

# REVISION OF THE GENUS OYEDAEA.

By S. F. BLAKE.

## INTRODUCTION.

In 1836 De Candolle<sup>1</sup> proposed the genus *Oyedaea*, named for the early Spanish navigator Alphonso Oyeda, and based on the two new species *O. verbessinoides* and *O. buphthalmoides*, the first of which was figured soon afterward in Delessert's *Icones*. In 1848 Gardner<sup>2</sup> published *O. angustifolia* from Brazil, and described under *Viguiera* two species which were later referred to *Oyedaea* by Bentham and Hooker. He also described<sup>3</sup> the genus *Serpaea* with two species, one of which, *S. oblonga*, wrongly referred to *Viguiera* by Bentham and Hooker, was placed in *Aspilia* by Baker in 1884, while the other, *S. ovata*, which must be considered the type of his genus, was referred with three new species to *Oyedaea* by Baker, under the subgeneric name *Serpaea*. In 1858 two new species were published from Colombia by Triana,<sup>4</sup> *O. cuerviana* (*Triana* 1520, specimen no. 4), and *O. helianthoides* (*Triana* 1520, specimen no. 5). The types of these species I have not been able to examine, but from description the former seems correctly referred to this genus. *O. helianthoides*, however, with a pappus of numerous caducous awns, must belong to *Perymenium* or more probably to *Steiractinia*. It is said by Triana to be identical with *Helianthus scaber* of the Willdenow Herbarium.

In the *Genera Plantarum* of Bentham and Hooker<sup>5</sup> the genus *Oyedaea*, distinguished from *Zexmenia* solely by its neutral rays, was divided into the three sections, *Wedelioides*, *Serpaea* (Gardn.), and *Verbesinoides*, and the number of species was estimated at 22. Hoffman<sup>6</sup> in 1890 gave the number of species as 15. The present writer,<sup>7</sup> when revising the genus *Dimerostemma* Cass. (*Serpaea* Gardn.) in 1917, estimated the number of species of *Oyedaea* at about 20, but subsequent study has reduced this to 13.

<sup>1</sup> Prodr. 5: 576. 1836.

<sup>2</sup> Lond. Journ. Bot. 7: 293, 398-399. 1848.

<sup>3</sup> Lond. Journ. Bot. 7: 296. 1848.

<sup>4</sup> Ann. Sci. Nat. IV. 9:39. 1858.

<sup>5</sup> Gen. Pl. 2: 374. 1873.

<sup>6</sup> In Engl. & Prantl, Pflanzenfam. 4<sup>5</sup>: 238. 1890.

<sup>7</sup> Contr. Gray Herb. n. ser. 52: 8. 1917.

The genus *Oyedaea* is closely related to *Zexmenia*, *Dimerostemma*, and *Aspilia*. From *Zexmenia* it is readily if somewhat artificially distinguished by its neutral rays. From *Dimerostemma* it differs in its round-sided achenes (four-angled and four-winged only in *O. humboldtiana*), in its lack of a secondary external foliaceous involucre, and in its pappus. The pappus of *Dimerostemma* is composed of two awns only, without intermediate corona, although the lateral angles of the achenes are sometimes produced into short teeth or rarely into awns nearly or quite as long as those of the main angles. In a single species of *Dimerostemma* (*D. asperatum*) the awns are connected at base by their lacerate decurrent bases, but there is no true corona, constricted at base, such as is found in *Oyedaea*. The genus *Aspilia* is distinguished from *Oyedaea* by the fact that its achenes are not winged, although in some species there is a corneous auriculiform appendage on each of the upper angles of the achene. *Oyedaea angustifolia* and *O. bonplandiana*, possessing these appendages but lacking the continuous wing of *Oyedaea*, are here placed in *Aspilia*.

### SYSTEMATIC TREATMENT.

#### OYEDAEA DC.

*Oyedaea* DC. Prodr. 5: 576. 1836.

Shrubs or herbaceous perennials, with opposite, entire to serrulate leaves and medium-sized yellow heads; heads heterogamous, radiate, the ray flowers 1-seriate, ligulate, neutral, those of the disk numerous, tubular, fertile; involucre 2 to 5-seriate, graduated, subequal, or with the outer phyllaries longer, the phyllaries lanceolate to oval or oblong, indurate at base or essentially throughout, usually with herbaceous tips, or the outer sometimes foliaceous; receptacle flattish or slightly convex; pales firm, concave, persistent; rays oval to linear-oblong, neutral; disk corollas with slender tube, cylindric or cylindric-funnelform throat, and 5-toothed limb; anthers sagittate at base, with ovate terminal appendages; style branches slender, dorsally hispid or hispidulous above, with short, lanceolate, hispid or hispidulous sterile appendages; disk achenes somewhat thickened but distinctly compressed, oblong or rarely cuneate-obovate, 2-winged (in one species 4-angled and 4-winged), the wings narrow or sometimes rather broad, usually united above to the awns or corona; pappus of 2 slender persistent awns and a corona of about 6 to 12 narrow, fimbriate or lacerate, more or less united squamellae.

Type species, as here selected, *Oyedaea verbesinoides* DC.

#### KEY TO SPECIES.

Phyllaries oval or oblong to lanceolate, with indurate base and herbaceous, loose or reflexed tip.

Plants frutescent.

Phyllaries oval or broadly obovate, with indurate base and herbaceous, usually rounded apex, the innermost in fruit somewhat elongate and with membranous-chartaceous rounded apex.....1. *O. bupthalmoides*.

Phyllaries ovate or oblong to lanceolate, rarely obovate-lanceolate, acute to acuminate or rarely obtuse, the inner not elongate and membranous-chartaceous at apex.

Involucre 4 to 9.5 mm. high, the phyllaries with indurate base and shorter, usually deltoid, mostly reflexed apex.

Leaves feather-veined or sometimes obscurely triplinerved.

Outer phyllaries linear-lanceolate; leaves lanceolate or ovate-lanceolate, obscurely reticulate beneath ..... 2. *O. scaberrima*.

Outer phyllaries ovate-lanceolate to ovate; leaves strongly reticulate beneath.

Leaves rather densely hispid-pilose or pilosulous between the veins on lower surface.

Leaves hispid-pilose beneath; involucre 5.5 to 8 mm. high, the phyllaries acute, scarcely reflexed.

Leaves oblong-ovate to ovate, obscurely serrulate, rounded at base. .... 3. *O. wedelioides*.

Leaves lance-ovate, distinctly serrulate, cuneate at base.

..... 4. *O. reticulata*.

Leaves hispidulous-pilosulous beneath; involucre 4 to 5 mm. high, the phyllaries acutish or obtusish, with strongly reflexed tips.

..... 5. *O. rusbyi*.

Leaves hispidulous beneath, lanceolate or ovate-lanceolate. Involucre, 4.8 to 6 mm. high, the phyllaries mostly with obtuse reflexed tips.

..... 6. *O. lanceolata*.

Leaves distinctly triplinerved ..... 7. *O. boliviana*.

Involucre 11 to 16 mm. high, the phyllaries with short indurate base and longer, lanceolate to ovate, loose, herbaceous tip ..... 8. *O. verbesinoides*.

Plants herbaceous.

Leaves linear ..... 9. *O. bahiensis*.

Leaves oblong to ovate.

Head solitary; leaves 1.5 to 3.5 cm. long ..... 10. *O. humboldtiana*.

Heads several; leaves 7.5 to 9 cm. long ..... 11. *O. trachyphylla*.

Phyllaries ovate to oval, indurate, without distinct herbaceous tips. 12. *O. ovalifolia*.

1. *Oyedaea buphthalmoides* DC. Prodr. 5: 577. 1836.

Shrub; stem terete, brown, striate, densely hispid-pilose with loose curly hairs with scarcely enlarged bases, subcanescent above; branches erect, 3 to 18-headed at apex; leaf blades 7.5 to 13 cm. long, 2 to 5.3 cm. wide, ovate or ovate-lanceolate, acuminate, cuneate at base, crenate-serrate with 17 to 27 pairs of mucronate teeth, triplinerved 1 to 3 cm. above the base, above dark green, pubescent with incurved, rather soft, long and short hairs with scarcely enlarged bases, or tuberculate-hispid with short incurved hairs, beneath densely grayish-tomentulose or pilosulous, the veins brownish; petioles rather softly hispid-pilose, 1 to 1.3 cm. long; pedicels 2.4 to 7 cm. long, canescently hispid-pilose; heads 2.9 to 3.8 cm. wide; disk 8 to 10 mm. high, 11 to 16 mm. wide; involucre 3 to 4-seriate, graduated, 9 to 11 mm. high; outermost phyllaries 3 or 4, oblong to oval-oblong or obovate-oval, acutish to obtuse, herbaceous, in age strongly indurate and subcoriaceous below, spreading at apex, rather softly hispid-pilose with ascending hairs, and ciliate (6.5 to 7.5 by 2 to 3.5 mm.); the next series about 4, oval-oblong or obovate-oval, with somewhat indurate base and narrow scarious margin, herbaceous above, obtusish; the innermost in fruit somewhat elongate, exceeding disk, membranous-chartaceous above, strigillose or subglabrate on back, pilose-ciliate, 4.3 to 6 mm. wide toward the rounded, slightly broadened tip; rays 8 or more (?), oblong, 1.1 to 1.9 cm. long, 3 to 5.5 mm. wide; disk corollas glabrous except on teeth, 6 to 6.5 mm. long (tube 2 to 2.5 mm.); pales narrow, acute, appressed-denticulate toward apex, about 1 cm. long; achenes blackish or mottled, oblong, winged, sparsely appressed-pubescent, 4.5 to 6.5 mm. long, 1 to 2 mm. wide; awns 2, spinulose-ciliolate, unequal, 2.5 to 4.5 mm. long; squamellae

about 6 to 8, acuminate, ciliate, 0.4 to 1.3 mm. long, united at base into a cup adnate to the awns, and to the narrow prolongation of the wings.

TYPE LOCALITY: Peru. Types collected by Poeppig (nos. 22 and 1624).

SPECIMENS EXAMINED:

PERU: Poeppig 1624 (cotype collection; B). Chachapoyas, Mathews 1382 (K), 3058 (B, G, K). Without definite locality, Mathews 1735 (K).

Readily distinguishable by its leaves, which are grayish-tomentulose or densely pilosulous beneath, and by its broad, mostly rounded phyllaries, the inner with submembranaceous tips.

## 2. *Oyedaea scaberrima* (Benth.) Blake.

*Lipochaete scaberrima* Benth.; Hook. Journ. Bot. 2: 43. 1840.

*Zexmenia scaberrima* Benth. & Hook.; Hook. & Jacks. Ind. Kew. 2<sup>2</sup>: 1250. 1895.

Shrubby, the branches apparently drooping; stem ashy brown, slender, in youth densely tuberculate-hispidulous with ascending hairs, in age subglabrate but densely brownish-tuberculate; leaf blades 6 to 7.5 cm. long, 1.6 to 2.5 cm. wide, lanceolate or lance-ovate, acuminate, cuneate at base, obscurely serrulate with 8 to 10 pairs of appressed mucronate teeth, dull green above, tuberculate-strigillose, lepidote in age, beneath slightly paler, rather sparsely tuberculate-hispidulous, pinnate-veined (veins 6 to 9 pairs), finely and obscurely reticulate; petioles densely tuberculate-hispidulous, unmarginated, 4 to 6 mm. long; heads about 6 in a terminal narrow panicle, about 2.5 cm. wide, on densely tuberculate-hispidulous pedicels 1.1 to 1.4 cm. long; disk 9 to 10 mm. high, 1.2 cm. wide; involucre 4-seriate, somewhat graduated, 7 to 8 mm. high; outermost phyllaries linear-lanceolate, strongly indurate at base, rather densely hispidulous-strigillose, the herbaceous apex loose, mucronate; the next series similar but ovate-lanceolate, acuminate, with broad indurate base and narrow herbaceous apex; the next similar but merely acute, the innermost oblong and obtuse, with scarcely herbaceous tip; rays pale yellow, narrowly oblong, sparsely puberulous and gland-dotted on veins of back, 1 cm. long, 3.5 mm. wide; disk corollas sparsely hispidulous on teeth; pales narrow, barely keeled, acute, minutely strigillose toward apex, 8 mm. long; achene blackish, oblong, strongly compressed, narrowly winged on each side, 5 mm. long, 1.8 mm. wide; awns 2, unequal, slender, minutely ciliate, 3 to 4 mm. long; squamellae about 8 to 10, fimbriate, united below into a cup nearly 1 mm. high.

TYPE LOCALITY: Mount Roraima, British Guiana.

SPECIMEN EXAMINED:

BRITISH GUIANA: Mount Roraima, 1839, Schomburgk (type; K, fragm. G).

Although included in *Zexmenia* by W. W. Jones<sup>8</sup> in his revision of that genus, this species has neutral rays and is a true *Oyedaea*. It is distinguished from related species by the narrow leaves and phyllaries.

## 3. *Oyedaea wedelioides* (Klatt) Blake.

*Zexmenia wedelioides* Klatt, Abh. Naturf. Ges. Halle 15: 328. 1881.

Shrub about 3 meters high; stem dull brown, subterete, tuberculate-strigose, glabrate but persistently tuberculate below, the inflorescence densely strigillose-hispidulous or shortly hispid-pilose with erect hairs; leaf blades 4.2 to 12.5 cm. long, 2.2 to 5 cm. wide, ovate or oblong-ovate to oval-ovate, acute or acuminate, at base broadly rounded, obscurely serrulate with 15 to 18 pairs of appressed mucronate teeth, above dark green, impressed-nerved, tuberculate-strigose and strigillose, beneath scarcely paler, rather densely hispid-pilose with spreading hairs longer along the veins, sparsely gland-dotted, penninerved with 9 to 12 pairs of lateral veins and strongly prominulous-reticulate; petioles densely hispid-pilose, 4 to 15 mm. long; heads 1.7 to 3 cm. wide, ternately arranged in cymose panicles of 5 to 21 at ends of

<sup>8</sup> Proc. Amer. Acad. 41: 146. 1905.

stem and axillary flowering branches, the ultimate bracts of inflorescence lanceolate, with indurate base and herbaceous tip, 3 to 6 mm. long; pedicels densely hispidulous-pilosulous, 7 to 25 mm. long; disk 9 to 14 mm. high, 6 to 13 mm. thick; involucre 4-seriate, graduated, 5.5 to 8 mm. high, the one or two outermost series of phyllaries ovate-lanceolate, acuminate, narrowed nearly from base to apex, the inner acute, ovate-oblong to oblong, all with strongly indurate, subcoriaceous, yellowish white, usually 1-vittate lower portion and lanceolate (outermost) to deltoid, loose or reflexed, herbaceous apex (the innermost with an appressed subherbaceous tip), more or less densely strigose and strigillose on the herbaceous apex, the outermost so nearly throughout; receptacle slightly convex; rays 12 to 18, linear-oblong, barely emarginate, 7 to 13 mm. long, 2 to 3 mm. wide; disk corollas glabrous except for the hispidulous teeth, slender, 4.5 to 6.8 mm. long (tube 1.5 to 2.2 mm.); pales narrow, carinate, acute to acuminate, hispidulous-ciliolate at apex, 6 to 9 mm. long; achenes oblong, blackish, sparsely strigillose, winged, 3.5 to 4.5 mm. long, 0.7 to 1.5 wide; awns 2, fragile, unequal, minutely ciliolate, slender, 3.5 to 4.5 mm. long; squamellae 6 to 12, subequal, 0.6 to 1.2 mm. long, lacerate, united below into a cup on the somewhat constricted achene apex.

TYPE LOCALITY: Moyobamba, Peru.

SPECIMENS EXAMINED:

PERU: Moyobamba, 1835, *Mathews* 1383 (type collection; B, G, K). Lamas, 1835, *Mathews* 1384 (K). Sandy plains near Tarapoto, 1855, *Spruce* 3922 (B, G, K).

Like the last, this species has neutral rays and is a true *Oyedaea*, although included in *Zexmenia* by W. W. Jones. It is distinguished from *O. reticulata*, its closest ally, by its broadly round-based leaves and looser inflorescence.

#### 4. *Oyedaea reticulata* Blake, sp. nov.

Shrub or "herb"; stem brown, densely and somewhat harshly appressed-pilose and glandular; leaf blades 8.5 to 10.5 cm. long, 2.5 to 4.3 cm. wide, ovate-lanceolate or ovate, acuminate, at base cuneate, regularly crenate-serrate with 17 to 20 pairs of depressed mucronulate teeth, penninerved with about 8 pairs of veins and obscurely triplinerved, reticulate beneath, above dull green, harshly tuberculate-strigillose, below rather harshly pilose-hispid and glandular; petioles flattened, subappressed-pilose and glandular, 0.8 to 1.2 cm. long; heads several at apex of branches, on terminal and axillary 1 to 5-headed peduncles 2.5 cm. long or less, 2.3 to 3 cm. wide; disk 1.2 cm. high, 1 to 1.5 cm. thick; involucre 4-seriate, slightly graduated, 8 to 9.5 mm. high, the outer phyllaries triangular-ovate, acute, ciliate and glandular-pilose, below indurate and coriaceous, the 1-nerved herbaceous apex spreading, the inmost phyllaries subobtuse, submembranaceous; rays about 12, yellow, oblong, glandular-pubescent on back, 7.5 to 12 mm. long, 3 to 3.5 mm. wide; disk corollas yellow, puberulous on teeth, 5.3 mm. long (tube 0.8 mm.); pales firm, subscarious, very acute, narrowly carinate, more or less puberulous, 9 to 9.5 mm. long; achenes black, sparsely pubescent, narrowly oblong, rugulose, very narrowly winged, 5.7 to 6 mm. long, 1.1 to 1.5 mm. wide; awns 2, fragile, unequal, spinulose, 4.5 to 5.5 mm. long; squamellae about 12, unequal, about 1.4 mm. long, lacerate, united to middle into a corona.

Type in the British Museum, collected at Caqueza, Colombia, at an altitude of 1,800 meters, by J. Triana (no. 1383); also in the Kew Herbarium; photograph and fragments in the Gray Herbarium.

ADDITIONAL SPECIMEN EXAMINED:

COLOMBIA: Moist bank, altitude 1,400 to 1,500 meters, Monte Redondo to Quetame, Cundinamarca, 1917, *Pennell* 1860 (N. Y. Bot. Gard.).

This species is distinguished from *O. wedelioides* by its narrower cuneate-based leaves and often crowded heads; from *O. rusbyi* and *O. lanceolata* by its larger involucre and the longer pubescence of its leaves.

5. *Oyedaea rusbyi* Blake, sp. nov.

Shrub with erect branches; stem terete, pale brown, densely tuberculate-strigillose and hispid-strigose with tuberculate-based hairs, at length glabrate; leaf blades 4.5 to 9.5 cm. long, 1.8 to 3.5 cm. wide, oblong-ovate to lance-ovate, acute to acuminate, mucronate, at base rounded, obscurely appressed-serrulate, slightly revolute, penninerved with 10 to 15 pairs of lateral veins, above dull green, rugulose and impressed-nerved, densely and very harshly tuberculate-strigillose, beneath scarcely paler, venose-reticulate, densely, nearly uniformly, and somewhat harshly pilosulous-hispidulous with spreading hairs, along the veins strigillose-hispidulous with subtuberculate-based hairs; petioles unmarginated, densely tuberculate-strigose, 4 to 10 mm. long; heads 1.8 to 2.1 cm. wide, numerous, cymose-panicled at tips of branches; pedicels densely hispidulous, 7 to 14 mm. long; disk 8 to 10 mm. high, 8 to 12 mm. thick; involucre 4 to 5-seriate, strongly graduated, 4 to 5 mm. high, the phyllaries triangular-ovate to (innermost) oblong-ovate, below strongly indurate and subcoriaceous, ciliate, on back sparsely strigillose or glabrous, the short, abruptly herbaceous, reflexed or spreading, deltoid apex subacute or obtuse; rays about 12, yellow, narrowly oblong, 9 to 10 mm. long, 1.8 to 2.5 mm. wide; disk corollas yellow, puberulous on teeth, with very slender tube and cylindrical-funnelform throat, 5.7 mm. long (tube 1.8 to 2 mm.); pales narrow, carinate, acuminate, at apex minutely ciliolate, 8 to 8.5 mm. long; achenes (very immature) appressed-pubescent; awns 2, equal, 1.8 mm. long; squamellae about 8, lanceolate, acuminate, lacerate, united to middle into a cup.

Type in the United States National Herbarium, no. 26728, collected at Reis, Bolivia, at an altitude of 455 meters, June, 1886, by H. H. Rusby (no. 2138). Also in the British Museum, the Gray Herbarium, and the Kew Herbarium.

The type collection of this species was originally recorded by Britton<sup>9</sup> as a "*Calea* probably undescribed," and has generally been referred in herbaria to *Zexmenia* or *Viguiera*. It represents, however, a typical species of *Oyedaea*, distinguished from *O. lanceolata*, its nearest ally, by its smaller involucre and by having its leaves densely hispidulous-pilosulous beneath.

6. *Oyedaea lanceolata* (Rusby) Blake.

*Calea lanceolata* Rusby, Bull. N. Y. Bot. Gard. 8: 132. 1912.

Shrub, 1.3 to 6.6 meters high, the trunk 6.5 cm. in diameter or less; stem lepidote-tuberculate below, above tuberculate-hispid-strigose and finely hispidulous; leaf blades 3.3 to 11 cm. long, 1 to 3.5 cm. wide, lanceolate or ovate-lanceolate, acuminate, at base cuneate or rounded-cuneate, entire or obscurely serrulate, somewhat revolute, penninerved with about 12 pairs of veins, green on both sides, above very harshly tuberculate-strigose and strigillose, in age tuberculate, beneath spreading-hispidulous and gland-dotted, along the veins hispid; petioles slender, densely tuberculate-hispidulous and glandular, 3.5 to 12 mm. long; heads numerous, cymose-paniculate, 2.1 to 2.8 cm. wide; pedicels densely hispid and hispidulous, 2 to 20 mm. long; disk 10 to 11 mm. high, 8 to 10 mm. thick; involucre 4-seriate, graduated, 4.8 to 6 mm. high, the outer phyllaries oblong-ovate, the inner oblong, obtuse or rounded, rarely subacute, ciliate or ciliolate and above more or less glandular-strigillose, below indurate, yellowish, with subherbaceous, usually spreading, triangular apex, the inner scarcely at all herbaceous; rays 10 to 12, golden, oblong, 2 or 3-denticulate, 7 to 10 mm. long, 2.8 to 3.5 mm. wide; disk corollas yellow, puberulous on teeth, with cylindrical-funnelform throat, 4 to 5.3 mm. long (tube 1 to 2 mm.); pales acute, strigillose, 5.8 to 7 mm. long; achenes oblong, appressed-pubescent, 4.8 mm. long, narrowly winged; awns 2, unequal, 1.8 to 3.5 mm. long, united at base with about 12 unequal squamellae into a corona about 0.8 mm. long.

TYPE LOCALITY: Apolo, Bolivia.

<sup>9</sup> Bull. Torrey Club 19: 151. 1892.

## SPECIMENS EXAMINED:

BOLIVIA: Apolo, altitude 1,465 meters, 1902, *Williams* 317 (B, N, photo. and fragm. G); July 9, 1902, *Williams* 1408 (type; N. Y. Bot. Gard.).

This species is distinguished from *O. rusbyi*, its nearest relative, by its more lanceolate leaves, which are less densely pubescent beneath.

7. *Oyedaea boliviana* Britton, Bull. Torrey Club 19: 149. 1892.

*Helianthus mandonii* Schultz Bip. Bull. Soc. Bot. France 12: 79. 1865, nomen nudum.

*Oyedaea pearcei* Rusby, Mem. Torrey Club 3: 59. 1893.

Evergreen shrub, 2 to 2.6 meters high, much branched; stem stout, terete, fuscous-brown, rather densely hispidulous or hispid-pilose with spreading or incurved hairs and sordid-glandular, especially on the younger parts, in age subglabrate but tuberculate below; leaf blades 8.5 to 17 cm. long, 1.3 to 7.5 cm. wide, ovate or broadly ovate to lance-ovate or the uppermost lanceolate, acuminate, cuneate to rounded-cuneate at base, triplinerved (sometimes obscurely so) and rather veiny, obscurely appressed-serrulate (the teeth mucronate, 29 pairs or less) or the upper subentire, above dark green, hispidulous and hispid with incurved hairs with tuberculate persistent bases, in age subglabrate, beneath slightly paler, rather densely hispidulous-pilosulous with incurved-spreading, harsh or soft hairs with scarcely swollen bases, more or less hispid along the veins, and gland-dotted; upper leaves much reduced; petioles 4 to 18 mm. long, pubescent like the stem and distinctly ciliate; heads rather numerous, 1.8 to 3 cm. wide, ternately arranged at ends of branches and branchlets, on pedicels 2 to 28 mm. long or less; disk 7.5 to 10 mm. high, 7 to 10 mm. thick; involucre 3 to 4-seriate, graduated, 4.5 to 7 mm. high; phyllaries ovate to oblong-ovate, with pale, strongly indurate and thickened, mostly 1-vittate base, more or less hispidulous and hispid with appressed hairs chiefly along middle and on margin (where the hairs are spreading) or sometimes all over, and shorter, acute or acuminate, deltoid or triangular, loose or reflexed, herbaceous apex, the innermost with drier paler tips; receptacle flattish; rays about 12, oval to linear-oblong, hispidulous on nerves of back, 8 to 18 mm. long, 2.5 to 4 mm. wide; disk corollas slender, puberulous on teeth, otherwise glabrous, 4.5 to 6.8 mm. long (tube 1.5 to 2.2 mm.); pales narrow, carinate, puberulous and gland-dotted at apex, acutish to acuminate, 7 to 8 mm. long; achenes (nearly mature) flattish, blackish brown, sparsely strigose on sides, ciliate on the narrow wings, 3.5 mm. long, contracted above into a more broadly winged short neck; awns 2, unequal, 3.7 mm. long or less, decurrent into the wings; corona 0.7 mm. high, of about 4 pairs of squamellae united to above the middle.

TYPE LOCALITY: Yungas, Bolivia.

## SPECIMENS EXAMINED:

BOLIVIA: Yungas, altitude 1,830 meters, 1885, *Rusby* 2143 (type of *O. boliviana*; herb. Columb. Coll.); in 1890, *Bang* 546 (type collection of *O. pearcei*; B, G, K, N). Santa Cruz, July, 1865, *Pearce* (B, K, fragm. G.). Vicinity of Yungas, altitude 2,100 meters, 1906, *Buchtien* 190 (N. Y. Bot. Gard.). Polo-polo near Coroico, altitude 1,100 meters, 1912, *Buchtien* 3945 (N. Y. Bot. Gard.). Near Ananea, Province of Larecaja, January, 1860, *Mandon* 37 (type collection of *Helianthus mandonii*; B, fragm. G.). Near Sorata, Province of Larecaja, *Mandon* (G).

This species is usually readily distinguishable from its relatives by its distinctly triplinerved leaves. Although it is somewhat variable in leaf shape, it is impossible to recognize more than one species in the moderately extensive material I have examined. The reference of this species to *Helianthus* by Schultz Bipontinus, in his enumeration of Mandon's Bolivian Compositae, is an indication of the haste or carelessness with which that usually well-informed specialist must have made his determinations of those plants.

8. *Oyedaea verbesinoides* DC. Prodr. 5: 577. 1836.

*Viguiera acuminata* Benth.; Oerst. Naturhist. For. Kjöbenhavn Vid. Medd. 1852: 91. 1852.

*Viguiera macrophylla* Benth.; Oerst. Naturhist. For. Kjöbenhavn Vid. Medd. 1852: 92. 1852.

*Oyedaea acuminata* Benth. & Hook.; Hemsl. Biol. Centr. Amer. Bot. 2: 176. 1881.

*Oyedaea macrophylla* Benth. & Hook.; Hemsl. Biol. Centr. Amer. Bot. 2: 176. 1881.

*Viguiera drymonia* Klatt, Leopoldina 1895: Bot. Beibl. 5. 1895.

Stout branched shrub or tree, 3 to 8 meters high; branches terete or striatulate, densely and usually canescently lanate-pilose or hispid-pilose with incurved hairs, their tuberculate bases persistent; leaf blades 7 to 22.5 cm. long, 2 to 9.5 cm. wide, ovate to ovate-lanceolate, long-acuminate, cuneate at base, crenulate-serrulate with 18 to 40 pairs of mucronulate appressed teeth, triplinerved and reticulate-venose, above dull green, often rugulose, somewhat impressed-veined, harshly strigose-pilose or tuberculate-strigose, the tuberculate bases of the hairs persistent, beneath rather densely and often subcanescently short-pilose or hispid-pilose with soft or roughish, spreading to appressed hairs; petioles lanate-pilose to hispid-pilose, 3 to 30 mm. long; heads about 2 to 16 at apex of branches, 3.8 to 5.5 cm. wide, irregularly cymose-panicled, on densely pilose or tuberculate-hispid-pilose and hispidulous pedicels 3 to 38 mm. long; disk 1.1 to 1.7 cm. high, 1.3 to 1.7 cm. wide; involucre 3 to 4-seriate, graduated, 1.1 to 1.6 cm. high, the phyllaries oblong-lanceolate to lanceolate, or the inner rarely obovate-lanceolate, acute to acuminate, at base strongly indurated and often costate, pale, ciliate and more or less strigillose or tuberculate, the usually much longer apex herbaceous, lanceolate to ovate-lanceolate, tuberculate-strigose and strigillose or appressed-pilose, loosely spreading or reflexed; receptacle flat; rays 8 to 14, oblong, bidentate or shortly bilobed, pubescent on back, 1.3 to 2.3 cm. long, 4 to 7 mm. wide; disk corollas very slender, hispidulous on the teeth, 6.5 to 10 mm. long (tube 2.5 to 4 mm.); pales narrow, with slightly erose or denticulate sides above and narrowed acuminate strigillose apex, 8.5 to 14 mm. long; achenes obovate-oblong to cuneate-obovate, blackish or mottled, nearly glabrous or sparsely pilose or strigose, narrowly or sometimes rather broadly winged, 3.5 to 6.2 mm. long, 1 to 3.5 mm. wide; awns 2, sometimes with a pair of shorter ones at base, fragile, slender, unequal, spinulose, 2.5 to 6.5 mm. long; squamellae about 8 to 12, linear-lanceolate, acuminate, lacerate-fimbriate, united below into a cup, 0.8 to 2 mm. long.

TYPE LOCALITY: Vicinity of Caracas, Venezuela. Type collected by Vargas.

ILLUSTRATION: Deless. Icon. Sel. 4: pl. 54. 1839.

## SPECIMENS EXAMINED:

COSTA RICA: San José, altitude about 1,300 meters, 1916, *Holway* 356 (G). Tres Ríos, altitude about 1,500 meters, 1915, *Holway* 274 (G). Rodeo de Pacaca, 1891, *Pittier* 3300 (G, K, N). Mount Aguacate, altitude 610 meters, 1851, *Oersted* 104 (type of *V. macrophylla*; K, fragm. G). Irazú, altitude 2,745 meters, 1851, *Oersted* 96, 106 (types of *V. acuminata*; K). Hills above Belmira, near Santa María de Dota, altitude 1,500 to 1,600 meters, 1898, *Tonduz* 11644 (G, K, N). Savannas of Boruca, 1891, *Pittier* 4523 (G). Forests of Boruca, 1891, *Pittier* 4528 (N). Border of forests, Cañas Gordas, altitude 1,100 meters, 1893, *Pittier* 7351 (type of *V. drymonia*; G); in 1897, *Pittier* 11044 (G, N), 11047 (G).

PANAMA: Boquete, 1849, *Seemann* 1590 (K, fragm. G). Among bushes, pastures around El Boquete, altitude 1,000 to 1,300 meters, 1911, *Pittier* 2948 (N).

COLOMBIA (?): "New Grenada," 1842-43, *Linden* 1511 (B, fragm. G).

VENEZUELA: Caracas, *Burchell* (G, K). Savannas, altitude 1,000 to 1,400 meters, Middle Cotiza, near Caracas, 1917, *Pittier* 7048 (N). Savannas, Upper Cotiza, above 1,400 meters, near Caracas, 1917, *Pittier* 7561 (N). Lower Catuche,



altitude 1,000 to 1,200 meters, 1917, *Pittier* 7545 (N). *Tovar*, *Moritz* (G, K); 1854-55, *Fendler* 680 (G, K). Frequent in subalpine region, 1865, *Ernst* 726 (B). Without definite locality, 1842-43, *Funck* 364 (B, K); in 1865, *Moritz* 1990 (B).

TRINIDAD: *Botanic Garden Herbarium* 3388 (N).<sup>10</sup>

*Oyedaea verbesinoides*, the commonest of this genus in herbaria, is a somewhat variable species, as might be expected from its comparatively wide range. The material from Costa Rica and Panama commonly has leaves more softly and densely pubescent beneath, and broader phyllaries, but the differences between the Central and South American specimens are neither constant nor of much importance, and after study of all the material available I have found it necessary to unite with *O. verbesinoides* both of Bentham's species as well as two manuscript segregates of my own. As thus constituted, the species is readily recognized by its usually large, triplinerved leaves, comparatively large heads, and phyllaries with long herbaceous tips. In Venezuela it is known as "tarilla" and "tara amarilla," according to Pittier.

9. *Oyedaea bahiensis* Baker in Mart. Fl. Bras. 6<sup>3</sup>: 206. 1884.

Herbaceous perennial; stems decumbent, at apex assurgent, sparsely branched, 30 to 45 cm. long, hispid; leaf blades numerous, linear, acuminate, sessile, narrowed to base, entire, the middle ones 7.5 to 10 cm. long, 6 to 8 mm. wide, the lowest much shorter, oblong, acute, rather firm, green and hispid on both sides; heads 1 to 4, terminal on hispid peduncles 5 to 10 cm. long; involucre campanulate, 1 to 1.2 cm. high, the phyllaries 2-seriate, lanceolate, acute, hispid, foliaceous, the outer longer; rays oblanceolate, 2.5 cm. long, 6 mm. wide; achenes obovate, compressed, 4 mm. long, narrowly winged, the wings produced above into lanceolate teeth; awns about 1 mm. long, twice as long as the minute pappus cup.

TYPE LOCALITY: Bahia, Brazil.

SPECIMEN EXAMINED:

BRAZIL: Province of Bahia, in grassy places, *Martius* (sketch of type; K).

This species, of which I have seen only the sketch of the type in the Kew Herbarium, is distinguished from all other species of the genus by its linear leaves. It may yet prove to belong to *Aspilia*. The description given above is translated from Baker's original.

10. *Oyedaea humboldtiana* (Gardn.) Benth.; Baker in Mart. Fl. Bras. 6<sup>3</sup>: 206. 1884.

*Viguiera humboldtiana* Gardn. Lond. Journ. Bot. 7: 398. 1848.

Herbaceous perennial; stems several, erect from a woody root, slender, subsimple or with a few short branches above, strigillose and shortly strigose-pilose, subglabrate below, sparsely leafy, monocephalous, 25 to 35 cm. high; leaves 3 to 5 pairs, remote (the lower smaller), the blades 1.5 to 3.5 cm. long, 7 to 10 mm. wide, oblong to ovate, acute to subobtuse at apex, sharply serrulate above the cuneate-rounded base, appressed-pubescent chiefly along the veins and margin and gland-dotted on both sides, triplinerved; petioles 1.5 mm. long or less, appressed-pubescent; peduncle 3 to 20 cm. long, naked or 1-bracteate, strigillose and strigose; head 4 to 5.8 cm. wide; disk 9 to 11 mm. high, 12 to 17 mm. wide; involucre 2-seriate, the other phyllaries foliaceous, oblong or oblong-spatulate, acutish, denticulate above the middle, appressed-pubescent and gland-dotted, 1.2 to 2.4 cm. long, the inner much shorter, indurate below, herbaceous above, appressed-puberulous, acuminate; rays about 14, oblong, tridenticulate, pubescent on tube, 1.2 to 2.3 cm. long, 5 to 7 mm. wide; disk corollas glabrous, 4.2 mm. long (tube 0.7 to 1 mm.), the throat subcampanulate-funneliform; pales subcarfous, narrow, nearly glabrous, abruptly short-acuminate, spinulose-denticulate near apex, 7.5 to 10 mm. long; achenes at full maturity cuneate-obovate, thickened, 4-angled, 4-winged, crustaceous-bullate on the sides, 4.5 to 4.8 mm. long, 3 to 4 mm. wide; awns

<sup>10</sup> Perhaps not a native specimen.

2, unequal, 1.5 to 2 mm. long, united into a cup at base with the 8 to 10 irregularly lacerate, much shorter squamellae.

TYPE LOCALITY: Near Chapadao de Nostra Senhora d'Abadia, Goyaz, Brazil.

SPECIMENS EXAMINED:

BRAZIL: Arid upland campos near Chapadao de Nostra Senhora d'Abadia, Province of Goyaz, May, 1840, *Gardner* 4239 (type collection; G, K). Between Bom Jesus and Fazenda Seca, Province of Goyaz, *Burchell* 7553 (G, K).

*Oyedaea humboldtiana* is distinct in its herbaceous habit, solitary head, and few small leaves.

11. *Oyedaea trachyphylla* Blake, sp. nov.

Herbaceous (?), trichotomous, leafy; stem stoutish, striate, densely hispid-pilose with loose spreading hairs with persistent tuberculate bases; leaf blades 7.5 to 9 cm. long, 4 to 5.5 cm. wide, ovate or broadly ovate, acuminate, at base broadly cuneate, obscurely serrulate with depressed teeth, slightly revolute, obscurely triplinerved above the base, above dull green, rugulose, harshly tuberculate and tuberculate-strigose, the tubercles thick and persistent, beneath slightly paler, reticulate-venose, scabrous, along the larger veins tuberculate-hispid and hispidulous, gland-dotted, along the ultimate veinlets minutely tuberculate-hispidulous; petioles densely tuberculate-hispid and minutely granulose, scarcely margined, 3 to 7 mm. long; heads 2.5 cm. wide, solitary at tips of branches and in the forks of the stem, on tuberculate-hispid and glandular striate peduncles 2.5 to 4.5 cm. long; disk 9 to 10 mm. high, 9 to 11 mm. thick; involucre 3-seriate, scarcely graduated, 9 to 11 mm. high, the phyllaries oblong, acute, about 3.5 mm. wide, below more or less indurate, pale, subcostate, tuberculate-strigose or strigose-hispid and granular, the apex shorter, loose, rather abruptly herbaceous, tuberculate and tuberculate-strigose; rays yellow, neutral, oblong, hispidulous on back, 6 mm. long, 1.5 mm. wide; disk corollas yellow, strigillose on teeth and at base of throat, 5.5 mm. long (tube 2 mm.); pales narrow, carinate, acute, minutely spinulose-ciliolate at apex, 8 mm. long; achenes fuscous, somewhat thickened, sparsely pilose, 4 mm. long, 2.2 mm. wide, the wings narrow, subauriculi-form at apex of achene, united with the corona; awns 2, linear-lanceolate, about equaling the squamellae and united with them below; squamellae about 12, fimbriate-lacerate, subequal, united into a corona 0.6 mm. high.

Type in the Kew Herbarium, collected near Rio de Janeiro, Brazil, 1878 or 1879, by A. Glaziou (no. 10985). Fragments in the Gray Herbarium.

This species is readily distinguished by its inflorescence.

12. *Oyedaea ovalifolia* A. Gray, Proc. Amer. Acad. 5: 183. 1861.

*Oyedaea ampeloides* Hemsl. Biol. Centr. Amer. Bot. 2: 176. 1881.

Reclining or climbing shrub, 3 to 6 meters long or more; stem striate, strigillose, in age glabrate but tuberculate; leaf blades 8 to 18.5 cm. long, 5 to 8 cm. wide, oval to ovate, acute or rarely obtuse, apiculate, at base cuneate or rounded, crenate-mucronulate, firmly pergamentaceous, harshly tuberculate-strigillose above, in age lepidote, beneath scarcely paler, sparsely strigillose, with the hairs longer along the veins, triplinerved above the base, reticulate on both sides with even the tertiary veins prominulous; petioles tuberculate-strigillose and sparsely ciliate, 5 to 17 mm. long; heads 3 to 5.5 cm. wide, several or numerous in an open panicle (its spreading branches usually exceeding the leaves), on tuberculate-strigillose pedicels 1.5 to 7 cm. long; disk 9 to 13 mm. high, 11 to 20 mm. wide; involucre 3-seriate, graduated, 4 to 5.5 mm. high, the phyllaries triangular-ovate to oval, obtuse to rounded or the outermost acutish, appressed, strongly indurate, with narrow subherbaceous or subscarios margin, finely tuberculate-strigillose and ciliolate; rays about 12 to 15, narrowly elliptic-oblong, emarginulate, 9 to 24 mm. long, 2 to 5 mm. wide; disk corollas glabrous except for the finely hispidulous teeth, 6 to 6.5 mm. long (tube 1.6 to 1.8 mm.); pales lacerate above, cuspidate-acuminate, strigillose at apex, 7 to

10 mm. long; achenes strongly compressed, cuneate-obovate, blackish, nearly glabrous, the 2 wings usually aristate-dentate at apex, sometimes spinulose-lobulate on margin, 4 to 5.2 mm. long, 2 to 3.2 mm. wide; awns 2, slender, fragile, unequal, 2.5 mm. long or less, each often with 2 much shorter ones at base; squamellae about 10, lanceolate, acute, unequal, united at base into a cup, 0.3 to 0.5 mm. long.

TYPE LOCALITY: On the road to Huaulta, Puebla, Mexico.

SPECIMENS EXAMINED:

SAN LUIS POTOSÍ: Tamasopo Canyon, 1890, *Pringle* 3212 (G, N).

PUEBLA: On the road to Huaulta, October, 1858, *Ervendberg* 97 (type; G).

Orizaba, *Botteri* 619 (G). Valley of Orizaba, September 8, 1865–1866, *Bourgeau* 2994 (type collection of *O. ampeloides*; G, K, N).

*Oyedaea ovalifolia*, the only Mexican species of the genus, may be distinguished by its oval or ovate, thickish, merely strigillose leaves, and short involucre of broad blunt phyllaries without distinct herbaceous tips.

DOUBTFUL SPECIES.

OYEDAEA CUERVIANA Triana, Ann. Sci. Nat. IV. 9: 39. 1858.

Stem fruticose, branching; branches appressed-villous-canescens; leaves ovate-lanceolate, acute, triplinerved, remotely and minutely serrulate, with revolute margin, above scabrous-hirtellous, beneath villous, attenuate into the petiole, the petioles pubescent above; heads corymbose, peduncled, the peduncles rather long, naked or usually leafy; involucreal scales pilose without, the outer foliaceous, linear-lanceolate, acute, entire, the inner submembranaceous, obtuse, ciliate; ligules linear; achenes of disk winged, black-dotted.

Grows between Ubala and Gachala in temperate places, in the Province of Bogotá (Colombia), at an altitude of 1,500 meters.

The above translated description represents all that is known of this plant. The type, according to Triana's catalogue in the British Museum, was numbered 1520 (specimen no. 5).

EXCLUDED SPECIES.

OYEDAEA ANGUSTIFOLIA Gardn. Lond. Journ. Bot. 7: 293. 1848.

This species, based on a collection made by Gardner (no. 2216) between the Rio Camde and Oeiras, Piahy, Brazil, has a cuneate thickened achene with narrow pale but not truly winged margins produced into slight ears at the truncate apex of the achene, and a very narrow cupuliform pappus of united squamellae and two awns. On each side of the achene at base is a subcrustaceous, slightly two-lobed, appressed appendage such as is found in various species of *Aspilia*, to which genus this species clearly belongs. As the name *angustifolia* has already been used twice in the latter genus, the present plant may take the name of *Aspilia cupulata*. Fragments of the type collection are in the Gray Herbarium.

OYEDAEA BONPLANDIANA (Gardn.) Benth.; Baker in Mart. Fl. Bras. 6<sup>3</sup>: 206. 1884.

*Viguiera bonplandiana* Gardn. Lond. Journ. Bot. 7: 399. 1848.

This species, based on *Gardner* 2217 and 2218 from the Province of Piahy, Brazil, has a wingless, cuneate, somewhat 4-angled achene auriculate at apex and cucullate-appendaged at base, as in the preceding species, and must likewise be referred to *Aspilia*, as *Aspilia bonplandiana* (Gardn.) Blake.

OYEDAEA HELIANTHOIDES Triana, Ann. Sci. Nat. IV. 9: 39. 1858.

This species, the type of which I have never seen, is, from description, a species of either *Steiractinia* or *Perymenium*.

OYEDAEA LIPPIOIDES Baker in Mart. Fl. Bras. 6<sup>3</sup>: 208. 1884.

A Brazilian species, *Dimerostemma lippioides* (Baker) Blake.<sup>11</sup>

<sup>11</sup> Contr. Gray Herb. n. ser. 52: 15. 1917.

OYEDAEA OVATA (Gardn.) Benth.; Baker in Mart. Fl. Bras. 6<sup>3</sup>: 207. 1884.

*Serpaea ovata* Gardn. Lond. Journ. Bot. 7: 296. 1848.

Gardner's *Serpaea ovata* is identical<sup>12</sup> with the earlier, long problematical *Dimerostemma brasilianum* Cass.<sup>13</sup>

OYEDAEA ROTUNDIFOLIA Baker in Mart. Fl. Bras. 6<sup>3</sup>: 208. 1884.

*Serpaea rotundifolia* Schultz Bip.; Baker in Mart. Fl. Bras. 6<sup>3</sup>: 208. 1884, as synonym.

This plant is properly known as *Dimerostemma rotundifolium* (Baker) Blake.<sup>14</sup>

OYEDAEA SEEMANNII (Schultz Bip.) A. Gray, Proc. Amer. Acad. 19: 10. 1883.

*Viguiera seemannii* Schultz Bip.; Seem. Bot. Voy. Herald 305. 1856-57.

Dr. Gray's reference of this species to *Oyedaea* was an error, due to the fact that achenes belonging to this genus had become mixed with the type material in the pocket of the sheet in the Gray Herbarium.<sup>15</sup>

The plant is properly known as *Viguiera seemannii* Schultz Bip., and is still known only from the original collection by Seemann (no. 2005) in the Sierra Madre of northwestern Mexico.

OYEDAEA VESTITA Baker in Mart. Fl. Bras. 6<sup>3</sup>: 207. 1884.

This is *Dimerostemma vestitum* (Baker) Blake.<sup>16</sup>

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<sup>12</sup> See Blake, Contr. Gray Herb. n. ser. 52: 15. 1917.

<sup>13</sup> Bull. Soc. Philom. 1818: 58. 1818.

<sup>14</sup> Contr. Gray Herb. n. ser. 52: 13. 1917.

<sup>15</sup> See Blake, Contr. Gray Herb. n. ser. 54: 78. 1918.

<sup>16</sup> Contr. Gray Herb. n. ser. 52: 11. 1917.