviis, crenato-dentatis basi integerrima excepta, membranaceis parce granulari-puberulis subtus paullo pallidioribus 3-3.5 cm. longis subaequilatis, dentibus 1.5-2 mm. altis 3-4 mm. latis; corymbis parvis densiusculis multicapitulatis terminalibus et ex axillis superioribus oriuntibus; capitulis ca. 15-floris 6.5 mm. altis 6 mm. diametro; involucri campanulati squamis ca. 13 plerisque subaequalibus lanceolatis attenuatis ca. 3 mm. longis dorso griseo-puberulis; corollis albis 3.5 mm. longis glabris, tubo proprio faucibus subcylindricis bis brevior; styli ramis filiformibus; achaeniis sub-10-costulatis (costulis secundariis 5 vel saltem 3-4 inter primarias singulatim distributis, omnibus sursum hispidulis) 2.3 mm. longis; pappi setis ca. 40 albidis sursum sub lente scabratis ca. 2.5 mm. longis.—COLOMBIA: Truandó, in the northern part of the Intendencia del Chocó, February, 1858, *Dr. Arthur Schott*, no. 3 (TYPE Field Mus., phot. Gr.).

In the secondary ribs of the achenes this species recalls the case of *Brickellia Fendleri* Gray, for a discussion of which see Robinson, *Mem. Gray Herb.* i. 12 (1917). Here also, as in that case, the chief technical distinction between *Eupatorium* and *Brickellia* breaks down and it becomes necessary to infer the affinities of the species concerned from habit and traits of minor weight. In the present case it appears to the writer that there can be no doubt that the plant is a true *Eupatorium*, although somewhat anomalous in its achenes.

E. (§ *Cylindrocephala*) *iridolepis*, spec. nov., fruticosum 12-15 dm. altum; caule tereti purpureo-brunneo crispe griseo-tomentello flexuoso; internodiis 3-6 cm. longis; foliis oppositis ovatis petiolatis in axillis proliferis longe acuminatis basi breviter rotundato-cuneatis

6-7 cm. longis 2.4-3 cm. latis basi apiceque exceptis crenato-serratis (dentibus 4-7 mm. latis vix usque ad 1 mm. altis) supra basin 3-nerviis supra minute hirtellis subtus in nervis venisque molliter pubescentibus crebre aureo-punctatis; corymbis terminalibus densiusculis convexis multicapitulatis ca. 1 dm. diametro; capitulis ca. 10-floris 9.5 mm. longis 3-4 mm. crassis sessilibus ad apices ramulorum ternis et quaternis fasciculatis; involucri gracile cylindrici 7 mm. alti squamis ca. 18 ca. 4-5-seriatim imbricatis plerisque anguste oblongis basi laete albis glabris apicem versus breviter subherbaceis viridibus vel (intimis) pulchriter roseo-purpureis, apice subherbaceo squamarum intermediarum plus minusve squarroso subpatente acutiusculo tomentello; corollis ut videtur roseis 4.5 mm. longis, tubo proprio 1 mm. longo, faucibus vix distinctis sensim sursum ampliatis extus 5-nerviis inter nervos cum glandulis stipitatis paucis munitis; achaeniis gracilibus 3.3 mm. longis in costis et in faciebus breviter hispidulis; nectario conspicuo depresso; pappi setis ca. 28 capillaribus laete albis 4 mm. longis.— COLOMBIA: open hillside, edge of forest, Las Nubes near Santa Marta, alt. 1370 m., December, *H. H. Smith*, no. 615 (TYPE Gr.).

A highly attractive species distributed under the name of *Eupatorium pulchellum* HBK., a Mexican plant with alternate shorter-petioled leaves and obtuse unappendaged involucreal scales. The name *iridolepis* alludes to the parti-colored involucreal scales which under low magnification have unusual beauty of form and color.

E. (§ Eximbricata) Jahnii, spec. nov., fruticosum; caulibus (vel ramis) teretibus 5 mm. diametro purpureo-brunneis juventate viscidulis molliter villosis maturitate glabris plus minusve vernicosis; internodiis ca. 3 cm. longis; foliis oppositis breviter petiolatis oblongis coriaceis acutis vel saltem acutiusculis margine (basi cuneata excepta) serrato-dentatis (dentibus 0.5-0.8 mm. altis 4-5 mm. latis) penniveniis (venis ca. 10-jugis) supra subglabris (costa et venis juventate paullo villoso-lanulatis) subtus in costa venisque sordido- vel fulvo-villosis vel -lanatis 6-9.5 cm. longis 2.3-4 cm. latis; petiolo ca. 8 mm. longo supra sulcato basi paullo dilatato; corymbo terminali sessili composito trichotomo multicapitulato planiusculo vel leviter convexo 8-10 cm. diametro; capitulis 6-floris ca. 11 mm. altis 4 mm. diametro; involucri anguste campanulati squamis ca. 11 lanceolatis inaequalibus laxe (ca. 2-seriatim) imbricatis viscidis ciliatis; corollis 6 mm. longis glabris; tubo proprio ca. 1.8 mm. longo; faucibus ca. 4.2 mm. longis gradatim leviterque sursum dilatatis; dentibus limbi 5 lanceolato-deltaideis recurvatis; antheris apice cum appendice longiuscula

oblonga instructis; achaeniis 3.5 mm. longis in costis sursum hispidulis; pappi setis ca. 37 flavidulo-albidis plerisque ca. 6 mm. longis (paucis multo brevioribus).—VENEZUELA: Sierra de Nevada de Mérida, Rio Nuestro Señora, alt. 3000–4000 m., Dr. Alfredo Jahn, no. 80 (TYPE U. S., phot. Gr.).

E. (§ *Conoclinium*) *lanulatum*, spec. nov., herbaceum vel paullulo lignescens decumbens 3–4 dm. altum; radice fibrosa quasi annua; caulibus 1–3 teretibus foliosis paullo flexuosis griseo-lanulatis; foliis oppositis breviter petiolatis lanceolatis crenulatis apicem versus gradatim angustatis (sed apice vero obtuso vel rotundato) supra viridibus vix cum vestigiis indumenti arachnoidei-puberuli tectis subtus albido-lanulatis penniveniis basi integris cuneatis 1–1.5(–3) cm. longis 2–4(–10) mm. latis; crenaturis utroque ca. 7; venis utroque ca. 9; petiolo 3–4 mm. longo; corymbis parvis terminalibus densiusculis 12–20-capitulatis 2–6 cm. diametro plerumque longe pedunculatis; capitulis ca. 20-floris ca. 7 mm. altis; involucri campanulati squamis 12–14 lanceolatis subtriseriatim imbricatis firmiusculis peracutis pilosulis vel glabrescentibus viridibus plerumque 3-nerviis 2–4-costulatis apicem versus purpurascentibus; corollis purpureis 4 mm. longis limbum versus granulati-pilosiusculis aliter glabris; tubo proprio 1.2 mm. longo tenui; faucibus anguste obconicis 2.2 mm. longis; achaeniis brunneo-fuscis 1.7 mm. longis glaberrimis basi calcaratis; pappi setis ca. 30 basi in annulum angustissimum connatis.—COLOMBIA: Guadalupe near Bogotá, alt. 2000 m., Bros. Apollinaire & Arthur, no. 33 (TYPE U. S., phot. Gr.); without precise locality, Triana, no. 1169 (K.).

This species clearly belongs to the small group of Colombian Eupatoriums of § *Conoclinium* of which *E. microphyllum* L. f. is probably the best known and most characteristic species. It differs from *E. microphyllum* in being a somewhat larger plant with lanceolate leaves cuneate at the base instead of roundish-ovate and cordate. The indument of the stem is also quite different being a very fine sub-appressed woolliness, while in *E. microphyllum*, at least on the peduncle, the hairs tend to spread widely and are somewhat stiffer in character.

E. (§ *Subimbricata*) *macrophylloides*, spec. nov., fruticosum elatum 3–4 m. altum; ramis teretibus costato-subangulatis dense fulvescenteque lanatis molliter lignescentibus medullosis; internodiis 3–8 cm. longis; foliis oppositis longe petiolatis deltoideo-ovatis 1 dm. longis 8 cm. latis acutis vel acuminatis basi subtruncatis ad insertionem brevissime cordatis usque ad basin crenulatis (dentibus numerosis 0.5–0.8 mm. altis 1–2 mm. latis) a basi 3-nerviis (nervis lateralibus

extrorsum fere ab incepto denuo ramosis) supra pulverulo-puberulis subtus multo pallidioribus griseis molliter tomentellis et atomiferis; petiolo usque ad 6 dm. longo; corymbis compositis trichotomis, partialibus convexis 6–10 cm. diametro densis multicapitulatis; capitulis breviter pedicellatis ca. 11-floris 7 mm. altis 3.2–3.5 mm. diametro; involucri subcylindrici squamis ca. 18 valde inaequalibus ca. 4-seriatim laxius imbricatis tenuibus stramineis, interioribus oblongo-linearibus apice rotundatis, exterioribus gradatim brevioribus obtusis ciliolatis, extimis ovatis acutiusculis dorso villosulis; receptaculo minimo planiusculo glabro; corollis ut videtur albidis 4 mm. longis, tubo proprio gracili fauces sensim paullo ampliatas subaequante, dentibus limbi 5 recurvatis; styli ramis filiformibus; achaeniis 2 mm. longis in faciebus et in angulis hispidulis; pappi setis albis capillaribus ca. 36 inaequalibus, aliis ca. 3.5 mm. longis, aliis quartem vel tertiam partem brevioribus.— VENEZUELA: at Sanchorquig (a name written with fair clearness upon the original label but not found on any available map), Eggers, no. 13,413 (TYPE U. S., phot. Gr.).

Although this species in foliage and general form of the inflorescence slightly suggests *E. macrophyllum* L., it differs in many important details (fewer florets, cylindrical rather than campanulate involucre, glabrous receptacle, etc.) and is clearly of § *Subimbricata*. Although cylindrical in form the involucre does not have the texture or close imbrication which characterize § *Cylindrocephala*.

E. (§ Subimbricata) magdalenense, spec. nov., perenne herbaceum erectum vel inclinatum 3–9 dm. altum; ramis brunneis obscure hexagonis mox glabratis laevissimis; ramulis inflorescentiae aliquid cum pilis minutis incurvis instructis; foliis oppositis (vel rameis alternis) anguste ovatis attenuato-acuminatis basi rotundatis argute serratis crassiuscule membranaceis paullulo succulentis utrinque viridibus et glabris 4–4.5 cm. longis 2–2.5 cm. latis a basi 3(–7)-costatis; venulis reticulatis translucentibus; petiolo 8–14 mm. longo; ramis primariis inflorescentiae late patentibus curvato-adscendentibus cum ramulis 3–7 brevibus subaequalibus (1–3 cm. longis) instructis; his 2–3-foliatis apicem versus floriferis 5–20-capitulatis; capitulis ca. 25-floris 6.5 mm. altis 5 mm. diametro; involucri campanulati 5 mm. alti et crassi squamis lanceolatis acutis minute ciliolatis ca. 3-seriatis subherbaceis persistentibus et denique brunnescentibus; corollis albis 4 mm. longis, tubo proprio ca. 7 mm. longo gradatim in fauces cylindricas ampliato; achaeniis 1.7 mm. longis nigris minute in costis pallidioribus hispidulis.— COLOMBIA: common on open ridges, Sierra del Libano, alt. 1680–1980 m., near Santa Marta, *H. H. Smith*, no. 1993 (TYPE Gr.).

A species in many characters near *E. pycnocephalum*, but quite different in its inflorescence.

E. (§ Subimbricata) Maxonii, spec. nov., frutescens molliter lignescens 3-4 m. altum; caule tereti fistuloso fulvide puberulo ramoso; ramis oppositis modice patentibus; foliis oppositis ovato-suborbicularibus tenuiter membranaceis utrinque viridibus apice breviter acuminatis basi subtruncatis vel brevissime acuminatis simplice vel plus minusve duplice dentatis lateraliter saepe uni-lobatis vel -angulatis basi pinnatinerviis supra basin trinervatis delicatule reticulatis 10-12 cm. longis 8-10 cm. latis; petiolis 3-5 cm. longis sordide puberulis supra planis vel leviter canaliculatis; capitulis ca. 26-floris sublaxe corymboso-paniculatis graciliter pedicellatis 1 cm. longis; involucri anguste campanulati squamis ca. 23 valde inaequalibus dorsaliter minutissime puberulis 3-6-nerviis, exterioribus ovato-lanceolatis acutis brevioribus (extimis 1-3 lineari-lanceolatis subpatentibus), mediis lanceolatis, interioribus anguste oblongo-lanceolatis acutis, intimis linearibus subacutis apicem versus ciliolatis; corollis graciliter tubulosis 7 mm. longis apicem versus patenter hispidulis aliter glabris verisimiliter albis, faucibus brevissimis obscuris, limbi dentibus 5 breviter deltoideis patentibus vel recurvatis; antheris subliberis apice longiuscule appendiculatis basi subsagittatis; achaeniis glabris nigris lucidis 5-costulato-angulatis 1.5 mm. longis basi callosis et concavis; pappi setis ca. 40 laete albis delicatule capillaribus plerisque subaequalibus (2 vel 3 brevioribus) minute scabratis basi in cupulam connatis; styli ramis longissimis filiformibus.—PANAMA: in humid forests in the vicinity of El Boquete, Chiriqui, alt. 1000-1300 m., 2-8 March, 1911, *William R. Maxon*, no. 4942 (TYPE U. S., dupl. Gr.).

From *E. conspicuum* Kunth & Bouché, a species somewhat similar in its long-petioled, thin, and broadly ovate leaves, *E. Maxonii* differs much in its involucre which is clearly that of § *Subimbricata*. From *E. hylobium* Robinson it differs in the more spreading dentation of the leaves, its longer corollas (7 mm. instead of 4.5 mm.), and considerably more numerous florets and pappus-bristles, as well as its slightly firmer and more acute scales. In *E. oresbium* Robinson, another species of somewhat similar foliage and habit, the heads are smaller and less numerous and the corolla has a more enlarged throat. *E. perornatum* Klatt of Vera Cruz, likewise somewhat similar in habit, has the receptacle hairy and the achenes somewhat hispid, while *E. prionophyllum* Robinson of Costa Rica, which is arboreous, has more ovate, more gradually acuminate leaves, and glabrous corollas about 4.5 mm. long.

E. (§ *Cylindrocephala*) meridense, spec. nov., perenne herba-ceum vel fruticosum erectum; caule teretiusculo paullulo costato-angulato dense breviterque fulvo-lanato; foliis oppositis lanceolatis utroque attenuato-acuminatis crenulatis vel subintegris 4–6 cm. longis 1–1.5 cm. latis basi in petiolum breve cuneato-alatum gradatim angustatis supra bullatis scabridis puberulis subtus 3-nerviis conspicue exserto-venosis et reticulatis in venis venulisque sordido-vel fulvo-tomentosis; corymbis terminalibus compositis valde rotundatis 1 dm. diametro multicapitulatis; capitulis pedicellatis ca. 10-floris ca. 9 mm. altis ca. 3.5 mm. diametro; involucri cylindrici 4–5-seriatim imbricati squamis ca. 22 regulariter gradatis obscure ciliolatis apice rotundatis vel subtruncatis apicem versus brunnescentibus; corollis graciliter tubulosis verisimiliter purpurascentibus; achaeniis gracil-limis 3.2 mm. longis (vix maturis) in costis cum pilis brevissimis subsphaericis ornatis; pappi setis ca. 30 sordide albidis vix scabratis corollam subaequantibus.—*E. scabrum* Sch. Bip. ex Hieron. in Engl. Bot. Jahrb. xxviii. 569 (1901), not L. f.—VENEZUELA: at Mérida, Moritz, no. 1365 (TYPE Gr.).

This species differs from *E. scabrum* L. f. in having smaller heads, considerably narrower subentire or finely crenulate leaves much more attenuate at each end. The pubescence is also very different, that of the stem being a close matted wool of tawny color instead of the long spreading articulated hairs composing the much harsher and more scattered indument of *E. scabrum*.

E. (§ *Subimbricata*) microdon, spec. nov., fruticosum; ramis teretibus curvatis nodosis griseis laevibus; ramulis obscure strigilloso-puberulis; foliis oppositis petiolatis lanceolato-oblongis longiuscule acuminatis basi acutis in margine subrevoluto remote obscureque cuspidato-denticulatis penninerviis (nervis lateralibus ca. 10-jugis prorsus curvatis) utrinque glaberrimis delicatule prominulenter reticulatis subcoriaceis 9–13 cm. longis 2.5–4.8 cm. latis; petiolis 1–1.5 cm. longis; paniculis terminalibus hemisphaericis 6–10 cm. diametro; bracteis parvis anguste oblanceolatis; capitulis in glomeru-los sphaericos ca. 5-capitulatos dispositis sessilibus ca. 3-floris 8 mm. longis; involucri subcylindrici squamis valde inaequalibus ca. 9, exterioribus lanceolato-ovatis acutiusculis vel obtusis dorso brevis-sime pilosulis brevibus persistentibus, intermediis et interioribus gradatim longioribus minute eroso-ciliolatis aliter glabrescentibus substramineis caducis; corollis graciliter tubulosis 4.8 mm. longis sine faucibus ullis distinctis, dentibus limbi ovato-deltoides patentibus subacutis; achaeniis atro-olivaceis 2 mm. longis 5-angulatis glaber-

rimis; pappi setis 41–50 minute subscabratis corollam subaequantibus; styli ramis clavellatis.—GUATEMALA: in tall woods, Coban, Alta Vera Paz, alt. 1550 m., April, 1908, *H. von Türckheim*, no. II, 2261 (TYPE Gr.).

This species with many of the characters of *E. daleoides* (DC.) Hemsley differs markedly in having its leaves finely and remotely cuspidate-denticulate instead of serrate and very obscurely, if at all, punctate, and in the distinct though fine reticulation on their upper surface.

E. (§ Subimbricata) miserum, spec. nov., herbaceum gracillimum perenne 2–2.5 dm. altum; radice e fibris duris gracilibus composita; caulibus 1–3 teretibus ca. 1 mm. diametro obscure fulvo-tomentellis simplicibus usque ad inflorescentiam paniculatim ramosam; foliis oppositis lanceolatis attenuatis ad apicem obtusiusculum crenatis (basi anguste cuneata integerrima excepta) membranaceis utrinque viridibus et paullo puberulis a basi 3-nerviis 1–2 cm. longis 2–5 mm. latis; petiolo 2–3 mm. longo; paniculae diffusae ramis inferioribus oppositis superioribus plerumque alternis gracilibus; pedicellis filiformibus 1–9 mm. longis; capitulis 4.5 mm. altis ca. 25-floris 3.5 mm. diametro; involucri turbinato-campanulati persistentis squamis lanceolatis vel lanceolato-linearibus tenuibus viridibus, interioribus subaequalibus glabris, exterioribus paucis gradatis plus minusve dorso puberulis; receptaculo parvo plano calvo glabro; corollis lilaceis vel roseis 2 mm. longis, tubo proprio 5 mm. longo, faucibus subcylindricis distincte ampliatis 1.3 mm. longis, limbi dentibus 5 deltoideis dorso paullulo hispidulis; achaeniis immaturis saltem in angulis pubescentibus.—COLOMBIA: at the Falls of the Truandó, just south of the border of Panama, *Dr. Arthur Schott*, nos. 2 (TYPE Field Mus., phot. Gr.), 1 (Field Mus., phot. Gr.).

An inconspicuous plant clearly of a small group of annuals and slender perennials, represented by *E. sideritidis* Benth., *E. Sinclairi* Benth., *E. capillipes* Benth., and *E. lloense* Hieron.

EUPATORIUM MUELLERI Sch. Bip. ex Klatt, *Leopoldina*, xx. 90 (1884), as *Mülleri*. Although this name has in recent years been rather frequently employed in identifications of Mexican specimens, it now becomes clear that it has not been rightly applied. Fragments and an excellent sketch of the type of *E. Muellerei* which came to the Gray Herbarium with the Klatt *Compositae* prove it to have been precisely the plant later described and well figured by Coulter, *Bot. Gax.* xx. 47, t. 5 (1895), as his proposed monotypic genus *Mallinoa corymbosa*. The writer, *Proc. Am. Acad.* xlix. 433 (1913), has already

discussed the generic position of *Mallinoa* and shown that it is of the genus *Eupatorium*, where it approaches very closely the species *E. bellidifolium* Benth. At that time it seemed unwise to rename *Mallinoa corymbosa* under *Eupatorium*, from a suspicion that the plant might already have been somewhere so treated, which now proves to have been the case. Klatt misleadingly described the species as shrubby. This is certainly not the case. It is an herbaceous perennial, leafy chiefly at or near the base and with consequent subscapose habit. The more leafy plant, long passing in herbaria as *E. Muelleri*, is described above as *E. choricepalum* and may be readily separated by its broadly ovate distinctly cordate leaves, distributed well into the open inflorescence, as well as by many other characters.

E. (§ Subimbricata) ornithophorum, spec. nov., herbaceum perenne griseo-viride tomentellum; caule striato-angulato griseo-brunneo, internodiis 6–12 cm. longis; foliis lanceolatis caudato-acuminatis penniveniis obtuse et irregulariter dentatis supra bullatis et scabridis subtus multo pallidioribus griseo-tomentosis 1 dm. longis 2.5–3.5 cm. latis basin versus primo paullo contractis deinde in discum suborbiculare dentatum perfoliatum ca. 2.4–4 cm. diametro dilatatis; foliis supremis bracteiformibus multo reductis angustatis attenuatis subintegris; panícula griseo-tomentella ca. 2 dm. alta et crassa; ramulis late patentibus, lateralibus terminales saepius longe superantibus; capitulis ca. 22-floris 7 mm. altis 4 mm. diametro subsessilibus glomeratis; involucri campanulati ca. 4-seriati griseo-tomentelli squamis lanceolatis vel intimis linearibus acutis; receptaculo plano calvo glabro; corollis 3 mm. longis purpureis vel violaceis tubulatis a basi ad apicem paullulo dilatatis sed sine faucibus distinctis; styli rami filiformibus elongatis papillosis attenuatis non glabratis; achaeniis 1.2 mm. longis in faciebus granulatis.—COLOMBIA: in the Cordillera Oriental east of Neiva, August 7, 1917, *Rusby & Pennell*, no. 1034 (TYPE N. Y., fragm. and phot. Gr.); foot of Cordillera, near Neiva, *Rusby & Pennell*, no. 479 (N. Y., fragm. Gr.).

E. (§ Subimbricata) Pennellii, spec. nov., herbaceum erectum 10–14 dm. altum exsiccatione fuscescens; caule tereti atropurpureo maturitate glabrato laevissimo sed obscuro infra simplici supra paniculatim ramoso; foliis oppositis petiolatis ovatis caudato-attenuatis basi rotundatis argute serratis (dentibus 14–18 utroque latere 0.7 mm. altis 1.5–2.5 mm. latis) membranaceis plerisque a basi 5-nervatis ca. 5 cm. longis 3.5 cm. latis supra in nervis sparse pubentibus infra subglabris; petiolo 1–1.5 cm. longo; panícula elongata ovoidea ca. 5 dm. longa 2 dm. diametro; ramis oppositis divaricatis saepe flexuosis

puberulis, pilis incurvis; cymis ca. 4-7-capitulatis 2-3 cm. diametro convexis laxiusculis, pedicellis 3-6 mm. longis; capitulis 7 mm. altis ca. 25-floris; involucri glabriusculi campanulati squamis stramineo-scariosis 3-4-seriatis plerisque 2-costatis (costis e callo conspicuo basilari oriuntibus), interioribus elliptico-oblongis apice erosis obtusis vel rotundatis, exterioribus gradatim brevioribus ovatis ciliatis dorso paullo pubescentibus; corollis albis 3.5 mm. longis glabris, tubo proprio 1 mm. longo, faucibus vix ampliatis cylindricis 2 mm. longis, limbi dentibus 5 ovato-deltaideis 0.5 mm. longis; achaeniis 2 mm. longis nigrescentibus in costis pallidioribus patentem hispidulis. — COLOMBIA: at the foot of the Cordillera Oriental near Neiva, *Rusby & Pennell*, no. 626 (TYPE Gr., dupl. N. Y.).

E. (§ Subimbricata) perezioides, spec. nov., gracile perenne erectum 4-5 dm. altum; caule tereti ad inflorescentiam simplici fusco-tomentoso et glandulari, internodiis inferioribus 2-12 mm. longis, superioribus 2-3 cm. longis; foliis oppositis ovato-ellipticis obtusis cordatis crenato-serratis firmis subcoriaceis supra atroviridibus et cum glandulis sessilibus vel breviter stipitatis conspersis infra multo pallidioribus griseo-tomentosis glandularibus 4-7 cm. longis 2.5-4 cm. latis basi ima penniveniis paullo supra basin tamen 3-nervatis venulis utrinque prominulis reticulatis; petiolis 2-3 mm. longis fusco-tomentosis; panicula diffusa 12-30-capitata, ramis oppositis divaricatis longis flexuosis subfiliformibus; pedicellis 1-2.5 cm. longis; capitulis ca. 36-floris ca. 8 mm. altis 5 mm. diametro; involucri campanulati 3-4-seriati squamis purpureo-brunneis ca. 3-nerviis, exterioribus brevibus late ovatis obtusis, interioribus gradatim longioribus angustioribus acutioribus; corollis viridi-albis limbum versus purpureo-tinctis, tubo proprio gracili 2.3 mm. longo, faucibus campanulatis distincte ampliatis 1.2 mm. longis, limbi dentibus 5 breviter deltaideis patentibus vel recurvis; styli ramis filiformibus perlongis; achaeniis 2 mm. longis rubro-brunneis in costis hispidulis; pappi setis 27-36 vix scabratis 3.7 mm. longis. — COLOMBIA: "Buenavista," west of Villavicencio, Dept. Meta, alt. 1000-1200 m., *Pennell*, no. 1678 (TYPE Gr.).

Not very closely related to any hitherto described species, and to be readily recognized by its diffuse inflorescence and *Perezia*-like habit.

E. (§ Eximbricata) rorulentum, spec. nov., fruticosum vel arboreum fulvo-tomentellum; ramis teretibus; ligno albo duro, cortice fusco brunneo; ramulis adscendentibus subfastigiatis foliosis fulvo-tomentellis teretibus vel obscure hexagonis; foliis oppositis petiolatis

late ovatis obtusis serratis (basi leviter cordata integra) 2–2.8 cm. longis 1.5–2 cm. latis coriaceis basin versus penniveniis supra basin 3-nervatis utrinque reticulatis supra dense cum glandulis sessilibus praeditis aliter glabris subtus fulvo-pubescentibus et sparsius glanduliferis; petiolo 1–3 mm. longo fulvo-tomentello; corymbis numerosis parvis in ramis terminalibus; ramulis pedicellisque griseo-hirsutis; capitulis ca. 10-floris ca. 6 mm. altis; involucri campanulati squamis 7–10 subaequalibus vix imbricatis lanceolato-oblongis acutiusculis dorso fulvo- vel griseo-tomentosis; receptaculo parvo plano calvo glabro; corollis (valde immaturis) verisimiliter albidis 5 mm. longis glabris; tubo proprio ca. 1 mm. longo; faucibus distincte ampliatis subcylindricis ca. 3 mm. longis; achaeniis deorsum attenuatis in angulis cum glandulis sessilibus vel brevissime stipitatis praeditis.— COLOMBIA: Guadalupe, Dept. Cundinamarca, alt. 2900 m., *Bros. Apollinaire & Arthur*, no. 27 (TYPE Gr.).

EUPATORIUM ROTHROCKII Gray. This species seems to be capable of subdivision into the following varieties.

Var. **typicum**, foliis firmisscule membranaceis ovatis vel lanceolatis basi obtusis vel rotundatis serratis (dentibus acutis) laeti- vel flavescenti-viridibus.— *E. Rothrockii* Gray, Syn. Fl. i. pt. 2, 102 (1884). *Kyrstenia Rothrockii* (Gray) Greene, Leaflet i. 9 (1903).— ARIZONA: Mt. Graham, alt. 2745 m., September, 1874, *Dr. J. T. Rothrock*, nos. 740, 741; Pine Cañon, alt. 2440 m., 1 Oct., 1909, *Blumer*, no. 3434. CHIHUAHUA: southwestern part of state, Aug.–Nov. 1885, *Palmer*, no. 375; shaded ledges of the Sierra Madre, 8 Oct. 1887, *Pringle*, no. 1265 (mixed with *E. Lemmoni* Robinson); mountain near Pilaes, Strawberry Valley, 22 Sept. 1891, *Hartman*, no. 752; near Colonia Garcia, alt. 2250 m., 12 Sept. 1899, *Townsend & Barber*, no. 325.

Var. **Shrevei**, var. nov., foliis tenuioribus deltoideo-ovatis cordatis vel basi truncatis majoribus usque ad 1 dm. longis et 7 cm. latis grosse crenatis fuscescente viridibus; inflorescentia, involucri, flosculis ut apud var. *typicum*.— ARIZONA: Ramsey Cañon, Huachuca Mountains, alt. 1680 m., 25 Sept. 1916, *Dr. Forrest Shreve*, no. 5017 (TYPE Gr.). Seemingly something more than a mere shade form, although without any as yet detected floral differences.

E. (§ Subimbricata) sciaphilum, spec. nov., fruticosum vagum 2–4 m. longum molliter lignosum; ramis teretibus glabris purpurascenti-griseis ramulis fulvescenti-puberulis, pilis crispis; foliis oppositis spatulato-obovatis vel -oblanceolatis integerrimis utrinque glabris molliter coriaceis sessilibus vel brevissime petiolatis obtusis basi cuneatis 5–8 cm. longis 1.8–3.2 cm. latis, nervo medio supra

impresso subtus prominulo, nervulis lateralibus pinnatis obscurissimis ca. 5-jugis; capitulis ca. 10-floris in corymbum laxum valde convexum 1-1.5 dm. diametro dispositis graciliter pedicellatis; bracteis lineari-subulatis; involucri subcylindrici squamis ca. 9, interioribus linearibus oblanceolatis uninerviis ciliolatis aliter glabris ut videtur purpureis acutis subaequalibus, extimis 2-3 multo brevioribus ovatis acutiusculis medio plus minusve incrassatis; flosculis valde exsertis; corollis glaberrimis graciliter tubulosis 7 mm. longis deorsum decrescentibus sine faucibus distinctis, limbi dentibus ovato-deltoides suberectis; achaeniis gracilibus 4 mm. longis 5-angulatis basi attenuatis in costis basin et apicem versus paullo patentius hispidulis; pappi setis ca. 48 albidis capillaribus vix scabratis corollam subaequantibus; styli ramis filiformibus.— COLOMBIA: Dept. Antioquia, alt. 2292-2350 m., in light shade of forest, 25 July, 1880, *Kalbreyer*, no. 1445 (TYPE K.).

This species, communicated to the Kew Herbarium by Messrs. Veitch, Nov. 1880, is said to have glossy foliage and dark purplish-violet handsome flowers. It seems promising for horticulture, but appears never to have received a name or scientific description. In its thick coriaceous foliage and the somewhat calyculate nature of the involucre it shows similarity to the Mexican *E. araliaefolium* Lessing, which, however, has lance-oblong acuminate leaves, more numerous flowered heads, and achenes hispid on the angles from the summit to the base.

E. (§ Eximbricata) sciatrappes, spec. nov., fruticosum primo aspectu laevissimum sed inflorescentia puberulum (pilis minutis attenuatis curvatis articulatis purpurascens); caule subtereti costulato juventate purpureo-brunneo maturitate griseo; internodiis 2-5 cm. longis; foliis oppositis petiolatis ovatis acuminatis apicem versus integris saepe falcatis lateraliter grosse crenatis (crenaturis ca. 2 mm. altis ca. 8 mm. latis) basi obtusis vel rotundatis subcoriaceis vel chartaceis supra in costa paullo puberulis aliter glaberrimis lucidulis viridibus subtus glaberrimis paullo pallidioribus 7-9 cm. longis 3-4 cm. latis supra basin 3-nerviis; nervis inter se a venis transversis connexis; corymbo terminali amplo leviter convexo laxiuscule ramoso ca. 18 cm. diametro basi foliaceo-bracteato supra bracteolis minimis integris spatulatis instructo; pedicellis rectis subfastigiatis apice plerisque capitula 2 vel 3 sessilia gerentibus; capitulis 8-13-floris ca. 6.5 mm. altis; involucri turbinato-campanulati squamis 10-12 lanceolatis vix imbricatis modice inaequalibus subacutis dorso paullo granulatis; corollis subcylindricis 2.5 mm. longis sensim dilatatis in

tubo extus sparse papillosis aliter laevibus; achaeniis deorsum decrescentibus 2 mm. longis in costis paullo hispidulis apice cum nectario purpurascenti breviter cylindrico instructis; pappi setis flavidulo-albidis vix scabratis.—SANTO DOMINGO: shady places at Altamira, alt. 420 m., *Eggers*, no. 2423 (TYPE N. Y., fragm. Gr.).

E. (§ Subimbricata) Squiresii Rusby, spec. nov., perenne elatum herbaceum vel verisimiliter fruticosum; caule tereti viridi glabro laevissimo meduloso; foliis oppositis breviter petiolatis oblongis acuminatis (apice vero saepe obtusiusculo) basi angustatis deinde rotundatis vel paullulo in petiolum decurrentibus penniveniis (venis utroque ca. 10 prorsus curvatis inter sese anastomosantibus) repandodontatis membranaceis utrinque viridibus glabris vel praecipue subtus in costa venisque sordide puberulis 9–22 cm. longis 4.5–10 cm. latis; panícula terminali ampla ad 3 dm. longa 1–2 dm. diametro laxa patenter ramosa inferne folioso-bracteata, ramis denuo ramosis puberulis apicem versus cymoso-furcatis; capitulis breviter pedicellatis glomerulatis ca. 6 mm. altis ca. 3.5 mm. diametro ca. 22-floris; involucri campanulato-subcylindrici squamis ca. 21 tenuibus stramineis valde inaequalibus 3–4-seriatim imbricatis regulariter gradatis apice rotundatis et dorso villosulis 1–3-nerviis 2–4-costulatis; corollis flavescente albidis 3.5 mm. longis ad limbum extus granulosis aliter glabris; styli ramis filiformibus papillosis; achaeniis nigris 1.3 mm. longis hispidulis; pappi setis ca. 30 capillaribus 3 mm. longis laete albis.—VENEZUELA: at Paloma, Delta Amacuro (in the region of the lower Orinoco), April, 1896, *Rusby & Squires*, no. 2 (TYPE N. Y., dupl. Gr., Mo., etc.).

Described by permission of Dr. H. H. Rusby, who long ago recognized the novelty of the plant but through pressure of professional duties has been unable to study it in detail and give it published record. The species is dedicated to his associate Mr. Roy W. Squires, who accompanied him on the arduous trip of exploration during which this plant, together with many others, was discovered.

EUPATORIUM TACOTANUM Klatt. This species, secured by several collectors at different points in Colombia, exhibits some variations worthy of note, the nature of which may be stated thus:

Var. **typicum**, involucri squamis plerisque 1-nerviis, extimis exceptis subglabris, intermediis lanceolato-linearibus acutiusculis, intimis linearibus acutis apice purpureis.—*E. tacotanum* Klatt in Engl. Bot. Jahrb. viii. 35 (1887).—A variety exhibiting two forms:

Forma **normale**, capitulis, ut dixit cl. Klatt, l. c., longe pedicellatis; pedicellis 3–10 mm. longitudine.—COLOMBIA: in bushy places of the savannahs around Tocotá, alt. 1600 m., *Lehmann*, n. 3424 (TYPE Gr.).

Forma **apodum**, forma nov., capitulis plerisque sessilibus in glomerulos 2-4-capitulatos dispositis; pedicellis paucissimis usque ad 2.8 mm. longis evolutis.— Same locality, habitat, and altitude, *Lehmann*, n. 3438 (TYPE Gr.).

Var. **trineurolepis**, var. nov., ut dicitur herbaceum 6 dm. altum habitu, inflorescentia, pubescentia, etc. vere in partibus omnibus involucri excepto ut apud var. *typicum* sed differt involucri squamis distincte 3-nerviis paullo magis oblongis obtusis vel apice rotundatis extus apicem versus tomentellis.— COLOMBIA: Papagayeros, Dept. El Valle, in clayey soil, alt. 800 m., 3 Nov. 1899, *E. Langlassé*, no. 9 (TYPE Gr.). The differences in the scales, which in the typical variety are as to the intermediate ones lance-linear, acutish, and 1-nerved, while here they are oblong-linear, obtusish, more copiously pubescent, and 3-nerved, are striking and might possibly justify separate specific rank. However, the plants appear to be otherwise identical throughout, and some slight variation has been observed in the scales of the typical variety of which several collections are now at hand, some of the intermediate scales being occasionally 3-nerved. It is therefore probable that a more extended series will bridge the gap between the two varieties. It may be remarked that, although Klatt, following a manuscript note of Lehmann, described his plant as a shrub reaching 3 m. in height and Langlassé notes his plant as an herb 60 cm. in height, the specimens themselves (showing in each case about 2.5-3 dm. of stem) exhibit no significant difference in the degree of lignescence, which if any distinction can be made is more pronounced in Langlassé's plant.

E. (§ Subimbricata) towarensis, spec. nov., herbaceum et perenne vel fortasse fruticosum (basi ignota); caulibus vel ramis teretibus gracilibus virgatis 2 mm. diametro sordide puberulis; foliis oppositis petiolatis lanceolato-oblongis attenuato-acuminatis basi cuneatis penniveniis 7-11 cm. longis 2.8-3.3 cm. latis primo aspectu integris sed remote obscureque cuspidato-denticulatis membranaceis utrinque viridibus supra glabris subtus puncticulatis atomiferis in costa venisque puberulis; venis utroque ca. 6 prorsus curvatis et inter sese anastomosantibus; petiolo ca. 1 cm. longo; paniculis terminalibus oppositirameis foliaceo-bracteatis 1-3 dm. longis 1-2 dm. diametro, ramis divaricatis basin versus nudis; ramulis brevibus etiam divaricatis; pedicellis plerisque 1-3 mm. longis; capitulis ca. 13-floris ca. 6 mm. altis 3.5 mm. diametro; involucri campanulati squamis ca. 21 stramineo-scariosis apice rotundatis regulariter 3-4-seriatim gradatis dorso praecipue apicem versus puberulis, extimis ovatis brevissimis, ceteris

oblongis vel lineari-oblongis plerisque 3-veniis 2-4-costatis; corollis 3 mm. longis in limbo brevissime 5-dentato extus granulosus aliter glabris, tubo proprio fauces vix ampliatas subaequante; achaeniis nigris 1.5 mm. longis in faciebus paullo papillois in angulis papilloso-hispidulis; pappi setis ca. 36 albis vix scabratis capillaribus 2.4 mm. longis; styli ramis filiformibus papillois.— VENEZUELA: near Tovar, State of Mérida, alt. 1220 m.; *Fendler*, no. 1947 (TYPE Gr.).

E. (§ Eximbricata) Trianae, spec. nov., herbaceum perenne crispe tomentellum; caulibus teretibus striatis indumento brevissimo brunescente tectis sursum alterni-ramosis foliosis; foliis caulinis alternis lanceolato-linearibus 6-10 cm. longis 5-10 mm. latis remote obscureque denticulatis vel integerrimis utroque attenuatis uninerviis pinnativeniis supra reticulato-rugulosis et puberulis subtus pallidioribus reticulatis sordide griseo-tomentosis, foliis rameis saepissime oppositis minoribus; petiolis vix 2-3 mm. longis tomentosis; capitulis ca. 28-floris subsessilibus in glomerulos globosos subsessiles vel breviter pedunculatos paniculatim dispositos aggregatis 5 mm. altis 5 mm. diametro; involucri squamis ca. 16 anguste oblanceolato-oblongis subaequalibus acutis 3-nerviis ciliatis dorso hirsutulis et cum glandulis numerosis sessilibus globularibus munitis; receptaculo glabro modice convexo; corollis 2.2 mm. longis colore incertis a basi ad apicem gradatim ampliatas 5-nervatis inter nervos apicem versus cum glandulis sessilibus globosis sparsis, dentibus limbi 5 recurvatis; achaeniis 5-costatis 5-angulatis nigris 1.2 mm. longis inter costas cum glandulis paucis instructis; pappi setis 21 sordide albis 1.8 mm. longis sursum minute scabratis; antheris oblongis basi rotundatis apice cum appendice oblongo-deltaidea munitis; styli ramis filiformibus.— COLOMBIA: without precise locality, *Dr. J. Triana*, no. 1196 (TYPE K.).

Unfortunately, no detailed data accompany this interesting plant which, like many others of Dr. Triana's Colombian material, was purchased by the Royal Gardens in February, 1892, but is unaccompanied by any original ticket. The species is exceedingly distinct from any other *Eupatorium* known to the writer, yet there can be little doubt that it is correctly referred to the genus.

E. (§ Cyandrocephala) uromeres, spec. nov., fruticosum gracile 12 dm. altum; caule tereti tomentello glabrescente flexuoso verisimiliter scandente ramoso; ramis longis patentibus saepe patenter dichotomis; foliis oppositis petiolatis 4-6 cm. longis 2-3 cm. latis ovatis acutis basi rotundatis deinde brevissime cuneatis membranaceis supra minute papillois subtus reticulatis molliter tomentellis a basi trinerviis obscure remoteque serratis dentibus 5-6 mm. latis vix 0.5 mm. altis; petiolo gracili tomentello 5-8 mm. longo; cymis axillaribus

oppositis plerisque 3-5-capitulatis; pedicellis lateralibus late patentibus subfiliformibus canescenti-tomentellis; capitulis campanulato-cylindricis ca. 45-floris 7 mm. altis 4 mm. diametro; involucri squamis ca. 50 albis uninerviis ca. 5-seriatim imbricatis apice cum appendice subulata herbacea patente vel deflexa ca. 0.7 mm. longa munitis; corollis 3 mm. longis purpurascentibus, tubo proprio 1.7 mm. longo sparse papilloso sursum in fauces 1 mm. longas paullo ampliato dentibus limbi 5 anguste ovatis 0.3 mm. longis; achaeniis 2.8 mm. longis gracilibus 5-costatis faciebus nigris glabris lucidulis, costis stramineis eroso-serratulis; pappi setis ca. 28 albis breviter hispidulo-scabratis 3 mm. longis.—COLOMBIA: occasional in thickets and dry forests below 915 m., fl. May-Dec., near Santa Marta, expedition of 1898-'99, *H. H. Smith*, no. 505 (TYPE Gr.).

A species readily distinguished by its caudate involucreal scales.

E. (§ *Cylindrocephala*) *xestolepis*, spec. nov., ut videtur fruticosum (basi ignota); caulibus teretibus 3-4 mm. diametro lanatis maturitate glabrescentibus fuscescentibus medullosis; ramis divaricatis curvatis sordide lanato-villosissimis; foliis oppositis petiolatis ovatis acute acuminatis basi cordatis crenato-serratis 3-5 cm. longis 2-3 cm. latis supra bullatis puberulis subtus griseo-tomentosis prominenter reticulatis a basi 3(-7)-nerviis; nervis a venis transversis connexis; corymbis laxiusculis paucicapitulatis; pedicellis patentibus saepe curvatis gracilibus pubescentibus 2-12 mm. longis; capitulis ca. 9 mm. altis 6 mm. diametro ca. 28-floris; involucri campanulato-subcylindrici squamis ca. 27 rigidiusculis pallidis eburneis lucidis 1(-3)-nerviis vel -striatis 4-5-seriatis regulariter gradatis caducis, extimis ovatis acutis, intermediis oblongis obtusis, intimis linearibus; summa parte axis post delapsam squamarum breviter cylindrica pedicello paullulo crassiore; corollis 4 mm. longis glabris; tubo proprio gracile 2.7 mm. longo; faucibus campanulatis 1.3 mm. altis; dentibus limbi brevibus recurvatis; pappi setis ca. 26 albidis 3.5 mm. longis apicem versus paullulo clavellatis stramineis hispidulo-scabratis; achaeniis nigris gracilibus 4-5-angulatis in angulis sursum minute scabratis apice cum nectario late breviterque cylindrico coronatis.—VENEZUELA: near Tovar, State of Mérida, *Fendler*, no. 638 (TYPE Gr.); Caracas, *Birschel* (Gr.); on the old road from Caracas to La Guaira, alt. 1100-1700 m., *Pittier*, no. 5880 (U. S., N. Y.).

E. (§ *Campyloclinium*) *zinniifolium*, spec. nov., fruticosum densissime fusco-tomentosum pilis glandulosis; foliis oppositis arcte sessilibus 5-7-nerviis elliptico-lanceolatis 7 cm. longis 3.5 cm. latis serratis (dentibus 0.5-1 mm. altis 3-4 mm. latis) apice angustatis obtusiusculis utrinque sordido-tomentellis; corymbis terminalibus vix

pedunculatis ca. 10-capitulatis; capitulis ca. 100-floris 12-13 mm. altis; involucri campanulati squamis 22-25 subaequalibus lanceolato-oblongis basin versus 2-4-costatis (extimis 1-3 brevioribus) dorso pubescentibus et cum glandulis paucis sessilibus instructis margine erosis et glandulari-ciliatis; receptaculo valde convexo fere hemisphaerico glabro; corollis 6.3 mm. longis; tubo proprio 2.6 mm. longo gracillimo; faucibus 3.7 mm. longis campanulato-ampliatis; limbi dentibus 5 lanceolato-deltaideis acutis dorso villosis; achaeniis 2.7 mm. longis 5-costato-angulatis brunneis in costis sursum hispidulis in faciebus glabris basi callosis ad apicem cum disco parvo coronatis; pappi setis 20-25 albidis 5.5 mm. longis paullulo firmissculis apicem versus sensim incrassatis scabridulis.—COLOMBIA: on the Sierra Nevada, alt. 2745-3050 m., Prov. of Rio Hacha, Dept. Magdalena, 1852, *L. Schlim*, no. 1812 (TYPE K., phot. Gr.).

This noteworthy species clearly belongs to the § *Campyloclinium* having the large heads and exceedingly convex receptacle of the group, but otherwise possessing many marked differences from previously described species. It was one of many plants obtained for horticultural purposes by J. Linden from northern South America in the 50's, but it has been impossible to find any horticultural records of the plant, which presumably failed to succeed in cultivation. The only field notes to be derived from the label are that the plant was shrubby and had roseate flowers. Whether the color was derived from the corollas or a composite impression of corollas and suffused involucreal scales cannot now be told.

Fleischmannia repens, spec. nov., herbacea repens; caulibus pluribus teretibus a rhizomate horizontali curvato-adscendentibus 1.5-4 dm. longis usque ad inflorescentiam foliosis longiuscule sordideque pilosis, pilis patentibus moniliformibus; foliis oppositis lanceolatis petiolatis 7-9 cm. longis 1.2-1.9 cm. latis argute serratis apice attenuato-acuminatis basi integerrimis anguste cuneatis supra basin 3-nervatis utrinque laxe in nervis venisque pilosis subtus paullo pallidioribus; corymbis terminalibus compositis planiusculis multi-capitulatis puberulis; pedicellis gracillimis; bracteis lineari-filiformibus minimis; capitulis parvis vix 5 mm. altis ca. 4 mm. diametro 17-floris; involucri campanulati squamis ca. 11 lineari-lanceolatis vel anguste oblongis acutiusculis ciliolatis 2-3-costato-nervatis una vel duabus extimis brevioribus caeteris subaequalibus ca. 3 mm. longis; corollis 2.8 mm. longis ut videtur albis vel pallide roseis glabris, tubo proprio gracillimo 1.5 mm. longo, faucibus abrupte campanulato-dilatatis, dentibus limbi 5 ovato-deltaideis acutiusculis patentibus; styli ramis filiformibus; antheris brevibus apice cum appendice oblongo-ovata

obtusa munitis; achaeniis 5-angulatis 1.2 mm. longis deorsum decrescentibus in costis hispidulis; pappi setis 5 delicatule capillaribus minute scabratis corollam aequantibus.— MEXICO: on wet rocks, Barranca de Tenampa, Zacuapan, Vera Cruz, March, 1910, *Dr. C. A. Purpus*, no. 4925 (TYPE Gr.).

This species, very naturally sent out as a *Eupatorium*, is clearly from its definite pappus-bristles of the genus *Fleishmannia*. It is, however, certainly distinct from any hitherto described species of the genus. While it approaches most nearly in its general habit and foliar characters *F. arguta* (HBK.) Robinson, it differs in many important characters. The heads are much more numerous, more definitely aggregated into flat-topped corymbs, and are much smaller. The florets are very much less numerous. The pubescence of the stem is of long conspicuous jointed hairs, while in *F. arguta* the stems are merely puberulent.

Kuhnia oreithales, spec. nov., herbacea erecta; caule tereti pluricostulato brevissime crispeque puberulo foliaceo 4–6 dm. vel ultra alto virgato vel supra mediam partem ramoso; ramis adscendente patentibus; foliis lineari-lanceolatis plerisque adscendentibus integerimis minute puberulis utrinque viridibus subtus paullo pallidioribus crebre punctatis 5–8 cm. longis 2–6 mm. latis tenuibus 1-nerviis margine paullo revolutis; capitulis ca. 18-floris thyrsoideo-corymbosis graciliter pedicellatis nutantibus 11–12 mm. altis; involucri squamis interioribus anguste oblongis acutis tenuibus striatis viridibus vel partim purpureis subglabris sed apicem versus atomiferis et plus minusve ciliolatis, squamis extimis multo brevioribus subsquarrosorecurvatis; corollis ca. 6 mm. longis albidis vel purpureo-tinctis glabris sed in limbo extus atomiferis; achaeniis maturitate 6 mm. longis fusco-brunneis glabriusculis.— MEXICO: Chihuahua: near Colonia Garcia, 16 August, 1899, *Townsend & Barber*, no. 260 (TYPE Gr., U. S., Mo., etc.), distributed as *Coleosanthus corymbosus*, with which it has no close resemblance even of general habit, not to mention its plumose pappus. *K. oreithales*, in its thin smoothish leaves and in habit, resembles the northeastern *K. eupatorioides* L., but it differs from that species in its entire leaves and nodding heads, as well as its more acute inner involucreal scales; and, of course, it is geographically remote. To *K. oreithales* may be referred the following specimens: near Colonia Garcia, 1–20 August, 1899, *E. W. Nelson*, nos. 6208 (Gr.), 6216 (Gr.); near Parral, 28 September, 1898, *E. H. Goldman*, no. 124 (Gr.); Sierra Madre and Sierra Santa Barbara, near La Providencia, alt. 1980–2440 m., *E. W. Nelson*, no. 5016 (Gr.).



Robinson, Benjamin Lincoln. 1918. "Diagnoses and notes relating to tropical American Eupatorieae." *Contributions from the Gray Herbarium of Harvard University* (55), 235–263. <https://doi.org/10.5962/p.336016>.

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