

**PLANTS COLLECTED BY TH. HERZOG ON HIS SECOND
BOLIVIAN JOURNEY, 1910—1911**

Part VIII

COMPOSITAE

(continued)

JOSÉPHINE TH. KOSTER

(Rijksherbarium, Leiden)

(Issued 1. VI. 1948).

EUPATORIEAE.

Ageratinae.

Stevia Cav.

After a paper had been published i. a. on the species of *Stevia* of the collection mentioned in the heading¹⁾ another *Stevia* from the same collection came into the author's hands. It proved to be new. The American genus *Stevia* has been treated in local revisions by B. L. Robinson (in Gray Herb. Harvard Univ. V, 90, 1930, 36—159; 96, 1931, 28—49; 100, 1932, 20—69). Its floral characters are fairly uniform, but the pappus shows a great diversity. The 5 achenes in a head do not mature at the same time. The genus *Stevia* seems to have its greatest development in Bolivia, where it is represented by 44 species. The next representation is in Peru with 24 and in Argentina with 23 species.

Section *Eustevia* Robinson.

Stevia pauciflora Koster, nov. spec. (*fig. 1—6*) — Herbacea parva, 11—16 cm alta, ramosa, ad basin caulinibus pluribus, rhizomatibus praedita, radicibus copiosis. Caules tenues, pubescentes, subteretes, obscuriter striati, purpurascentes, $\frac{1}{2}$ —1 mm crassi, ad basin squamis lanceolatis, minutis, siccis, confertis praediti; internodiis $\frac{1}{2}$ —3 cm longis. Folia opposita, subsessilia vel breviter petiolata, parva, anguste elliptico-lanceolata, ad basin sensim in petiolum attenuata, apice obtusa, sparse dentata (dentibus 4—8), firma, pallide olivacea (in sicco), utrinque dense glandulosa-punctata, glabra, trinervia, nervis prominentibus subtus, $\frac{1}{2}$ —3 cm longa, $1\frac{1}{2}$ —5 mm lata. Capitula pauca, 3, interdum 4, conferta, terminalia vel ad apice pedunculi tenuis pubescentis, bracteis minutis saepe praediti, in axillis superioribus 2, breviter pedunculata (pedunculis 1— $1\frac{1}{2}$ mm longis in axilla bracteae minutae) vel subsessilia, cylindrica, 5-flora, 9 mm longa, $1\frac{1}{2}$ mm crassa;

¹⁾ in *Blumea* 5, n. 3, 1945, 641—685.

involucrum cylindricum, 4—5 mm longum, squamis 5, elliptico-lanceolatis, longitudine inaequantibus, naviculiformibus, apice acutis, dorso glandulosis, pubescentibus, striatis. Flores bisexuales, 9 mm longi; corolla tubulosa, apice 5-lobata, glandulosa, 5 mm longa, lobis obtusis. Antherae apice insigne appendiculatae, obtusae, ad basin obtusae. Styli rami longi, tenues, apice acuti. Achenium turbinato-oblongum, 5-costatum, glabrum, nigrescens, 4 mm longum; pappus omnium acheniorum similis ex paucis paleis membranaceis, minutis, apice laciniatis cum 3 setis filiformibus, scabris, 4 mm longis. Receptaculum parvum, planum, nudum.

Hab.: an trockenem, felsigen Abhängen im Caipipedithal, 1000 m alt.; Dez. 1910, n. 1228.

The type is preserved in the Rijksherbarium, Leiden.

Obs.: This species is closely allied to *Stevia chamaedrys* Griseb., which, however, differs by the shape of the leaves and the much longer involucre, according to the original diagnosis. Moreover, Robinson describes its leaves to be membranaceous and pubescent and its inflorescences to exist of dense glomerules.

HELIANTHEAE.

While studying this difficult group I enjoyed the indispensable help of Dr S. F. Blake, Washington.

Millerinae.

Clibadium L.

Clibadium surinamense L., Mant. 2, 1771, 294; DC., Prodr. 5, 1836, 505; Baker in Mart., Fl. Bras. 6, 3, 1882—1884, 151; Schulz in Engl., Bot. Jahrb. 46, 1912, 617; Knuth in Fedde, Repert. Spec. nov. regni veg., Beih. 43, 1928, 711; Moore in Fawcett and Rendle, Fl. Jamaica 7, 1936, 210, fig. 65; Koster in Pulle, Fl. Surinam. 4, 2, 1938, 137 — *Clibadium peruvianum* Poepp. in DC., Prodr. 5, 1836, 505; Schulz in Engl., Bot. Jahrb. 46, 1912, 620.

Hab.: Hochstaude oder spreizender Strauch an der Waldgrenze bei Tres Cruces (Cordillera de Santa Cruz), 1450 m alt., Febr. 1911, Bl. crème-weiß, n. 1533.

Distr.: West Indies, Costarica, Panama, Colombia, Venezuela, Guyana, Brasil, Peru, Bolivia.

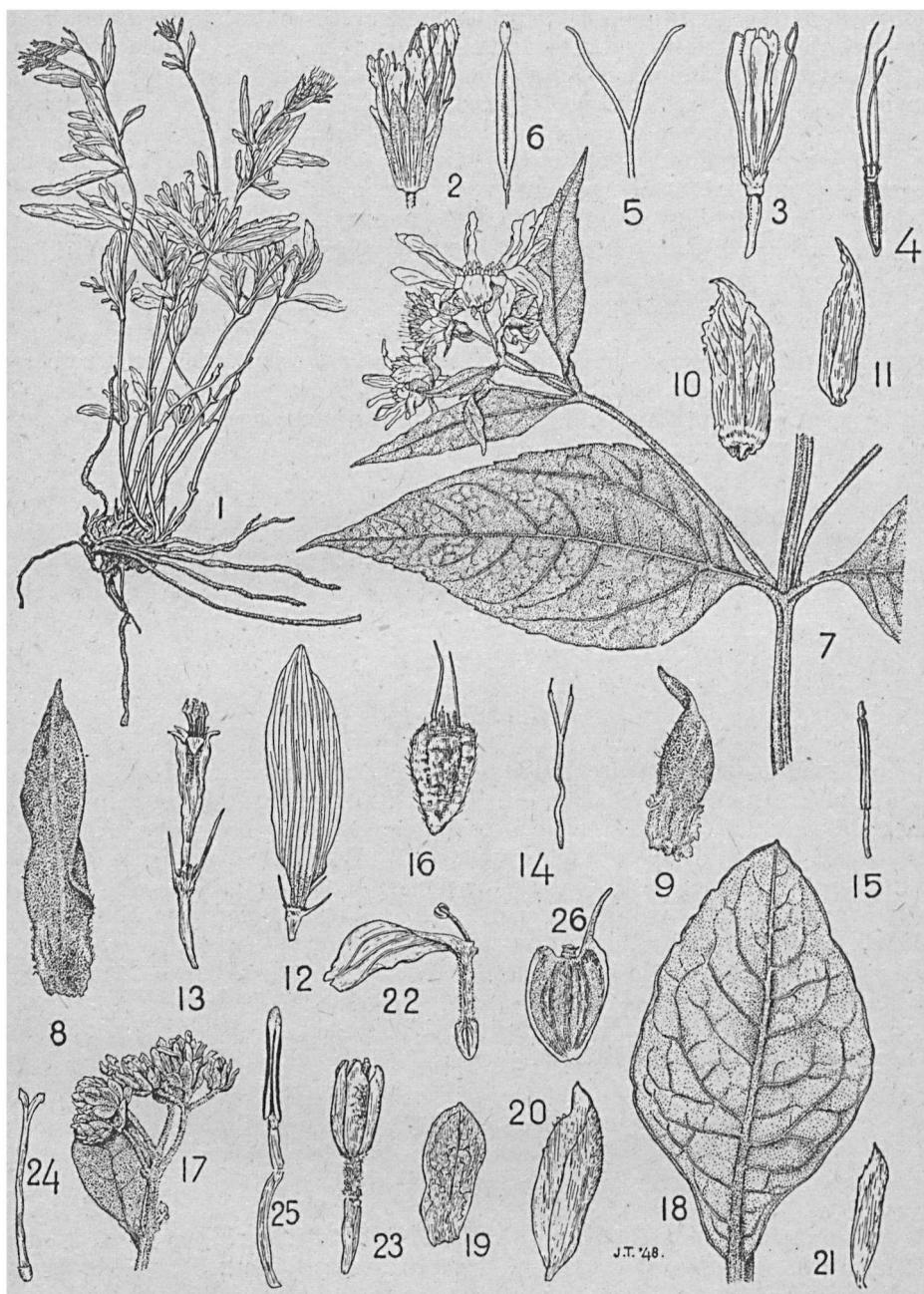
Ambrosinae.

Ambrosia L.

Ambrosia elatior L. Spec. Pl., 1753, 987; Small, Man. S. E. Flora, 1933, 1300; Giscafre et Ragonese in Darwiniana 6, 1942, 35 — *Ambrosia artemisiifolia* Auct. non L.

Hab.: in Potreros um Villa Montes häufig, 460 m alt., Nov. 1910, n. 1123.

Distr.: North, Central and South America, escaped to Europe.



Zinniae.

Sanvitalia Lam.

The following species was identified by Dr S. F. Blake, Washington.
Sanvitalia versicolor Grisebach in Abh. Kön. Ges. Wiss. Gött. 24, 1879,
189; Fries in Ark. f. Bot. 5, 1906, 18.

Hab.: in der Felssteppe bei Comarapa, 1900 m alt., April 1911, n. 1890.

Distr.: Bolivia, Argentina.

Verbesiniae.

Wedelia Jacq.

Wedelia aff. goyazensis Gardn. in Hook., London Journ. Bot. 6, 1847,
288; Baker in Mart., Fl. Bras. 6, 3, 1882—1884, 189.

Hab.: Spreizklimmer im Gebüsch zwischen Cumbarute und Majado, 800 m alt.,
Dez. 1910, n. 1174; klimmend im Buschwald bei Villa Montes (Rio Pilcomayo), 460 m
alt., n. 1122.

Obs.: Because of the achenes being immature, important characters
of the species could not be studied. Leaves cuneate or rotundate at the base.

Wedelia brachycarpa Baker in Mart., Fl. Bras. 6, 3, 1882—1884, 181 —
Viguiera spec. no 1317 Beauverd in Herzog, Pfl. boliv. And., 1923, 115.

Hab.: in Potreros zwischen Gebüsch bei Santa Cruz, 450 m alt., Jan. 1911, n. 1317.

Distr.: Paraguay.

Obs.: Peduncles 2—9 cm long.

Oyedaea DC.

Oyedaea bullata Koster, nov. spec. (fig. 7—16) — Fruticosa; rami
angulosi, parte superiore 2—4 mm crassi, sordide hirti; internodiis 4—6 cm
longis. Folia opposita, breviter petiolata, petiolis 1—½ em longis, superio-
ribus subalatis, superiora sessilia, elliptica-oblonga, utrinque gradatim at-
tenuata, apice longiter acuminata, acutissima, serrata, chartacea, bullata,
utrinque aspera, pilis brevibus, rigidis, pinninervia, subtrinervia, reticula-
tione subtus prominente, supra obscure viridia, subtus pallidiora, 9—18 cm
longa, 2½—7½ cm lata, superiora minora. Capitula numerosa, corymbosa,
(inflorescentia foliosa, foliis parvis), interdum solitaria in axillis foliorum
superiorum, pedunculata, pedunculo 1—5½ cm longo, interdum folio parvo
praedito, 5 cm diam., 12 mm alta. Involucrum campanulatum, 3—4-seria-
tum, squamis oblongis, exterioribus laxis, apice acutissimis, supra asperis,

Fig. 1—6. *Stevia pauciflora* Koster, nov. spec.; 1: flowering plant ($\times \frac{1}{2}$);
2: head ($\times 2\frac{1}{2}$); 3: flower ($\times 3\frac{1}{2}$); 4: achene ($\times 2\frac{1}{2}$); 5: style ($\times 9$); 6: stamen
($\times 12\frac{1}{2}$) — 7—16. *Oyedaea bullata* Koster, nov. spec.; 7: part of flowering plant
($\times \frac{1}{2}$); 8: outer involucral bract (mature, $\times 4$); 9: the same (young, $\times 4$); 10: inner
involucral bract ($\times 4$); 11: palea of receptacle ($\times 4$); 12: ray-flower ($\times 1\frac{1}{2}$);
13: disk-flower ($\times 3\frac{1}{2}$); 14: style ($\times 3\frac{1}{2}$); 15: stamen ($\times 3\frac{1}{2}$); 16: achene of
disk-flower ($\times 3$) — 17—26. *Verbesina rhomboidea* Koster, nov. spec.; 17: part of
flowering plant ($\times \frac{3}{4}$); 18: leaf ($\times 1$); 19: outer involucral bract ($\times 4\frac{1}{2}$); 20: inner
involucral bract ($\times 4\frac{1}{2}$); 21: palea of receptacle ($\times 2\frac{1}{2}$); 22: ray-flower ($\times 4$);
23: disk-flower ($\times 3\frac{1}{2}$); 24: style ($\times 2\frac{1}{2}$); 25: stamen ($\times 7\frac{1}{2}$); 26: achene of
disk-flower ($\times 3$).

subtus hirtellis, foliaceis, basi rigidis, 11 mm longis, deinde longioribus, anterioribus apice subacutis, vel subrotundatis, glabris, stramineis, brevioribus. Flores radii steriles, 10—15, lutei; corolla ligulata, apice 3-dentata, dentibus brevibus, 2 cm longa, 7 mm lata. Antherae et stylus desunt. Achenium rudimentum turbinatum, triquetrum, glabrum, marginibus ciliatis exceptis; pappi setae 3, achenio longioribus, squamellae parvae, laciniatae. Flores disci bisexuales, numerosi; corolla tubulosa, apice 5-dentata, dentibus acutis, basi abrupte attenuata, lutea, 6 mm longa. Antherae ad basin brevissime sagittatae, apice acutae. Styli rami breves, apice primo deltoidei, deinde abrupte attenuati, acuminati. Achenium ovatum, a lateribus compressum, marginibus ciliatis, alatum, 5 mm longum, $3\frac{1}{2}$ mm latum; pappi setae 2, achenio aequilongae vel breviores, inaequales, basin versus dilatatae, plus minusve caducis, squamellae plures, parvae, lanceolatae, apice dentatae. Receptaculum paleaceum, paleis naviculiformibus, flores disci subinvolventibus, carinatis, apice acutis.

Hab.: Strauch im Gebüsch um Incaconal, sehr häufig, 2500 m alt., Juni 1911, n. 2244.

The type is preserved in the Rijksherbarium, Leiden.

Obs.: Allied to *O. boliviiana* Britton, but to be distinguished by the bullate leaves and especially by the involuerum.

Verbesina L.

Section Ochractinia Robinson et Greenman in Contr. Gray Herb. Harv. Univ. N. S. I, 16, 1899, 559.

Verbesina macrophylla (Cass.) Blake in Bull. Torrey Bot. Club 5, 1924—1925, 430 — *Verbesina diversifolia* DC., Prodr. 5, 1836, 615; Benth. et Hook., Gen. Pl. 2, 1876, 380; Baker, in Mart., Fl. Bras. 6, 3, 1882—1884, 213, t. 65; Robinson and Greenman in Contr. Gray Herb. Harv. Univ. N. S. I, 16, 1899, 562; Rusby in Bull. N. Y. Bot. Gard. 4, 1907, 389 — *Verbesina pinnatifida* var. *subintegra* Beauverd in Herzog, Pfl. boliv. And., 1923, 142.

Hab.: Hecken um Samaipata, 1700 m alt., Bl. weiss, März 1911, n. 1668.

Distr.: Colombia, Brasil.

Obs.: A large form, of which the upper leaves are 22 cm long, 13 cm broad, the heads 5—6 mm thick, 8—10 mm long.

Section Lipactinia Robinson and Greenman in Contr. Gray Herb. Harv. Univ. N. S. I, 16, 1899, 563.

Verbesina flavovirens R. E. Fries in Ark. f. Bot. 5, 1906, 19, t. 2, fig. 1—3.

Hab.: im niederen Gebüsch der Bergkämme bei Tres Cruces, circa 1450 m alt., Bl. gelb, März 1911, n. 1545.

Distr.: Bolivia.

Obs.: Stem narrowly alated in some places; wing about 1 mm broad; ligulate flowers in the heads 0—5.

Verbesina rhomboidea Koster, nov. spec. (fig. 17—26) — Fruticosa; rami lignosi, teretes, iuveniles curvati, striati, pilosi, pilis ad basin tumidis praediti, deinde glabrescentes, lenticellati; internodiis 1—2 cm longis. Folia alterna, sessilia vel subpetiolata, subrhomboidea vel elliptica vel ovato-ellip-

tica, apice acuti, ad basin cuneati, crenati, margibus revolutis, chartacea, pinninervia (nervis utroque circa 8), superne basibus pilorum caducorum scabra, subtus pallidiora, nervis prominentibus, strigosis, reticulatione ampla, 4—5½ cm longa, 2½—4 cm lata, superiores minores. Capitula plura, subcorymbosa, pedunculata, pedunculo ferrugineo vel cinereo, piloso ut rami iuveniles, saepe folio parvo lanceolato, ½—1 mm longo praedito, ½—1 em longo, 1 em alta, 5—7 mm diam. Involucrum campanulatum, 2—3-seriatum, 6 mm longum; squamis decrecentibus, laxis, oblongis, apice subacutis, pubescentibus, margine ciliatis, subfoliaceis, suberassis, interioribus naviculiformibus. Flores radii feminei, pauci, (2—7), breves; corolla ligulata, lutea, ligula late elliptica, 3-dentata, dentibus obtusis, striata, glabra, ± ½ cm longa, 2½ mm lata, tubo piloso, 2 mm longo. Antherae desunt. Styli rami breves, lineares, subobtusi. Achenium rudimentum, obovatum, a lateribus compressum, margine ciliatum; pappus deest. Flores disci bisexuales, pauci, circa 12; corolla tubulosa, apice 5-dentata, dentibus subacutis, parte inferiore angustiore dense, superiore parce pilosa, 5 mm longa. Antherae nigrae, ad basin breviter sagittatae, apice subobtusae, filamentis latis. Styli rami breves, lati, apice acuti et ciliati. Achenium maturum cordato-obovatum, a lateribus compressum, subtriquetrum, striatum, glabrum, angustissime alatum, margine parce ciliatum 5 mm longum, 3 mm latum; pappi arista 1,3 mm longa. Receptaculum paleaceum, paleis naviculiformibus, stramineis, apice acutis, dorso et margine ciliatis, 7 mm longis.

Hab.: kleiner Strauch auf dem Kamm der Laguna verde bei Comarapa, 2600 m alt., April 1911, n. 1984.

The type is preserved in the Rijksherbarium, Leiden.

Obs.: Allied to *V. laevifolia* Blake and *V. flavovirens* R. E. Fries, from which species it is different i. a. by the shape of the leaves. The new species belongs to the section *Lipactinia*, though the ligules are short. However, also in the species *V. flavovirens* and *V. grandifolia* Blake, belonging to the same section, the ligules are short.

Coreopsidinae.

Isostigma Less.

Isostigma hoffmannii O. Kuntze, Rev. Gen. Pl. 3, 2, 1898, 160; Beauverd in Herzog, Pfl. boliv. And., 1923, 155.

Hab.: in der Pampa von Santa Cruz, 450 m alt., Jan. 1911, n. 1309.

Distr.: Bolivia.

Chrysanthellum Rich.

The following species was identified by Dr S. F. Blake, Washington.

Chrysanthellum americanum (L.) Vatke in Bremen Abh. 9, 1885, 122; O. Kuntze, Rev. Gen. Pl. 3, 2, 1898, 141; Knuth in Fedde, Repert., Spec. nov. regni veg., Beih. 43, 1928, 722; Moore in Fawcett et Rendle, Fl. Jamaica 7, 1936, 256, fig. 87 — *Chr. procumbens* Rich. in Pers. Syn. 2, 1807, 471; DC., Prodr. 5, 1836, 630; Grisebach, Fl. Br. West Ind. Isl., 1864, 377; in Abh. König. Ges. Wiss. Gött. 19, 1874, 139; 24, 1879, 198.

Hab.: auf Bergtriften um Samaipata, 1900 m alt., März 1911, n. 1673, "Anisillo"; Gebüschen um Samaipata, ca 1800 m alt., n. 1669/a.

Distr.: Central America, West Indies, Venezuela, Bolivia, Brasil.

Heterosperma Cav.

The following species was identified by Dr S. F. Blake, Washington.
Heterosperma diversifolium H. B. K., Nov. Gen. et Spec. 4, 1820, 226, t. 384; Grisebach in Abh. Kön. Ges. Wiss. Gött. 24, 1879, 198; Hieronymus in Engl. Bot. Jahrb. 36, 1905, 495; Rusby in Bull. N. Y. Bot. Gard. 4, 1907, 389.

Hab.: auf Bergtriften um Samaipata, 1900 m alt., März 1911, n. 1677/a.

Distr.: Ecuador, Peru, Bolivia, Argentina (Andes).

Obs.: A species very variable in leaf form (Dr S. F. Blake).

Bidens L.

Section **Greenmannia** Sherff in Bot. Gaz. 88, 1929, 297; Sherff in Publ. Field Mus. Nat. Hist. Bot. Ser. 16, 1937, 31.

Bidens squarrosa H. B. K., Nov. Gen. et Spec. 4, 1820, 238; DC., Prodr. 5, 1836, 599; Knuth in Fedde, Repert. Spec. regni veg. Beih. 43, 1928, 724; Sherff in Publ. Field Mus. Nat. Hist. Bot. Ser. 16, 1937, 179 Pl. 44, 45, fig. a—g.

Hab.: an der Cuesta de Piedra Borracha hoch in die Bäume kletternd, 1400—1700 m alt., März 1911, n. 1741.

Distr.: Central America, West Indies, Venezuela, Colombia, Brasil, Peru, Bolivia.

Section **Psilocarpaea** DC., Prodr. 5, 1836, 596; Sherff in Publ. Field Mus. Nat. Hist. Bot. Ser. 16, 1937, 32.

Bidens andicola H. B. K., Nov. Gen. et Spec. 4, 1820, 237; DC., Prodr. 5, 1836, 599; Weddell, Chlor. And. 1, 1855, 69; Schultz-Bip. in Bull. Soc. Bot. de France 12, 1865, 79; Klatt in Engl., Bot. Jahrb. 8, 1887, 44; Britton in Bull. Torrey Bot. Club 19, 1892, 150; Rusby in Mem. Torrey Bot. Club 3, 1893, 60; O. Kuntze, Rev. Gen. Pl., 3, 2, 1898, 136; Hieronymus in Engl., Bot. Jahrb. 28, 1901, 614; Sidorov, eod. 29, 1901, 48; Hieronymus, eod. 36, 1905, 496; R. E. Fries in Nov. Act. Sci. Upsal. Ser. 4, 1, 1905, 84; Buchtien, Contr. Fl. de Bolivia, 1910, 193; Perkins in Engl., Bot. Jahrb. 49, 1913, 228; Beauverd in Herzog, Pfl. Boliv. And., 1923, 216; Sherff in Publ. Field Mus. Nat. Hist. Bot. Ser. 16, 1937, 494, Pl. CXIII fig. a—d, h—p.

Hab.: auf Wiesen der hohen Bergkämme bei Comarapa, 2600 m alt., April 1911, n. 1942.

Distr.: Venezuela, Colombia, Ecuador, Peru, Bolivia, Northern Argentina.

Bidens triplinervia H. B. K. var. *macrantha* (Wedd.) Sherff in Bot. Gaz. 80, 1925, 383; Sherff in Publ. Field Mus. Nat. Hist. Bot. Ser. 16, 1937, 510, Pl. CXXVI fig. a—i, l—v, CXXVIII fig. j—p — **Bidens humilis** H. B. K., Nov. Gen. et Spec. 4, 1820, 183; Weddell, Chlor. And. 1, 1855, 69 (cum var. *macrantha*); Schultz-Bip. in Bull. Soc. Bot. de France 12, 1865, 79; Schultz-Bip. in Linnaea 18, 1866, 528; Knuth in Fedde, Repert. regni veg. Beih. 43, 1928, 723 — **Bidens grandiflorus** Balb. var. *humilis* (H. B. K.) O. Kuntze, Rev. Gen. Pl. 3, 2, 1898, 136.

Hab.: am Cerro Oruro auf steinigen trockenen Boden, 3800 m alt., Nov. 1911, n. 2522/b.

Distr.: Mexico, Guatemala, Venezuela, Colombia, Ecuador, Peru, Bolivia, Chili, Argentina.

Obs.: Small plants, up to 60 cm long, with heads, 1½ cm in diam.

Cosmos Cav.

Cosmos peucedanifolius Wedd., Chlor. And. 1, 1855, 70; Beauverd in Herzog, Pfl. boliv. And., 1923, 181; Sheriff in Publ. Field Mus. Nat. Hist. Bot. Ser. 8, 1932, 439 — **Cosmos diversifolius** Beauverd in Herzog, Pfl. boliv. And., 1923, 144.

Hab.: auf Bergwiesen des "Fuerte" bei Samaipata, 1900 m alt., März 1911, Bl.rosa, n. 1771; auf steinigen Triften am Gipfel des Berges über Vallegrande, 2550 m alt., März 1911, Bl.rosa, n. 1795.

Distr.: Peru, Southern Bolivia (Andes)

Galinsagineae.

Calea L.

Section **Leontophthalmum** (Willd.) DC., Prodr. 5, 1836, 675.

The following species was identified by Dr S. F. Blake, Washington.

Calea coriacea DC., Prodr. 5, 1836, 675; Blake in Contr. U. S. Nat. Herb. 26, 1940, 258.

Hab.: Charakterstrauch der Buschregion von Tres Cruces, 1450 m alt., März 1911, Bl.gelb, n. 1625; Comarapa, s. n.

Distr.: Bolivia.

Obs.: Heads solitary. Dr S. F. Blake observed about this species:

"This seems to me to be merely a phase of *C. coriacea* DC. (of which *C. robusta* Britton is a synonym; see Contr. U. S. Nat. Herb. 26: 258, 1930), with solitary heads. The leaves are scarcely cordate and rather more oblong than in nearly all specimens of *C. coriacea* examined, but they agree so precisely in texture, venation, in the peculiar papillose roughness of the upper surface and the impressed glands of the glabrous lower surface, and the involucre, achene and pappus are so completely identical, that I cannot believe it is different from *C. coriacea*. Some of our specimens of that have very few heads, although none have them solitary."

Tridax L.

Tridax procumbens L., Spec. Pl. ed. 1, 1753, 900; DC., Prodr. 5, 1836, 679; Hoffmann in Engler-Prantl, Nat. Pfl. Fam. 4, 5, 1894, 247; Hieronymus in Engl. Bot. Jahrb. 19, 1894, 58; Rusby in Bull. N. Y. Bot. Gard. 4, 1907, 390; Schellenberg, Schinz und Thellung in Mém. Soc. Neuchatel Sci. Nat. 5, 1914, 428.

Hab.: am sandigen Ufer des Rio Pirai, 450 m alt., Jan. 1911, n. 1433.

Distr.: Central America, West Indies, Colombia, Bolivia, introduced into the Malay Archipelago and Mauritius.