

linear-subulate or lance-linear, acuminate, revolute-margined, stipitate-glandular and short-pilose, herbaceous, 11 to 13 mm. long, 1 to 2 mm. wide; inner phyllaries 8, linear, acuminate, subherbaceous, densely stipitate-glandular, densely ciliolate, toward apex pilose, 15 to 16 mm. long; outer corollas yellow, bilabiate, the tube sparsely stipitate-glandular above, 8 mm. long, the outer lip oblong-ovate, 8 mm. long, 3 mm. wide, tridentate, stipitate-glandular on back and near apex short-pilose, the inner lip 2-parted, 5.5 mm. long, the lance-linear lobes recurved; inner corollas similar but smaller; achenes very slenderly fusiform-cylindric, 7 mm. long, densely papillose-hispidulous with spreading, yellowish, 1-celled hairs; pappus of numerous, very slender, hispidulous, straw-colored setae 1 cm. long.

Type in the U. S. National Herbarium, no. 576968, collected at Gualán, Guatemala, altitude about 125 meters, January 12, 1905, by C. C. Deam (no. 324).

The type collection has been identified as *Trixis frutescens* P. Br., which is *T. radialis* (L.) Kuntze. It differs from that species in pubescence and various other characters. It is nearest *T. rugulosa* Robins. & Greenm., but is distinguished by its longer and narrower outer and longer, densely stipitate-glandular inner phyllaries.

**Trixis grandis** Blake, sp. nov.

Herb 2 meters high, branched at least above; stem stout, fistulose, 1 cm. thick, densely accumbent-pilosulous with sordid glandular-based hairs, winged by the long-decurrent leaf bases, the wings 1 to 5 mm. wide; stem leaves rather remote, elliptic-lanceolate or oblong-lanceolate, 20 to 30 cm. long, 3.5 to 4 cm. wide, acute, sessile by a scarcely narrowed, decurrent base, remotely denticulate, papery, dark dull green, rather densely pilosulous on both sides with spreading or ascending glandular-based hairs, featherveined, loosely prominulous-reticulate beneath; branch leaves much smaller, 3 to 7.5 cm. long; heads subglobose, about 76-flowered, 3 cm. wide and 1.8 cm. high in flower, 3.5 to 4 cm. wide in fruit, in loose panicles of about 8 toward end of branches, the peduncles swollen above, monocephalous, 4 to 8 cm. long; involucre distinctly 2-seriate, equal, 1 to 1.2 cm. high, densely accumbent-pilosulous, the outer phyllaries about 7, oblanceolate or linear-oblong, acute, usually denticulate toward apex, 1.5 to 2.8 mm. wide, the inner about 18 to 21, linear, acuminate, about 1.5 mm. wide; corollas "orange-red," bilabiate, 1.4 cm. long, hirsute toward apex of tube and on the back of both lips above, the outer lip elliptic-oblong, tridenticulate, 6.5 mm. long, the inner 2-parted, 5 mm. long; achenes distinctly rostrate, 9 to 12 mm. long, densely spreading-pilosulous with slender subglandular-based hairs; pappus brownish, 8 to 10 mm. long.

Type in the U. S. National Herbarium, no. 1,110,858, collected in swamps at Novo Friburgo, State of Rio de Janeiro, Brazil, altitude 900 meters, January 7, 1922, by E. W. D. and M. M. Holway (no. 1470).

Allied to *Trixis glaziovii* Baker and *T. gigas* Wawra. The former, according to Baker's description, has much smaller leaves, 30-flowered heads, and achenes only 5 mm. long. The latter, while agreeing in general features with *T. grandis*, has leaves flavescent-villous beneath, an involucre 2.5 cm. high or more, and achenes only 5 mm. long and not distinctly rostrate.

**Trixis verbascifolia** (Gardn.) Blake.

*Bowmania verbascifolia* Gardn. in Hook. Icon. Pl. 6: pl. 519, 520. 1843.

*Trixis bowmanii* Baker in Mart. Fl. Bras. 6<sup>3</sup>: 390. 1884.

A specimen of the type collection, Gardner 5797, is now in the National Herbarium.

#### CICHORIEAE.

**Pinaropappus parvus** Blake, sp. nov.

Dwarf perennial, about 4 cm. high; caudex short, with short thick branches (3 to 4 mm. thick), bearing rosettes of leaves and 1 to 4 scapes; scapes very slender, curved glabrous, pale green, naked or bearing 1 to 4 subulate bracts 1 to 4 mm. long, rarely



with a branch below the middle; leaves densely rosulate, narrowly oblanceolate or spatulate-oblanceolate, 5 to 15 mm. long, 1 to 2 mm. wide, acute, callous-apiculate, narrowed gradually into a petioliform base, minutely serrulate, subcoriaceous, pale green or glaucescent, glabrous; heads solitary, about 12 mm. wide; involucre campanulate, about 5-seriate, graduate, the outermost phyllaries very short, triangular or lance-ovate, the others narrowly linear-oblong or linear-lanceolate, all acute or acutish to obtusish, submembranous, with purplish center and narrower whitish margins, without sphacelate tips or these minute, obscurely ciliolate at apex; receptacle paleaceous, the pales membranous, subulate-attenuate, glabrous, 7 mm. long; lamina of the corollas about 8 mm. long; achenes (immature) contracted above, glabrous, about 4-angled; pappus of unequal hispidulous bristles, about 3 mm. long.

Type in the U. S. National Herbarium, no. 1,120,372, collected on rocks, Hilton Canyon, Lincoln National Forest, New Mexico, altitude 2,075 meters, September 12, 1916, by W. R. Chapline (no. 660).

Distinguished from its closest relative, *Pinaropappus spathulatus* T. S. Brandeg.,<sup>24</sup> of Veracruz and Puebla, by its lower growth, thick short-branched caudex, smaller and somewhat firmer leaves, and lack of obvious sphacelate tips to the phyllaries. Comparison of *Purpus* 1165, the type collection of *P. spathulatus*, which has been sent from the Gray Herbarium, with *Purpus* 5816, type collection of *P. caespitosus* T. S. Brandeg.,<sup>25</sup> in the National Herbarium, has shown that the two supposed species are identical and should be combined under the name *P. spathulatus*.

**Malacothrix floccifera** (DC.) Blake.

*Senecio flocciferus* DC. Prodr. 6: 426. 1837.

*Malacothrix obtusa* Benth. Pl. Hartw. 321. 1849.

DeCandolle's description of *Senecio flocciferus*, which was evidently based on imperfect material, agrees well with *Malacothrix obtusa*, and his name is referred to the synonymy of that species by Gray. As this was not a homonym, it is necessary to adopt it in place of *Malacothrix obtusa* Benth.

**Hieracium arsenei** Blake, sp. nov.

Herbaceous perennial, 1-stemmed, about 23 cm. high; caudex short, oblique, with long somewhat thickened rootlets, at apex densely tufted-pilose with golden-brown hairs about 15 mm. long; basal leaves few (about 2), obovate-oval, short-petioled, about 2.5 cm. long, 1.2 cm. wide, rounded, glandular-apiculate, remotely glandular-serrulate, thickish, purple beneath, rather densely hirsute-pilose above with golden-brown hairs about 4 mm. long and with obscurely tuberculate bases, sparsely so beneath; stem slender, densely pilose for about one-quarter its length with golden-brown hairs (4 to 10 mm. long) with small tuberculate bases, sparsely so above and there slightly stipitate-glandular, simple below the inflorescence, bearing 2 to 4 linear-subulate densely pilose bracts (7 to 12 mm. long, 1 mm. wide or less); heads several, about 27-flowered, in a thyriform panicle 9 cm. long or less, this densely stipitate-glandular (the glands golden, the hairs yellowish or blackish-based, about 0.5 mm. long) and very sparsely or rather densely pilose with long yellow hairs; involucre 9.5 to 12.5 mm. high, 4 to (young fruit) 9 mm. thick, the chief phyllaries 13, linear lanceolate, blackish green, rather densely stipitate-glandular especially below, and loosely long-pilose with yellowish hairs about 2.5 mm. long, the outer phyllaries or bracteoles few, half as long as the inner or less; corollas yellow (when dry); achenes bright reddish brown or purplish brown, narrowed at base, slightly attenuate at apex, striate, 3.5 to 4.6 mm. long; pappus somewhat sordid, 5 mm. long.

Type in the U. S. National Herbarium, no. 42962, collected at Cerro Azul, near Morelia, Michoacán, Mexico, March 9, 1911, by G. Arsène.

<sup>24</sup> Zoe 5: 241. 1906.

<sup>25</sup> Univ. Calif. Publ. Bot. 4: 388. 1913.