

BV = 36377

New South American Verbesinas

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The synopsis of *Verbesina* published by Robinson and Greenman* in 1899 listed 109 valid species, and some 63 additional ones have since been described. The 13 new species here published bring the total number to approximately 185, making the genus by far the largest in its subtribe and, with the exception of *Bidens*, the largest in the tribe *Heliantheae*. The present paper will be followed by another presenting a rearrangement of the section *Lipactinia*, which has grown more rapidly than any other group of the genus since 1899.

Verbesina Macbridei, sp. nov.

Herbaceous (?); stem sordid-lanate; leaves alternate, large, elliptic, obscurely serrulate, scabrid above, sordidly pubescent beneath chiefly along the veins, on rather long naked petioles; heads about 12, medium-sized, yellow, radiate, about 47-flowered, long-peduncled; involucre about 4-seriate, graduate, about 8 mm. high; pappus awn 1.

"Coarse, 3 m. high;" stem stout, densely and sordidly lanate-pilose with matted hairs; petioles stout, naked or very narrowly margined above, not auriculate or decurrent, lanate-pilose, 1-3.5 cm. long; blades elliptic (or obovate-elliptic?), the main ones 18-23 cm. long or more, 4-8 cm. wide or more, acuminate at each end, minutely serrulate with remote teeth, thin, above dull green, sordidly hirsute-pilose, densely so along the veins (the hairs mostly deciduous except along the veins, the tuberculate bases persistent), beneath dull brownish green, densely sordid-hirsutulous with spreading hairs along the larger veins and costa, sparsely so elsewhere, featherveined, the chief veins about 11 pairs, prominulous on both sides, the secondaries loosely prominulous-reticulate beneath; tufts of oblanceolate leaves about 12 cm. long and 2.5 cm. wide present in the upper axils; heads in cymes of 2-4 on terminal and axillary peduncles, these 6.5-10 cm. long, the pedicels sordidly pilose-tomentose, 5.5-12 cm. long, subtended by very small linear bracts; disk about 1.2 cm. high, 1 cm. thick, in young fruit about 1 cm. high, 1.4 cm. thick; involucre about 4-seriate, graduate, about 8 mm. high, the phyllaries linear-oblong to oblong, sometimes spatulate, hispidulous-ciliolate and sparsely hirsutulous, with indurate

* Proc. Amer. Acad. 34: 534-566. 1899.

few-ribbed base and shorter subherbaceous obtuse or rounded tip, the innermost (subtending the rays) sometimes acutish; rays about 7, yellow, pistillate, exceeding disk, the densely hirsutulous tube 1 mm. long, the lamina narrowly elliptic, 12 mm. long, 3 mm. wide, 3-denticulate, about 8-nerved, hirsutulous on back; disk flowers about 40, their corollas slender, hirsutulous below, 6.8 mm. long (tube 1.5 mm., teeth 1.3 mm.); pales acutish or obtuse, narrow, hirsutulous and ciliolate, blackish green above, about 9 mm. long; ray achenes (very immature) trigonous, epappose, somewhat hispidulous; disk achenes cuneate-obovate, very flat, 6 mm. long, 2.5 mm. wide (including wings), hispidulous above, rather narrowly 2-winged (wings 0.8 mm. wide or less, hispidulous-ciliolate above); awn 1, on the outer angle, usually lance-subulate, upwardly hispidulous, 4 mm. long, sometimes (teratologically?) reduced to a triangular or oblong lacerate squamella 0.8 mm. long.

Peru: On gravelly stream bank, Cushi, Dept. Huanuco, alt. about 1525 m., 19-23 June 1923, *J. F. Macbride* 4822 (type no. 535859, herb. Field Mus.; duplicate no. 1,191,517, U. S. Nat. Herb.).

Rather closely related to the Brazilian *V. glabrata* Hook. & Arn., of the section *Verbesinaria*. In that plant the stem is short-pubescent or glabrate, the leaves are much less pubescent beneath, and the pappus awns are 2 and subequal. The pappus of *V. Macbridei*, when reduced to a single squamella, is very similar to that of the recently described genus *Monopholis*, but the achenes and disk corollas are entirely different from those of that genus.

Verbesina malacophylla, sp. nov.

Suffrutescent, 2 m. high; stem cinereously pilose-tomentose, winged by the decurrent leaves; leaves mostly alternate, oblong-ovate, sessile, decurrent but not auriculate, serrate-dentate, velvety above, canescent-tomentose beneath; heads medium-sized, radiate, yellow, about 50-flowered, numerous in terminal panicles; outer phyllaries obovate, 8-10 mm. long, rounded, densely canescent-tomentose, the inner oblong, subequal; achenes narrowly winged.

Stems "in clumps, unbranched," rather stout, very densely and sublanately pilose-tomentose with reflexed matted hairs (these more or less deciduous in age, leaving the small tuberculate bases), narrowly winged; leaves alternate or sometimes opposite, oblong-ovate or the upper lance-ovate, 9.5-18 cm. long, 2.5-7 cm. wide, sessile, acute or acuminate, rounded at base and long-decurrent on the stem (wings 2-4 mm. wide),

rather coarsely serrate-dentate (teeth deltoid, mucronulate, 1-4 mm. high), thickish, above grayish-green, densely and rather softly velvety-pubescent with spreading several-celled hairs with glandular-tuberculate bases, beneath densely and softly canescent-tomentose (the hairs along the veins somewhat yellowish, those along costa mostly reflexed), featherveined (the chief veins 4-6 pairs), reticulate beneath; heads 1.5-2.8 cm. wide, in flattish clusters of about 17-30 at ends of stem and branches, forming a large concave compound panicle 26 cm. wide; pedicels mostly 5-17 mm. long, pubescent like the stem; disk 6-11 mm. high, 7-11 mm. thick; involucre about 2-seriate, subequal or somewhat unequal, 8-10 mm. high, the outer phyllaries obovate or sometimes oblong or oblong-ovate, rounded or sometimes acute, indurate and pale below, herbaceous for their upper half, appressed, densely lanate-tomentose, the inner often shorter, oblong, less pubescent or nearly glabrous, blackish green with pale margin and short yellowish apiculation; rays 8, yellow, pistillate, the lamina oval, 3.5-9 mm. long; disk flowers 35-48, their corollas yellow, pilose on tube and base of throat, 6 mm. long; pales obtuse or apiculate, with firm erect tips, with blackish green center and yellowish white tip, sparsely pilose and ciliate, about 8 mm. long; disk achenes obovate, strongly compressed, 1-ridged on the sides, narrowly 2-winged, glabrous throughout (including wings), 6.5 mm. long, 2.8 mm. wide; awns 2, slender, finely hispidulous, subequal, 3 mm. long.

Peru: On sunny stream bank, 4.8-9.6 km. northwest of Mito, Dept. Huanuco, altitude about 3355 m., 10 Aug. 1922, *Macbride & Featherstone* 1935 (type no. 518430, herb. Field Mus.; photog. and fragm. in U. S. Nat. Herb.).

The small rays of this species would place it in Robinson and Greenman's synopsis in the section *Saubinetia*, where its closest ally would be *V. semidecurrens* Kuntze (of which *V. soratae* Schultz Bip. is a later synonym), a species very distinct in character of pubescence, shape and tothing of leaves, and color of rays. Its real affinity is rather with the *V. elegans* group of section *Verbesinaria*, from all of which it differs in its decurrent leaves, as well as in various details.

Verbesina saubinetioides, sp. nov.

Suffrutescent; stem strigillose, winged; leaves alternate, obovate, sessile, serrate, rather sparsely strigillose; heads few to many, medium-sized, whitish, radiate, on pedicels usually 1-6 cm. long; involucre about 3-seriate, barely graduate, about 5 mm. high, the outermost phyllaries linear or linear-lanceolate,

acute or acuminate, the inner oblong, obtuse to acute, all rather densely hirsutulous; achenes winged.

"Low straggling shrub;" stem angulate, 3-6 mm. thick, sparsely strigillose, glabrescent, winged into the inflorescence (the wings 1-2 mm. wide), the branches winged only below, sometimes erect-hirsutulous; internodes 2-5 cm. long, usually winged throughout; leaves obovate or oblong-obovate, 8-17.5 cm. long, 2.5-5 cm. wide, acuminate, sometimes falcate at tip, long-cuneate at base, not auriculate, serrate above the lower third (teeth very acute, about 1 mm. high, mostly 3-5 mm. apart), firm-papery, above deep green, evenly strigillose or antrorse-hirsutulous with tuberculate-based, at length deciduous hairs, smooth to the touch, beneath somewhat yellowish green, evenly short-strigose or antrorse-hirsutulous along all the veins and veinlets, featherveined, the chief veins 8-11 pairs, prominent beneath, the secondaries loosely anastomosing, the costa prominent beneath; heads 1.3-1.5 cm. wide, few to numerous in terminal cymes or cymose panicles, the bracts small, the pedicels usually 1-6 cm. long, strigillose or erect-hirsutulous, sometimes shorter and densely sordid-hirsutulous with somewhat spreading hairs; disk subglobose, 7-10 mm. high and thick; involucre about 3-seriate, slightly or not at all graduate, 5-6 mm. high, the outermost phyllaries linear to linear-oblong, acute to acuminate, with indurate 2-ribbed central portion and blackish green margin and apex, the inner similar but broader (about 2.5 mm. wide), oblong, obtuse to acute, all appressed, rather densely erect to spreading-hirsutulous and ciliolate; rays 7-9, equaling the young disk, "dirty white," pistillate, the tube densely hirsutulous, 2 mm. long, the lamina suborbicular, emarginate or 3-dentate, about 8-nerved, 4.2-5 mm. long, about 4 mm. wide; disk flowers about 55, dull white (the teeth tinged with blackish green), densely hirsutulous on tube and to middle of throat, glabrous above (the teeth papillose-margined), 4.5 mm. long (tube 1.3 mm., throat slender-funnelform, 2.2 mm., teeth ovate, 1 mm.); pales obtuse or acute, hirsutulous on keel and apex, ciliolate above, blackish green toward tip, 6.5 mm. long; ray achenes compressed, obovate, 3.5 mm. long, narrowly or rather broadly 2-winged (the wings usually unequal, sparsely ciliolate above, 0.1-0.5 mm. wide, adnate to the awns at base), 1- or 2-awned, the awns weak, unequal, 2.5 mm. long or less; disk achenes similar, 5 mm. long, always 2-awned, the wings as variable as in the ray achenes.

Peru: Obrajillo, *Wilkes Exploring Expedition* (U. S. Nat. Herb.); interior of Peru, 1862, *Mathews* 562 (N. Y. Bot. Gard.); on steep southern slope, Matucana, alt. 2440 m., 12 April-3 May 1922, *Macbride & Featherstone* 132 (type no. 516665, herb. Field Mus.; photog. and fragm. in U. S. Nat. Herb.).

Nearest *Verbesina saubinetia* Klatt (*Saubinetia helianthoides* Remy), of the Province of Coquimbo, Chile, known to me only from description. This species agrees in most features with *V. saubinetioides*, but is said to have hirsute-subvelvety leaves, tridentate pales, mostly sterile disk flowers, disk corollas pubescent throughout their length, 2-awned ray achenes, and 1-awned disk achenes. The Wilkes plant was identified doubtfully by Dr. Gray as *V. helianthoides* H. B. K. (= *V. Humboldtii* Spreng.), an entirely different species.

***Verbesina altipetens*, sp. nov.**

Branches sordid-tomentose; leaves opposite; petioles naked; blades lance-elliptic, attenuate, acuminate at base, sparsely serrulate above, sordid-pilose beneath; heads medium-sized, yellow, about 32-flowered, small-rayed, cymose-panicled; involucre about 3-seriate, subequal, about 10 mm. high, the phyllaries loose, oblanceolate, acute, herbaceous, sordid-pilose.

Shrubby (?); branch densely and sordidly pilose-tomentose with loose, many-celled, brownish hairs; leaves (only first pair below inflorescence seen) opposite; petioles 1.5 cm. long, pubescent like the branches; blades lance-elliptic, 9.5 cm. long, 2 cm. wide, subentire or with a few small sharp teeth above the middle, papery, above dull dark green, evenly but not densely hirsute-pilose (hairs many-celled, with small tuberculate bases), beneath dull green, similarly pubescent, densely so along the veins, featherveined, the chief veins about 5 pairs, prominulous beneath; heads about 1.3 cm. wide, about 13 in a terminal flattish panicle 11 cm. wide, its lowest branches subtended by somewhat reduced leaves; pedicels 0.5–3 cm. long, pubescent like the branches, naked or 1-bracteate; disk about 1.8 cm. high, 1 cm. thick; involucre about 3-seriate, subequal or slightly unequal, 10–11.5 mm. high, the two outer series of phyllaries oblanceolate (about 2 mm. wide), herbaceous, loose or spreading, acute, densely and sordidly hirsute-pilose on both faces, the innermost (subtending the rays) similar but more nearly lanceolate, not spreading; rays about 7, equaling or shorter than the mature disk, pistillate, yellow (or greenish-yellow?), the tube pilose, 2.5 mm. long, the lamina linear, 6 mm. long, 1.2 mm. wide, 3-denticulate, 3-nerved, pilose on back; disk flowers about 25, their corollas yellow (teeth apparently blackish green), pilose on tube and sparsely so on throat and teeth, at maturity 8 mm. long (tube 2.5 mm., throat 4.5 mm., teeth 1 mm.); pales acuminate, blackish green above, hispid-pilose along back and on upper margin, 11 mm. long; disk achenes (immature) linear-cuneate, obsolete winged, glabrous, 5–6 mm. long; awns 2, slender, upwardly hispidulous, equal or unequal, 4.5–6.8 mm. long.

Colombia: In shrub zone ("paramillo"), Mt. El Derrumbo, Dept. El Cauca, Cordillera Occidental, alt. 2500-2900 m., 1 July 1922, *E. P. Killip* 7993 (type no. 1,140,323, U. S. Nat. Herb.).

A member of the section *Saubinetia*, distinguished from all other South American species of its group by its opposite leaves. The involucre is also characteristic.

***Verbesina hastifolia*, sp. nov.**

Suffrutescent, 1.6 m. high; stem densely cinereous-puberulous; leaves opposite or subopposite; petioles short, naked; blades triangular, hastately 2-lobed at base, coarsely lobate-toothed to middle, cinereous-tomentose beneath; heads small, radiate, yellow, about 25-flowered, numerous in long-peduncled axillary and terminal cymose panicles.

Stem rather slender, terete, striatulate, very densely cinereous-puberulous with somewhat matted hairs, these more or less deciduous in age, leaving the sordid, subglandular bases; petioles similarly pubescent, stout, 1-2 cm. long, not auriculate or decurrent; blades triangular in outline, usually oblique, 10-14 cm. long, 6.5-10 cm. wide across the basal lobes, 3.5-5.5 cm. wide near middle, obtuse, at base subtruncate and very shortly decurrent on the petiole, sharply serrate, thickish, above dull green, densely hispid-pilose with several-celled spreading hairs (these mostly deciduous except along the veins, leaving the glandular-tuberculate bases), beneath densely and softly pilose-tomentose, triplinerved and reticulate beneath; panicles axillary and terminal, many-headed, 5.5-10 cm. wide, the lower on peduncles up to 20 cm. long, the bracts mostly minute, the pedicels usually 6-15 mm. long, pubescent like the stem; heads about 1.6 cm. wide; disk 8-10 mm. high, 5-7 mm. thick; involucre about 3-seriate, graduate, about 5 mm. high, rather densely and loosely pilose and ciliate with whitish hairs, the outermost phyllaries usually obovate, rounded, thickish, subherbaceous above, the others oblong or ovate-oblong, obtuse, with blackish green center and narrow yellowish margins; rays 5, pistillate, yellow, the lamina oval, 6.5 mm. long, tridenticulate, about 11-nerved, pubescent on back; disk flowers 18-23, their corollas yellow, densely pilose on limb and lower throat, 5.3 mm. long; pales obtuse, lacerate-ciliate, pilose on back, with blackish green center and yellowish tips, about 7 mm. long; achenes very flat, narrowly cuneate, 6 mm. long, obsoletely 2-winged, hispidulous on the wings, otherwise glabrous; awns 2, slender, upwardly hispidulous, unequal, 4.5 mm. long or less.

Peru: On rocky western slope, Matucana, Dept. Lima, alt. about 2440 m., 12 April-3 May 1922, *Macbride & Feather-*

stone 195 (type no. 516728, herb. Field Mus.; duplicate no. 1,185,439, U. S. Nat. Herb.).

Described on the labels as a fragrant, coarse half-shrub 4-5 ft. high. In Robinson and Greenman's synopsis of the genus, this species enters the section *Pseudomontanoa*. It is well characterized by the shape and pubescence of its leaves.

Verbesina nudipes, sp. nov.

"Shrubby;" stem angled, rather sparsely sordid-hirsutulous with mostly appressed hairs; leaves alternate, large, oval-oblong, obscurely serrulate, harsh above, sordid-hirsutulous chiefly on the veins beneath, on long naked petioles; heads small, radiate, white, about 23-flowered, very numerous in a large dense cymose panicle; involucre 3-seriate, about 5 mm. high.

Stem stout (1 cm. thick), pithy, strongly angled above, evenly but not densely hirsutulous with mostly appressed hairs to the inflorescence, glabrate below; internodes usually about 1.5 cm. long; petioles sordid-hirsutulous, slender, 4-5.5 cm. long; blades oval-oblong, 16.5-20 cm. long, 6.5-8.5 cm. wide, short-acuminate, rounded-cuneate or cuneate at base, serrulate (teeth about 0.5 mm. high, 3-6 mm. apart), firm-papery, above deep brownish green, somewhat shining, evenly and harshly hispidulous with mostly antrorse hairs with persistent tuberculate bases, beneath brownish green, hirsutulous along all the veins and veinlets with spreading, tuberculate-based, brownish hairs, featherveined, the chief veins about 10 pairs, curved-anastomosing, with the secondaries prominulous-reticulate; heads about 1.3 cm. wide, very numerous in axillary and terminal cymose panicles, forming a large rounded compound panicle 25 cm. wide or more, the axis, branches, and pedicels (these very slender, usually 8-15 mm. long) densely sordid-hirsutulous with crisped, several-celled, spreading hairs; disk about 8 mm. high, 5 mm. thick; involucre 3-seriate, graduate, about 5 mm. high, the phyllaries of the 2 outermost series linear or linear-oblong, hirsutulous, with pale base and short subherbaceous obtuse tip, the innermost (subtending the rays) oblong, acutish, sparsely hirsutulous, thin-tipped; rays 4-5, pistillate, white, about equaling the disk, the lamina oval-oblong, 5 mm. long, 3-denticulate, about 6-nerved; disk flowers 16-21, their corollas probably white, hirsute-pilose on the short tube (1 mm. long) and base of throat, hirsutulous on teeth, 5 mm. long; pales obtuse or acutish, sparsely hirsutulous, about 6 mm. long; disk achenes (very immature) cuneate, narrowly margined, essentially glabrous; awns 2, slender, upwardly hispidulous, unequal, 4-5 mm. long.

Colombia: In thicket, La Cumbre, Dept. El Valle, Cordillera

Occidental, alt. 1500-1750 m., 7-10 May 1922, *F. W. Pennell* 5208 (type no. 1,140,129, U. S. Nat. Herb.).

A species of *Ochractinia*, allied to *V. synethes* Blake, also Colombian, which has petioles margined nearly to the base, and leaves smoothish to the touch above and with a denser and more grayish pubescence beneath. *Pennell & Killip* 8034, from the Department of El Cauca, is so similar to *V. nudipes* in nearly all features that it might easily be a more pubescent form of it, but the flowers are described as yellow.

Verbesina grandis, sp. nov.

Very tall, herbaceous (?); stem glabrous, glaucescent; leaves alternate, large, pinnately lobed, harsh above, densely hispidulous-pilosulous beneath, the long petioles winged throughout, auriculate but not decurrent at base; heads rather small, radiate, white, about 30-flowered, very numerous in large open cymose panicles.

Stout herb (?), 6 m. high, "the branchlets leafy only below;" stem and branches stout, pithy, striate, purplish, glabrous; main leaves ovate in outline, 35-48 cm. long (including petiole, this about 14 cm. long, winged to base, about 1.3 cm. wide, the wings forming auricles at base, not decurrent), 14.5-28 cm. wide, pinnately about 9-lobed (lobes lance-oblong, acuminate, often falcate, subentire or sparsely serrulate toward apex, 6.5-13.5 cm. long, 2-3.5 cm. wide, the second and third pairs usually somewhat the longest, the rachis between them 3-4 cm. wide), acuminate, cuneately narrowed into petiole, firm-papery, above deep dull green, harshly hispidulous, somewhat bullate, beneath dull grayish-green, densely and rather softly hispidulous-pilosulous with spreading straightish hairs, on costa hispid-pilose, the veins and veinlets impressed above, prominent-reticulate beneath; panicles axillary and doubtless terminal, large and loose, up to 36 cm. long and 32 cm. wide, very many-headed, the bracts lanceolate, unlobed, with auriculate bases, the upper minute, the axis and branches wide-spreading, sordid-puberulous only on their upper half, the pedicels mostly 5-10 mm. long; heads 1.2-1.5 cm. wide; disk 7-9 mm. high, 5-7 mm. thick; involucre about 3-seriate, graduate, about 4 mm. high, the phyllaries few, the outermost small, linear to lance-ovate, obtuse, subherbaceous-tipped, sparsely hirsutulous and ciliolate, the inner (subtending the rays) whitish-stramineous, thin-tipped, acute, sparsely hirsutulous chiefly toward margin; rays about 3-5, white, pistillate, the lamina elliptic-oblong, emarginate, 5-nerved, 5.5 mm. long; disk flowers about 26, their corollas hirsute-pilose on tube and lower throat, 4 mm. long; pales obtuse or acute, sparsely hispidulous above, about 7 mm. long; achenes

(ray and disk) obovate, flattish, bluntly 1-ridged on each side, very narrowly 2-winged (the wings hispidulous-ciliate, adnate to base of awns), sparsely hispidulous above, 4 mm. long, 1.8–2 mm. wide; awns 2, slender, upwardly hispidulous, unequal, 3 mm. long or less.

Peru: In gravelly, shrubby stream bottom, Yanano, Dept. Huanuco, alt. 1830 m., 13–16 May 1923, *J. F. Macbride* 3786 (type no. 534848, herb. Field Mus.; duplicate no. 1,191,467–8, U. S. Nat. Herb.).

A member of the section *Ochractinia*, nearest *V. columbiana* Robinson, in which the involucre and pales are densely pubescent, and the main axis and branches of the inflorescence densely sordid-pilosulous with lax many-celled hairs.

Verbesina pterophora, sp. nov.

Tall herb; stem essentially glabrous, glaucescent; leaves alternate, large, pinnately lobed, puberulent beneath, the long winged petioles long-decurrent; heads small, radiate, white, about 23-flowered, short-pedicelled, numerous in cymose panicles.

Stem rather stout, multistriate, whitish, sparsely branched, glabrous below, hispidulous with mostly incurved hairs towards the inflorescence; leaves ovate in outline, 16–27 cm. long (including petiole, this 5–7.5 cm. long, winged to base, and decurrent on the stem for 2–6.5 cm. in herbaceous wings 1–3 mm. wide), 9–12 cm. wide, pinnately about 9-lobed (the upper leaves merely shallowly repand-dentate or lobed) with lance-elliptic or triangular, acuminate, remotely serrulate lobes (the rachis between them 0.7–5 cm. wide), acuminate, long-cuneate at the base and decurrent the whole length of the petiole, thin, above dark green, slightly harsh with small incurved scarcely tuberculate-based hairs, beneath lighter green, evenly puberulous with curved antrorse hairs and along the veins hispidulous, featherveined (the lateral veins about 6 pairs); heads numerous, 6 mm. wide, in axillary and terminal pedunculate, bracteolate, cymose panicles 4–9 cm. wide; pedicels 1.5–5 mm. long, densely sordid-hispidulous with mostly curved ascending hairs like the upper part of the peduncles; disk (scarcely mature) 7 mm. high, 4 mm. thick; involucre about 3-seriate, graduate, about 5.5 mm. high, the outer phyllaries linear to oblong, acute or short-acuminate, the innermost (subtending the rays) oblong, acute or acuminate, all whitish-stramineous, with thin obscurely subherbaceous tips, hispidulous-puberulous chiefly above and toward margin; rays 3–4, white, pistillate, the lamina oblong-oval, 3.5 mm. long, 3-toothed, 5-nerved; disk flowers about 19, their corollas white, hispidulous with several-celled hairs chiefly on tube and lower

part of throat, 3.5 mm. long; pales obtuse to acuminate, hispidulous above, whitish, about 6 mm. long; achenes (ray and disk) cuneate-obovate, hispidulous, broadly winged, 4-5 mm. long, 3-3.3 mm. wide (including the wings, these 1 mm. wide, hispidulous-ciliolate above, adnate to the awns at base); awns 2, upwardly hispidulous, unequal or subequal, 2-3 mm. long.

Colombia: Vicinity of Cartagena, 1919, *Bro. Heriberto* 228 (type no. 1,036,970, U. S. Nat. Herb.); in thicket, Sincelejo, Dept. Bolivar, alt. 250-350 m., 26 Jan. 1918, *Pennell* 4061 (N. Y. Bot. Gard.).

A species of the section *Ochractinia*, nearest the Brazilian *V. macrophylla* (Cass.) Blake,* which has a more definitely pubescent stem, and leaves with fewer lobes and more densely pubescent with longer hairs beneath. The vernacular name is "cerbatana."

Verbesina crassicaulis, sp. nov.

Tall herb; stem glabrous, glaucescent; leaves alternate, large, pinnately lobed, densely sordid-pilosulous beneath, the petioles winged, auriculate at base, not decurrent; heads rather small, white, discoid, about 21-flowered, numerous in cymose panicles.

Stem stout, 1.3 cm. thick, striate, pithy, purplish, glabrous, the branches of the inflorescence elongate, loosely and sordidly pilosulous especially above; leaves 20-30 cm. long (including petiole, this 7.5-11 cm. long, winged throughout, the wings dilated at base into rounded auricles about 1 cm. wide), 15-28 cm. wide, pinnately 7 or 9-lobed (the lobes ovate or oblong-ovate to lance-elliptic, acuminate, serrate, 7.5-14 cm. long, 3-6.5 cm. wide, the second pair usually largest, the rachis between the lobes 2-4 cm. wide), acuminate, abruptly contracted into

* *Verbesina macrophylla* (Cass.) Blake.—*Ditrichum macrophyllum* Cass Dict. Sci. Nat. 13: 371. 1819. *Verbesina diversifolia* DC. Prodr. 5: 615. 1836; Baker in Mart. Fl. Bras. 6³: 213. pl. 65. 1884. *Verbesina lancifolia* Gardn. Lond. Journ. Bot. 7: 406. 1848, fide Baker.—This transfer is made on the basis of the equation of Cassini's and De Candolle's names by Bentham & Hooker (Gen. Pl. 2: 380. 1873), who had examined a head from Cassini's type, and by Baker (*loc. cit.*). Cassini's description agrees fairly well with this plant, except that the heads are described as rayless and yellow. Probably the rays, which are not obvious in the young heads, were overlooked by Cassini. No yellow-flowered *Verbesina* with alternate, pinnately lobed leaves is known. The name *Ditrichum macrophyllum* is usually cited from Bull. Soc. Philom. 1817: 33, but only the generic name appears in that paper.

the cuneate-winged petiole, thick-papery, more or less corrugate and bullate above especially along the costa, above dark green, rather harshly hispidulous-pilosulous with antrorse-curved hairs, densely so along the chief veins, beneath densely and rather softly griseous-pilosulous, featherveined, the veinlets impressed above, prominent-reticulate beneath; peduncles elongate, axillary and doubtless terminal; heads 6–10 mm. high, 4 mm. thick, numerous in a flattish cymose panicle 14.5 cm. wide, its branches and the pedicels (mostly 2–8 mm. long) densely sordid-pilosulous; involucre 2-seriate, graduate, 4 mm. high, the phyllaries few, oblong or linear-oblong, whitish-stramineous, with obtuse or rounded subherbaceous tips, sordid-pilosulous and ciliate; flowers 20–22, their corollas white, hirsute-pilose on tube and to middle of throat, 4.5 mm. long; pales obtuse to acute, hispidulous above, about 7 mm. long; achenes flat, cuneate-obovate, very narrowly 2-winged, finely hispidulous on edge of wings and sparsely so on the body, 5 mm. long, 2 mm. wide; awns 2, slender, subequal, upwardly hispidulous, about 3.5 mm. long.

Colombia: Open ground, La Cumbre, Dept. El Valle, Cordillera Occidental, alt. 1500–1750 m., 7–10 May 1922, *F. W. Pennell* 5200 (type no. 1,140,127, U. S. Nat. Herb.).

Although its discoid heads artificially place this species in the section *Lipactinia*, its real relationship is with species of the section *Ochractinia*. This is shown not only by its whole habit and the color of its florets, but by the fact that several of the outer florets sometimes have imperfect anthers, suggesting that rays may be developed at times. It is distinguished from *V. columbiana* Robinson by its perfectly glabrous stem and discoid, fewer-flowered heads (flowers about 38 in *V. columbiana*), and from *V. myriocephala* Schultz Bip. by the longer, more spreading, sordid pubescence of its lower leaf surface, as well as by the absence of rays.

***Verbesina minuticeps*, sp. nov.**

Tall herb; stem glabrous, glaucescent; leaves alternate, large, pinnately lobed, subsericeous-hispidulous beneath, the petioles winged throughout, shortly auriculate-decurrent; heads tiny, discoid, white, about 15-flowered, very numerous in a large cymose panicle.

Herb about 4.5 m. high; stem stout, 1.2 cm. thick, striate, glabrous or with a few minute appressed hairs; main leaves broadly ovate in outline, about 38 cm. long (including petiole, this 12–14 cm. long, winged throughout, about 1.2 cm. wide, the wings obliquely decurrent on the stem for about 1 cm. as

rounded auricles about 6 mm. wide), about 26 cm. wide, pinnately 9-lobed (lobes lanceolate or oblong, 7.5–13 cm. long, 2.5–7.5 cm. wide, acuminate, serrate or the lower sometimes repandly about 6-lobed, the second pair largest, the rachis between the lobes about 2.2 cm. wide), acuminate, abruptly contracted into the winged petiole, papery, above deep green, rather harshly tuberculate-hispidulous, beneath pale, very densely and somewhat harshly subsericeous-hispidulous with curved-spreading tuberculate-based hairs; leaves subtending the lower branches of the panicle similar to the main leaves, but only 7.5–9 cm. long; heads discoid, 13–15-flowered, 5 mm. high, 2.5 mm. thick, very numerous in a large rounded cymose panicle 30 cm. wide, its axis and the lower part of its branches essentially glabrous, the upper part of the branches and the pedicels (1–3 mm. long) cinereous-puberulous; involucre about 3-seriate, graduate, 3 mm. high, the phyllaries few, the outermost small, linear, subherbaceous-tipped, obtuse, hispidulous and ciliate, the inner oblong, obtuse to acute, whitish-stramineous, ciliate, sparsely hispidulous dorsally; corollas white, hirsute-pilose on tube and to middle of throat, 3 mm. long; pales obtuse to acute, whitish-stramineous, hispidulous and ciliate above, about 4.5 mm. long; achenes cuneate-oblong, obsoletely 2-winged, rather plump, 1-angled on each side, hispidulous on wings and toward apex, 2.5 mm. long; awns 2, upwardly hispidulous, unequal, about 2 mm. long.

Ecuador: Guayaquil, alt. 0–50 m., 18–26 June 1923, A. S. Hitchcock 20159 (type no. 1,195,177, U. S. Nat. Herb.).

Like *V. crassicaulis*, described above, this species is technically referable to the section *Lipactinia* on account of its discoid heads, but is really more closely allied to the *V. gigantea* group of section *Ochractinia*. The only closely related members of the section *Lipactinia* are *V. bipinnatifida* Baker, of Brazil, which has the leaves griseous-pubescent beneath and the achenes distinctly winged, and *V. crassicaulis*, described above, which has larger heads and leaves griseous-pilosulous beneath. Its nearest ally in the section *Ochractinia* is *V. myriocephala* Schultz Bip., which has radiate, about 20-flowered heads, and a different pubescence on the lower leaf surface.

***Verbesina grandifolia*, sp. nov.**

Very tall; stem sordidly lanate-tomentose; leaves alternate, very large, rhombic-oval or rhombic-oblong, serrate above the cuneate entire lower portion, sordidly subtomentose beneath; petioles naked; heads small or medium-sized, yellow, radiate, about 18-flowered, very numerous in flattish cymose panicles; rays small; involucre few-seriate, about 5.5 mm. high.

Evidently shrubby, up to 7.5 m. high; stem stout, pithy, striate, densely lanate-tomentose with brownish hairs; petioles stout, not auriculate or decurrent, pubescent like the stem, 1–2.5 cm. long; blades rhombic-oval or rhombic-oblong, 15–36 cm. long, 6–17.5 cm. wide, acuminate at each end, serrate or serrulate above the entire lower third (teeth small, unequal, mucronulate, 0.5–3 mm. high, 2–4 mm. apart), papery, above deep dull green, evenly and harshly antrorse-hispidulous with ochroleucous hairs, very densely so along the veins (the hairs with persistent tuberculate bases), beneath densely and ochroleucously subtomentose-pilosulous (the hairs crisped, brownish along the veins), feather-veined, the lateral veins 10–15 pairs, prominent beneath, the secondaries prominulous; heads about 7 mm. wide in flower, very numerous in dense cymose panicles, these terminal and from the upper axils, forming a compound panicle up to 30 cm. wide; bracts small, mostly linear or oblanceolate; pedicels mostly 1–2 cm. long, densely sordid-hirsutulous; disk in anthesis 11 mm. high, 6 mm. thick; involucre about 3-seriate, graduate, about 5.5 mm. high, the outer phyllaries oblong or oblong-oblanceolate, with pale base and shorter, thickened, subherbaceous, rounded or sometimes apiculate tip, sordid-hirsutulous, the innermost (subtending the rays) similar but with thin subglabrous obtuse tips; rays about 4, pistillate, yellow, shorter than the disk, the tube densely hispidulous, the lamina oblong-oval, 3 mm. long, 1.5 mm. wide, rather deeply 3-dentate, with about 8 brown nerves; disk flowers about 14, their corollas yellow, hispid-pilose on tube and base of throat, ciliolate on inner edge of teeth, 5.3 mm. long; pales obtuse, blackish green and densely hispidulous except on the essentially glabrous, erose, subscarious, yellowish tips, about 8 mm. long; disk achenes cuneate-obovate, flat, 1-nerved on each side (the nerves sometimes narrowly winged above), 5–6 mm. long, 3–4 mm. wide (including the wings, these 1 mm. wide above), tuberculate-hispidulous, rather broadly 2-winged, the wings ciliolate, usually adnate to the awns at base; awns 2, upwardly hispidulous, unequal, 4.5 mm. long or less.

Peru: On sunny, rocky stream bank, Mito, Dept. Huanuco, alt. about 2745 m., 8–22 July 1922, *Macbride & Featherstone* 1500 (type no. 517999–518000, herb. Field Mus.; duplicate no. 1,185,980, U. S. Nat. Herb.).

The presence of small rays in this species would place it in the section *Saubinetia* in Robinson and Greenman's revision. Its proper place, however, is clearly in the section *Lipactinia*, in which several species with small rays have been described. It is related to *V. adenobasis* Blake, of Ecuador, which has opposite leaves and much less densely pubescent involucre and

pales, and to *V. flavovirens* R. E. Fries of Bolivia and *V. lloensis* Hieron. of Ecuador. *V. flavovirens* is described as herbaceous, 1.5 m. high, with alternate, opposite, or ternate leaves pubescent only on the veins beneath, while *V. lloensis* has narrower leaves, linear or linear-lanceolate phyllaries, and acute pales. The label of the type collection of *V. grandifolia* describes it as reaching 25 ft. in height and gives the vernacular name as "wampu." The stem is described as branched only in the inflorescence, the new shoots being unbranched. The rays and disk corollas appear to have been greenish-yellow.

***Verbesina brachypoda*, sp. nov.**

Stem (or branch?) winged, griseous-pilosulous; leaves alternate, broadly ovate, acute, serrate, rough above, griseous-subtomentose beneath, on short winged petioles; heads small, about 15-flowered, radiate, yellow, pedicellate, in a flattish cymose panicle; involucre about 4 mm. high, the phyllaries mostly oblong, obtuse or rounded, blackish green, ciliolate, sparsely pubescent on back; achenes distinctly winged.

Shrubby (?), 3 m. high; stem (or branch) stoutish, 5 mm. thick, pithy, griseous-pilosulous with crisped many-celled hairs, about 4-winged to the inflorescence, the wings herbaceous, 1-2 mm. wide; petioles winged to base, not auriculate, 5-15 mm. long, 4-12 mm. wide, the wings long-decurrent; blades ovate or broadly ovate, the larger 8-17.5 cm. long, 4.5-10 cm. wide, acute, apiculate, at base broadly rounded or cuneate-rounded and often unequal, decurrent on the petiole, serrate above the usually entire base (teeth low, apiculate, about 0.5 mm. high, mostly 3-6 mm. apart), firm-papery, above yellowish green, harshly tuberculate-hispidulous, beneath densely subtomentose-pilose with many-celled, mostly spreading hairs, featherveined or obscurely triplinerved, the chief veins 3-4 pairs, prominulous beneath, the veinlets prominulous-reticulate beneath; panicle terminal, ternately divided, many-headed, 12-18.5 cm. wide, densely ochroleucous-hirsutulous with spreading hairs, the bracts mostly minute, the pedicels mostly 2-8 mm. long; heads about 11 mm. wide; disk at maturity about 11 mm. high, 5 mm. thick; involucre about 2-seriate, unequal, 4 mm. high, the phyllaries few, the outer oblong, rounded, with pale obscurely ribbed base and blackish green tip, hispidulous-ciliolate and above sparsely hispidulous, the inner (subtending the rays) similar but obtuse or acute, blackish green with yellowish margin and apex, less pubescent; rays about 3, equalling disk, yellow, pistillate (styles short, included), the tube hirsute, the lamina elliptic or oval, 2-3-dentate, 4-6-nerved, 5 mm. long; disk flowers 11-12,

their corollas yellow, hirsute on tube and sparsely on throat, 5.5–6 mm. long; pales acute or obtuse, blackish green with yellowish margin and apex, ciliolate and sparsely hirsutulous dorsally, about 6 mm. long; achenes cuneate, flat, sometimes 1-ridged on sides, glabrous, 2-winged, 4.5–6 mm. long, 2.5–3 mm. wide (including wings, these about 1 mm. wide above, glabrous, adnate to awns at base); awns 2, subequal, slender, slightly hispidulous, about 5 mm. long.

Ecuador: Cuenca, 12 Sept. 1920, *E. W. D. & M. M. Holway* (type in Gray Herb.; duplicate in herb. N. Y. Botanical Garden; photog. and fragm. in U. S. Nat. Herb.).

The type collection has been identified as *Verbesina arborea* H. B. K., but that plant has an unwinged stem and different pubescence. *V. brachypoda* is nearer *V. callacatensis* Hieron., which has a densely hirsutulous involucre and longer, auriculate petioles, and the wings of the stem, when present, are much less developed in that species.

Verbesina pentantha, sp. nov.

Herb, 3 m. high; stem appressed-puberulous; leaves alternate; blades elliptic, obscurely serrulate, appressed-puberulous beneath, on slender naked petioles; heads discoid, 4–5-flowered, white, cylindrical, in a flattish terminal panicle; involucre very unequal, about 4.5 mm. high, its phyllaries about 6, whitish.

Stem 3.5 mm. thick, terete, striatulate, whitish; petioles appressed-puberulous, 0.4–3 cm. long; blades 8.5–12 cm. long, 2–3.2 cm. wide, acuminate at each end, minutely serrulate (teeth 1–2 mm. apart), papery, above light green, scabrid-hirsutulous with antrorse-curved, tuberculate-based hairs, beneath light green, densely subappressed-puberulous, featherveined, the chief veins about 7 pairs, with the secondaries prominulous-reticulate beneath; panicle dense, terminal, 13.5 cm. wide, its lower branches subtended by greatly reduced leaves, the other bracts minute, the branches and pedicels (these obsolete or up to 3 mm. long) densely hirsutulous with erect or ascending, several-celled, yellowish white hairs; disk in anthesis 8 mm. high, 2.5–3 mm. thick; involucre about 4.5 mm. high, very unequal, the phyllaries few (about 6), the outermost whitish, obscurely greenish above, short-ciliate and sparsely hirsutulous, obtuse, minute, linear or linear-oblong, the innermost about three times as long, linear-oblong, obtuse, without greenish tips, nearly glabrous dorsally; corollas white, hirsutulous on tube and base of throat, sparsely so above, papillose-ciliolate on inner margin of teeth, 4.5 mm. long (tube 0.8 mm., throat slender-funnelform, teeth ovate, 0.6 mm.); pales whitish, obtuse (involute above

and appearing acute), short-ciliate, hirsutulous below or nearly glabrous dorsally, about 6 mm. long; achenes (immature) linear-obovate, obscurely margined but not winged, hirsutulous, 3 mm. long, 0.8 mm. wide; awns 2, slender, unequal, upwardly hirsutulous, 3-4.5 mm. long.

Ecuador: Dry brushy land, between Santa Rosa and La Chorita, Prov. Oro, alt. 0-100 m., 27 Aug. 1923, *A. S. Hitchcock* 21144 (type no., 1,195,584, U. S. Nat. Herb.).

This species is of interest from its evidently close alliance with the Argentinian species of the *Chaenocephalus macrophyllus* group. Its heads are fewer-flowered than those of any other species of *Verbesina*, those of *V. Cumingii* Schultz Bip. being 5-6-flowered, of *V. crassiramea* Blake rarely 5-flowered, and of several other species 6-10-flowered.

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