

HEMIBACCHARIS, A NEW GENUS OF BACCHARIDINAE.

By S. F. BLAKE.

INTRODUCTION.

The genus *Baccharis* L. is one of the dozen largest genera of Asteraceae, containing some 250 to 300 species, all of which are confined to America. The genus is characterized by its functionally dioecious habit, the pistillate plants bearing heads composed entirely of pistillate fertile flowers with filiform corollas and an exserted style, while the staminate bear heads composed of hermaphrodite but sterile flowers with tubular 5-toothed corollas and entire or 2-branched styles. Several generic names, based chiefly on real or supposed distinctions in the number or form of the pappus bristles, were published for different species of the genus by some of the early authors, but all these are now universally referred to *Baccharis*, and the only other genera now recognized in the subtribe Baccharidinae are *Heterothalamus* Less. and *Parastrephia* Nutt.¹ The former has polygamo-dioecious heads, the staminate, of hermaphrodite but sterile flowers, sometimes provided with pistillate outer flowers with minutely or broadly ligulate corollas, the pistillate without admixture of hermaphrodite flowers and with the receptacle provided with pales which half include the flowers.

A group of some 15 species, occurring from Mexico to Costa Rica, has long afforded difficulty to botanists. These species, of which *Baccharis mucronata* H. B. K., *B. hirtella* DC., and *B. asperifolia* Benth. are the best known, are perplexingly intermediate between *Baccharis* and *Eschenbachia* (*Conyza* of most authors, not L.). They are herbs or shrubs with the general habit of *Baccharis*, but are polygamo-dioecious. The staminate plants are indistinguishable from *Baccharis*, but the pistillate bear heads containing 1 to 15 hermaphrodite but sterile central flowers with regular tubular corollas. On this account *Baccharis asperifolia* Benth. was referred by Ben-

¹ Since this paper was turned in for printing, further investigations in regard to Nuttall's genus *Parastrephia* have left little doubt that, as was suggested by O. Hoffmann in 1890, it was founded on abnormal specimens of a species of *Lepidophyllum* Cass., probably *L. phyllicaeforme* (Meyen) Hieron. This genus belongs to the Astereae-Solidagininae, and has no close affinity to *Baccharis*.

tham in the Genera Plantarum to *Conyza* (= *Eschenbachia*), where it has since been allowed to remain, while *B. hirtella* and *B. mucronata*, with the several similar species described in recent years, have been kept in *Baccharis*. This course is decidedly unsatisfactory, since it vitiates the characters of both *Baccharis* and *Eschenbachia*, and it seems best to distinguish a new genus to receive these species. This genus, which I propose to call *Hemibaccharis*, in allusion to the fact that the staminate plant is indistinguishable from *Baccharis*, will then be distinguished from *Baccharis* by the presence of hermaphrodite flowers in the center of the pistillate heads, perhaps also by its compressed 2-nerved achenes; from *Eschenbachia* by the presence of staminate plants; and from *Heterothalamus* by the absence of pales on the pistillate receptacle and the presence in the pistillate heads of central hermaphrodite flowers.

It may be noted that Cassini² ascribes subdioecious heads to the Jamaican *Baccharis scoparia* Swartz (type of the genus *Sergilus* Gaertn., retained provisionally by Cassini). He describes the inner flowers as male, with regular corolla, and the outer as similar in appearance, but actually female, with "corolla ambiguë," containing false stamens. Cassini's observations were apparently based on abnormal specimens, for those of this species which I have dissected are strictly dioecious. Staminate heads of *Hemibaccharis* sometimes show more or less abortive stamens in the outer florets, and the same condition is likely to occur in *Baccharis*, but the essential diagnostic feature of *Hemibaccharis* is the regular presence of hermaphrodite flowers in the center of the pistillate heads.

In *H. pringlei* only the staminate plant is known; in *H. salmcooides*, *H. androgyna*, and *H. corymbosa* only the pistillate. The corollas of both sexes are pubescent with short erect subclavate hairs. In several species the anthers of the hermaphrodite flowers in the center of the pistillate heads are more or less abortive.

The following key to the 15 species of the genus recognized is based chiefly on the material in the National Herbarium, supplemented by a number of sheets from the New York Botanical Garden and the Gray Herbarium, for the loan of which I am indebted to Dr. N. L. Britton and Dr. B. L. Robinson.

SYSTEMATIC TREATMENT.

Hemibaccharis Blake, gen. nov.

Polygamo-dioecious herbs or shrubs, often scandent, with alternate leaves and small, whitish, discoid or disciform (in one species radiate), cymose-panicled heads; involucre 3 to 5-seriate, graduate, of linear to lanceolate or ovate, narrowly scarious-margined, green-centered phyllaries; receptacle flat-

²Dict. Sci. Nat. 37: 479. 1825.

tish, alveolate; pistillate heads heterogamous, the outer flowers (9 to 120) pistillate, fertile, their corollas with filiform tube, subtruncate or with very short, erect, often bidentate limb, much surpassed by the style, or in one species distinctly ligulate and exceeding the style, the central 1 to 15 flowers hermaphrodite but sterile, with regular tubular 5-toothed corolla and usually 2-branched style; staminate heads 8 to 70-flowered, with regular tubular 5-toothed corollas, in one species with 5 to 12 outer tubular-filiform pistillate flowers; stamens subentire or minutely sagittate at base, with rather long elliptic terminal appendages; style branches in the hermaphrodite flowers oblong to lanceolate, acute to acuminate, hispidulous, or the style rarely undivided, in the pistillate flowers linear, glabrous; fertile achenes compressed, rarely trigonous, 2 (rarely 3)-nerved, hispidulous; pistillate pappus setose, 1-seriate, the bristles capillary; staminate pappus with the bristles often dilated at apex.

Species 15, ranging from Chihuahua to Costa Rica. Type species, *Hemibaccharis hieracioides* Blake (*Baccharis hieraciifolia* Hemsl.).

KEY TO SPECIES.

Lamina of the pistillate corollas wanting or less than 1 mm. long and erect.

Leaves (at least the middle and upper) narrowed to an amplexicaul base.

Stem densely pubescent with spreading gland-tipped hairs.

Leaf blades lanceolate to elliptic or elliptic-lanceolate, gradually narrowed to base..... 1. *H. glandulosa*.

Leaf blades oval, rather abruptly contracted into a petioliform base.

2. *H. oaxacana*.

Stem pubescent with eglandular hairs. Leaves broadly ovate.

3. *H. pringlei*.

Leaves petiolate, not amplexicaul.

Heads larger, the pistillate 7 to 10 mm. high, the staminate 6 to 11 mm. high.

Stem densely pubescent with spreading gland-tipped hairs.

4. *H. hieracioides*.

Stem sparsely hispidulous with incurved eglandular hairs.

5. *H. simplex*.

Heads smaller, 2 to 6 mm. high.

Plants scandent or subscandent, frutescent; branches usually conspicuously zigzag; heads in usually small, rounded, cymose panicles terminating the branches and the numerous wide-spreading branchlets.

Leaves firmly papery or pergamentaceous, essentially glabrous except on the veins, the veinlets prominulous-reticulate on both sides.

6. *H. salmeoides*.

Leaves membranaceous or papery, usually pubescent on the surface beneath as well as on the veins, scarcely or not prominulous-reticulate.

Heads tiny, 2 to 3.5 mm. high; leaves chiefly ovate or elliptic.

7. *H. hirtella*.

Heads larger, 4 to 6 mm. high.

Leaves chiefly elliptic or lance-elliptic, less than half as wide as long; branches densely spreading-pilose with many-celled sordid hairs..... 8. *H. flexilis*.

Leaves chiefly oval or oval-ovate, more than half as wide as long; branches sordid-puberulous, glabrescent..... 9. *H. torquis*.

Plants erect, not scandent, herbaceous or frutescent; branches straight; heads in large terminal panicles.

Stem densely puberulous, hirtellous, or sordid-pubescent, sometimes tomentose.

Pubescence cinereous or griseous; heads 3 to 4 mm. high.

Pubescence of stem and upper leaf surface harsh; leaves not densely tomentose beneath----- 10. *H. mucronata*.

Pubescence usually soft; under leaf surface and often the stem densely tomentose----- 10a. *H. mucronata paniculata*.

Pubescence sordid, subglandular; heads 4.5 to 5 mm. high.

11. *H. irazuensis*.

Stem glabrous or essentially so, at least below, and often glaucescent, rarely thinly arachnoid.

Leaves oval or ovate-oval, the larger 3 to 6 cm. wide.

12. *H. sescenticeps*.

Leaves narrowly lanceolate to elliptic or oblong, the larger 1 to 3.5 cm. wide.

Leaves narrowly lanceolate, glabrous----- 13. *H. androgyna*.

Leaves chiefly elliptic, pubescent, at least on the veins beneath.

14. *H. asperifolia*.

Lamina of the pistillate corollas 2.5 mm. long, spreading-- 15. *H. corymbosa*.

1. *Hemibaccharis glandulosa* (Greenm.) Blake.

Baccharis glandulosa Greenm. Proc. Amer. Acad. 40: 36. 1904.

TYPE LOCALITY: Serranía de Ajusco, Federal District, Mexico.

SPECIMENS EXAMINED:

PUEBLA: Boca del Monte, 1907, *Purpus* 2792 (G, N).

STATE OF MEXICO: Desierto Viejo, Valley of Mexico, 1865, *Bourgeau* 1230 in part (N). Sierra de las Cruces, altitude 3,050 meters, 1899, *Pringle* 7709 in part (N).

FEDERAL DISTRICT: Serranía de Ajusco, altitude 2,895 meters, December 7, 1903, *Pringle* 8782 (type collection; N).

This herbaceous species is characterized by its densely glandular-pubescent stem, and lanceolate to elliptic leaves gradually narrowed into an amplexicaul base. The pistillate heads contain about "100 to 120" pistillate flowers, and 1 to "15" hermaphrodite. *Pringle* 7709, as represented in the National Herbarium, consists of two specimens, one with the amplexicaul leaf bases of this species, the other referable to *H. hieracioides*. *Bourgeau* 1230, in the National Herbarium, is *H. glandulosa*; the specimen of this number in the Gray Herbarium, however, is *H. hieracioides*. The two species may perhaps be identical, but are best kept distinct until further evidence is available.

2. *Hemibaccharis oaxacana* (Greenm.) Blake.

Baccharis oaxacana Greenm. Proc. Amer. Acad. 40: 37. 1904.

TYPE LOCALITY: Sierra de San Felipe, Oaxaca.

SPECIMENS EXAMINED:

OAXACA: Sierra de San Felipe, altitude 2,895 meters, December 13, 1895, *Pringle* 6257 (type collection; G, N); August 3, 1894, *Pringle* 5669 (G).

Related to *H. glandulosa*, but distinguished by its broader leaves, rather abruptly contracted into a margined amplexicaul base. In this species the staminate heads bear "5" to 12 filiform pistillate marginal flowers.

3. *Hemibaccharis pringlei* (Greenm.) Blake.

PLATE 48.

Baccharis pringlei Greenm. Proc. Amer. Acad. 41: 259. 1905.

TYPE LOCALITY: Sierra de San Felipe, Oaxaca.

SPECIMENS EXAMINED:

OAXACA: Wet ravines, Sierra de San Felipe, altitude 2,285 meters, December 11, 1895, *Pringle* 7014 (type; G, photo. N).

Although only the staminate form is known, the relationship of this species to the *H. glandulosa* group is so close that its inclusion in *Hemibaccharis* is justifiable. *H. pringlei* is nearest *H. oaxacana*, from which it differs in its larger leaves, up to 12 cm. long and 5.5 cm. wide, with the petioliform lower portion 1.5 cm. wide, and its numerous smaller heads (the staminate about 25-flowered, 5 to 6 mm. high), as well as in its eglandular pubescence.

EXPLANATION OF PLATE 48.—*Hemibaccharis pringlei*, from the type specimen in the Gray Herbarium. Natural size.

4. *Hemibaccharis hieracioides* Blake, nom. nov.*Baccharis hieraciifolia* Hemsl. Biol. Centr. Amer. Bot. 2: 129. 1881. Not *B. hieracifolia* Lam. 1783.

Herbaceous, the base not seen; stem branched above, densely spreading-pubescent with several-celled gland-tipped hairs; petioles naked below, 3 to 12 mm. long; leaf blades lanceolate or elliptic to lance-ovate, 4 to 12 cm. long, 1.3 to 2.5 cm. wide, acuminate, cuneate to acuminate at base, remotely spreading-mucronulate on margin, membranaceous, pubescent on both sides with several-celled, often gland-tipped hairs; heads rather numerous, in a loose panicle, the pedicels mostly 1 to 3 cm. long; pistillate heads 7 to 10 mm. high, with about 54 pistillate flowers and 3 or 4 hermaphrodite; staminate heads 9 to 11 mm. high, about 54-flowered; involucre about 4-seriate, 5 to 7 mm. high, the phyllaries linear-lanceolate, acuminate, densely stipitate-glandular, loose at tip, with green or purplish-tinged midline and apex and narrow scarious margins; achenes 2-nerved, compressed, hispidulous, 2 mm. long, their pappus whitish, 5 mm. long; style branches in the hermaphrodite flowers linear-lanceolate, acuminate, hispidulous.

TYPE LOCALITY: Desierto Viejo, Valley of Mexico.

SPECIMENS EXAMINED:

STATE OF MEXICO: Desierto Viejo, 1865, *Bourgeau* 1230 in part (G). Sierra de las Cruces, 1892, *Pringle* 5312 (G); in 1899, *Pringle* 7709 in part (N). Along brook, in shady woods, and on rocks, Mount Ixtaccihuatl, altitude 2,440 to 3,355 meters, 1903, *Purpus* 36 (N), 204 (G), 251 (N); in 1905, *Purpus* 1498 (N).

Hemsley's description of *Baccharis hieraciifolia* was based on *Bourgeau* 951 and 1230. The former has not been available for examination; the latter, as represented in the National Herbarium, is *H. glandulosa*, but the specimen in the Gray Herbarium is the present species. Hemsley's description of the leaves as "utrinque attenuata" indicates the plant here renamed *Hemibaccharis hieracioides*.

5. *Hemibaccharis simplex* Blake, sp. nov.

PLATE 49.

Herbaceous perennial, about 60 cm. high, the apparently solitary stems erect or ascending from a procumbent rooting base, slender, purplish-tinged, rather sparsely hispidulous with incurved sordid hairs with subtuberculate bases, glabrate below, simple below the inflorescence; internodes 5 to 25 mm. long; petioles 2 to 5 mm. long, naked; leaf blades cuneate-oblongate to elliptic-obovate, 3.5 to 7 cm. long, 1.3 to 2.2 cm. wide, acute, mucronulate, cuneate at base, remotely denticulate-mucronulate, membranaceous, above

green, glabrous except for the puberulent costa, hispidulous on margin, beneath paler green, sparsely and obscurely puberulous along the veins with subglandular hairs, penninerved, the veins and veinlets usually impressed above, somewhat prominulous-reticulate beneath; heads in both sexes rather few (about 15) in a terminal corymbiform panicle about 6 cm. wide, the pedicels 1 to 1.8 cm. long, puberulous with erectish several-celled hairs; pistillate heads 7 to 8 mm. high, 5 to 8 mm. thick, the pistillate flowers about 48, the hermaphrodite 2; staminate heads 6 mm. high, 5 mm. thick, about 32-flowered; involucre 4 to 5-seriate, graduate, 4.5 to 5.5 mm. high, the phyllaries linear-lanceolate, acuminate, green-centered, narrowly scarious-margined, ciliolate with subglandular hairs, otherwise essentially glabrous, subappressed; achenes (immature) compressed, subglabrous, the pappus 5 mm. long; style branches (hermaphrodite flowers) oblong-lanceolate, subacuminate, hispidulous.

Type in the U. S. National Herbarium, no. 462582, collected in woodlands, at Honey Station, Hidalgo, Mexico, November 25, 1903, by C. G. Pringle (no. 11821). Duplicate in the Gray Herbarium.

In this species, readily distinguished from *H. hieracioides* by its sparse incurved eglandular hairs, the main leaves often bear in their axils very short branchlets with two to several reduced leaves 8 to 20 mm. long.

EXPLANATION OF PLATE 49.—*Hemibaccharis simplex*, from the type specimen. Natural size.

6. *Hemibaccharis salmeoides* Blake, sp. nov.

PLATE 50.

Shrubby climber, the stout, subterete, grayish-barked stem 5 mm. thick, the branches more or less zigzag, about 30 cm. long, sordid-hirtellous with incurved brownish hairs, glabrate; internodes of branches 1.5 to 2.5 cm. long, of main stem up to 12 cm.; petioles incurved-hirtellous, naked, 6 to 13 mm. long; leaf blades oval or ovate-oval, 5.5 to 9 cm. long, 3 to 4.5 cm. wide, short-acuminate, mucronate, at base rounded-cuneate and often unequal, remotely mucronate-denticulate, firmly papery or pergamentaceous, above deep green, somewhat shining, hirtellous along costa, very sparsely so on surface or subglabrous, beneath deep dull green, obscurely hirtellous along costa and sometimes along the 4 or 5 pairs of lateral veins, these curved-anastomosing, like the secondaries and finer veinlets prominulous-reticulate especially beneath; pistillate panicles axillary and terminal, rounded, 6 to 38-headed, 1.5 to 4.5 cm. wide, the sordid-hirtellous pedicels 2 to 3 mm. long; pistillate heads 5 to 6 mm. high, the pistillate flowers 9, the hermaphrodite 1; involucre 3.5 mm. high, about 5-seriate, graduate, the phyllaries ovate (outer) to oblong or ovate-oblong, obtuse, appressed, lacerate-ciliate with sometimes gland-tipped hairs, glabrous dorsally, with dark green center and pale scarious margin; achenes compressed, 1.8 mm. long, 2-nerved, hispidulous; pappus rufidulous, 3.5 mm. long, the bristles slightly dilated above in the pistillate flowers, strongly so in the hermaphrodite; style branches (hermaphrodite flower) rhombic-oblong, acute, hispidulous.

Type in the U. S. National Herbarium, no. 860862, collected at Cobán, Alta Verapaz, Guatemala, altitude 1,350 meters, February, 1907, by H. von Türckheim (no. II. 1641). Duplicate in the Gray Herbarium. Also collected by von Türckheim (no. II. 1657) at the same locality, March, 1907 (G).

A strongly marked species, with much the habit of *Salmea scandens* (L.) DC. Both collections were distributed as *Baccharis hirtella* DC. Heyde & Lux 3389 (G, N), from Nebaj, Quiché, Guatemala, may be the staminate plant of this species.

EXPLANATION OF PLATE 50.—*Hemibaccharis salmeoides*, from the type specimen. Natural size.

7. *Hemibaccharis hirtella* (DC.) Blake.

Baccharis scandens Less. in Schlecht. & Cham. Linnaea 5: 146. 1830. Not *B. scandens* (Ruiz & Pav.) Pers. 1807.

Baccharis hirtella DC. Prodr. 5: 418. 1836.

Baccharis schiedeana Benth. in Oerst. Naturh. For. Kjöbenhavn Vid. Medd. 1852: 83. 1852.

Baccharis thomasi Klatt, Abh. Naturf. Ges. Halle 15: 326. 1882.

TYPE LOCALITY: Mexico. Type collected by Haenke.

SPECIMENS EXAMINED:

TEPIC: In 1892, Palmer 1846 (N).

VERACRUZ: Near Jalapa, Schiede 318 (fragm. of type of *B. scandens*; G); Pringle 6108 (N).

STATE OF MEXICO: Bourgeau 955 (N); Purpus 18 (N), 1499 (N).

FEDERAL DISTRICT: Pringle 11483 (N).

MORELOS: Pringle 9853 (N).

GUERRERO: Nelson 2237 (N), 2238 (N).

OAXACA: Pringle 4988 (N); C. L. Smith 259 (N); Nelson 1471 (N), 2236 (N).

MEXICO (without definite locality): Ehrenberg 1408 (N).

This common species is well distinguished by its scandent habit and usually strongly zigzag branches, its elliptic or ovate membranous leaves, and its tiny heads in usually small rounded cymes or panicles, terminating the branchlets. The attempts which have been made to distinguish *B. scandens* and *B. hirtella* are not supported by the specimens distributed under those names or by the original descriptions of the two supposed species. Fragments of the type of Lessing's *Baccharis scandens* have been examined in the Gray Herbarium. De Candolle's description is less clearly applicable, but probably refers to the same species, and the traditional use of this name has been followed. Bentham's *B. schiedeana* was a mere renaming of *B. scandens* Less. non Pers. *B. thomasi* Klatt, from description, seems referable to this species. It was described from material collected at Orizaba in 1866 by Thomas.

8. *Hemibaccharis flexilis* Blake, sp. nov.

Frutescent, scandent, the slender stem densely sordid-pilose with many-celled, crisped, spreading hairs, glabrescent below; internodes 3 to 11 cm. long; petioles naked, sordid-pilose, 2 to 5 mm. long; leaf blades elliptic, lance-elliptic, or ovate-elliptic, 3.5 to 7 cm. long, 1.3 to 3 cm. wide, acuminate, at base rounded or cuneate, remotely serrate to subentire, submembranaceous or papery, above deep green, puberulous along costa and sometimes along the veins, hispidulous on margin, beneath equally green, evenly but sparsely sordid-pilosulous on surface, densely so along veins, feather-veined or weakly triplinerved, the lateral veins about 4 pairs, impressed above, prominulous beneath, the secondaries in age somewhat prominulous; panicles small, numerous, axillary and terminal on the branchlets, about 2 to 3 cm. wide, densely sordid-pilosulous, the pedicels 2 to 5 mm. long; pistillate heads 5.5 to 6 mm. high, the pistillate flowers 16, the hermaphrodite 1 or 2; staminate heads 5 mm. high, 8-flowered; involucre 3.5 to 4 mm. high, about 5-seriate, graduate, the linear or (outer) linear-lanceolate phyllaries acute, green-centered with whitish margins, somewhat ciliolate, the outermost sordid-puberulous; hermaphrodite corollas with 5-parted limb, the style branches linear-oblong, obtuse or acutish; achenes compressed, hispidulous, 2 or 3-nerved, 1.3 mm. long, their pappus 1-seriate, brownish-tinged, 3.5 mm. long; bristles of hermaphrodite pappus obscurely dilated at apex.

Type (pistillate plant) in the U. S. National Herbarium, no. 860860, collected at Cobán, Alta Verapaz, Guatemala, altitude 1,350 meters, March, 1908,

by H. von Türckheim (no. II. 1636). Duplicate of this number in the Gray Herbarium, dated February, 1907.

Represented also in the National Herbarium by a staminate specimen from the same locality, altitude 1,400 meters, March, 1903, *von Türckheim* II. 728 (J. D. Smith, no. 8405). Distinguished from *H. hirtella* by its larger heads, and from *H. torquis* by its narrower leaves and longer pubescence.

9. *Hemibaccharis torquis* Blake, sp. nov.

PLATE 51.

Frutescent, scandent, the stem terete, grayish, glabrate, the branches strongly zigzag, sordidly puberulous or pilosulous, glabrescent; petioles 2 to 7 mm. long, essentially naked; leaf blades oval or ovate-oval, 3 to 8 cm. long, 1.8 to 5.5 cm. wide, acute or short-acuminate, rounded or cuneate-rounded at base, remotely mucronate-dentate or denticulate with very depressed teeth, submembranaceous, above deep green, evenly but not densely pilosulous or puberulous, glabrescent, smoothish, beneath duller green, sordid-pilosulous chiefly along the veins, feather-veined, the lateral veins 4 or 5 pairs; panicles rounded, about 5 cm. wide, axillary and terminal on the branchlets, the pedicels sordid-puberulous, 2 to 9 mm. long; pistillate heads 4 to 5 mm. high, the pistillate flowers about 30, the hermaphrodite 2; staminate heads 5 mm. high, 20 to 22-flowered; involucre about 5-seriate, graduate, 3.5 to 4 mm. high, the linear to (outer) linear-lanceolate phyllaries acute, with green midline and whitish margins, ciliolate, sparsely puberulous dorsally; hermaphrodite corollas with 5-parted limb, the style branches linear-oblong, acutish; achenes compressed, 2-nerved, hispidulous, 0.8 mm. long, their pappus 2.5 mm. long, brown-tinged; pappus of the hermaphrodite flowers slightly thickened toward apex.

Type in the U. S. National Herbarium, no. 471504, collected behind the "hospice des aliénés," San José, Costa Rica, November, 1892, by A. Tonduz (no. 1535, distr. Herb. Boiss.)

ADDITIONAL SPECIMENS EXAMINED:

VERACRUZ: Valley of Córdoba, 1865, *Bourgeau* 1637 (N).

OAXACA: Altitude 1,750 meters, 1900, *Conzatti & González* 44 (N).

GUATEMALA: Cobán, altitude 1,310 meters, 1887, *von Türckheim* 1350 (N).

COSTA RICA: San José, altitude 1,135 meters, 1893, *Tonduz* 1549 (N).

Related to *H. flexilis*, but distinguished by its much broader leaves and shorter pubescence. The type collection was distributed as *Stevia rhombifolia* H. B. K.

EXPLANATION OF PLATE 51.—*Hemibaccharis torquis*, from the type specimen. Natural size.

10. *Hemibaccharis mucronata* (H. B. K.) Blake.

Baccharis mucronata H. B. K. Nov. Gen. & Sp. 4: 60. 1820.

Pluchea floribunda Hemsl. Diagn. Pl. Nov. 2: 32. 1879.

TYPE LOCALITY: Between Santa Rosa and Los Ioares. Guanajuato.

SPECIMENS EXAMINED:

CHIHUAHUA: In 1885, *Palmer* 277 (N), 281 (N).

SAN LUIS POTOSÍ: *Parry & Palmer* 338 (N), 339 (N); *Schaffner* 359/783 (N); in 1902, *Palmer* 168 (N).

JALISCO: In 1886, *Palmer* 737 (N); *Pringle* 2364 (N); *Jouy* (N).

MICHOACÁN: *Arsène* 3241 (N), 3646 (N), 5296 (N).

STATE OF MEXICO: *Bourgeau* 969 (N); *Purpus* 1502 in part (N), 1579 (N).

FEDERAL DISTRICT (Mexico): *Bourgeau* 1096 (N); *Pringle* 11288 (N), 11482 (N).

TLAXCALA: *Arsène* (N).

PUEBLA: *Arsène* 2090 (N), 2267 (N), 5491 (N), 7206 (N).

GUERRERO: *Nelson* 2127 (N), 2262 (N).

A variable species, usually readily distinguished by the short harsh pubescence of the stems and upper leaf surfaces. The pistillate heads contain about 37 to 48 pistillate flowers, with the filiform corolla tube terminated by a minute erect ligule about 0.5 mm. long, much shorter than the style, and 3 or 4 hermaphrodite flowers; the staminate heads are about 28-flowered.

The name *mucronata* is here taken in its traditional sense, although the description is not particularly applicable.

10a. *Hemibaccharis mucronata paniculata* (Donn. Smith) Blake.

Diplostegium paniculatum Donn. Smith, Bot. Gaz. 23: 8. 1897.

TYPE LOCALITY: Between San Martín and Todos Santos, Huehuetenango, Guatemala.

SPECIMENS EXAMINED:

VERACRUZ: Orizaba, *Botteri* 496/821 (N).

STATE OF MEXICO: Salto de Agua, 1905, *Purpus* 1502 in part (N). Amecameca, 1899, *Deam* (G).

OAXACA: Sierra de Clavellinas, altitude 2,745 meters, 1894, *C. L. Smith* 260 (N).

CHIAPAS (?): Mountains around San Cristóbal Las Casas, *Ghiesbreght* 524 (G).

GUATEMALA: Between San Martín and Todos Santos, Huehuetenango, altitude 2,135 to 2,590 meters, December 25, 1895, *Nelson* 3629 (type; N). Casillas, 1892, *Heyde & Lux* 4251 (G). San Rafael, 1915, *Holway* 21 (G).

Although typical specimens of this more southern form, with their densely cinereous- or canescent-tomentose stems and under leaf surface, are very distinct in appearance from typical plants of the species, they show no technical distinctions, and seem to represent a subspecies only. Several of the collections cited above under *H. mucronata* approach this form more or less closely, particularly *Bourgeau* 969, *Purpus* 1579, *Nelson* 2262, *Pringle* 11482, and several of *Arsène's* specimens.

11. *Hemibaccharis irazuensis* Blake, sp. nov.

Herbaceous above, the base not seen; stem purplish, sparsely branched above, densely and sordidly short-pilose with several-celled matted hairs, glabrescent below; internodes 2 to 4 cm. long; petioles sordid-pilose, about 5 mm. long; leaf blades lance-ovate or lance-elliptic, 4 to 8 cm. long, 1.3 to 2.5 cm. wide, acuminate, cuneate at base, subremotely mucronate-denticulate, papery, above densely pilosulous with somewhat deciduous subtuberculate-based hairs, roughish at maturity, beneath brownish green, densely sordid-pilosulous along the veins and veinlets and sparsely so between them, feather-veined; panicles many-headed, rounded, 3.5 to 6 cm. wide, terminating the stem and the subterminal branches, the pedicels 2 to 6 mm. long, densely sordid-pilosulous; pistillate heads 4.5 to 5 mm. high, the pistillate flowers about 36, the hermaphrodite 4 or 5; staminate heads 5 mm. high, about 32-flowered; involucre about 5-seriate, graduate, 4.5 mm. high, the linear-lanceolate phyllaries acute to acuminate, green-centered, scarious-margined, ciliolate, the outer somewhat puberulous dorsally; teeth of the staminate corollas longer than throat, the style branches linear, acute, hispidulous; achenes compressed, hispidulous, 1.2 mm. long, the brown-tinged pappus 3.5 mm. long; pappus of hermaphrodite flowers scarcely dilated toward apex.

Type (pistillate plant) in the U. S. National Herbarium, no. 577970, collected at Laguna del Reventado, Volcán de Irazú, Costa Rica, altitude 2,306 meters, January 1, 1901, by H. Pittier (no. 14079). Duplicate (staminate plant) collected at the same time and place (no. 14078).

Distinguished from *H. mucronata* by its sordid subglandular pubescence, and slightly larger heads.

12. *Hemibaccharis sescenticeps* Blake, sp. nov.

Herbaceous above, the lower portion not seen; stem stoutish, branched above, glabrous and glaucescent or thinly arachnoid-tomentulose and glabrate; internodes 2.5 to 7 cm. long; petioles naked, glabrous or thinly tomentulose, 1 to 2.5 cm. long; leaf blades oval or oval-ovate, 6 to 13 cm. long, 3 to 6 cm. wide, short-acuminate, rounded to cuneate at base, mucronate-serrate, membranaceous to chartaceous, above along the veins sordid-puberulous, on the surface glabrous or tuberculate-hispidulous and glabrate, smooth or slightly rough, beneath somewhat paler green, sordid-puberulous along the chief veins, on surface very sparsely so or glabrous, featherveined, the lateral veins 5 to 7 pairs, prominulous beneath; heads very numerous at apex of stem and upper branches, forming large pyramidal panicles 10 to 21 cm. wide, the pedicels densely sordid-pilosulous, mostly 3 to 7 mm. long; pistillate heads 4 to 4.5 mm. high, the pistillate flowers about 27, the hermaphrodite 2; staminate heads 3.5 to 4 mm. high, about 22-flowered; involucre 3 to 4-seriate, somewhat graduate, 2.5 to 3.5 mm. high, the phyllaries linear or linear-lanceolate, acute to acuminate, with narrow green midline and scarious margins, somewhat ciliolate; teeth of the hermaphrodite corollas longer than the tube, the style branches linear-oblong, acute, hispidulous; achenes compressed, 2-nerved, hispidulous, the dull whitish pappus 3 mm. long; bristles of hermaphrodite pappus somewhat dilated above.

Type in the U. S. National Herbarium, no. 570333, collected in moist open woods and along creeks, Mount Ixtaccihuatl, State of Mexico, Mexico, altitude 2,135 to 2,440 meters, November, 1905, by C. A. Purpus (no. 1501).

ADDITIONAL SPECIMENS EXAMINED:

JALISCO: Between Mascota and San Sebastián, 1897, *Nelson* 4055 (N).

STATE OF MEXICO: Mount Ixtaccihuatl, 1903, *Purpus* 20 (N).

GUERRERO: Top of Sierra Madre near Chilpancingo, altitude 2,745 to 3,110 meters, 1894, *Nelson* 2203 (N), 2204 (N).

Distinguished by its glabrous or thinly arachnoid-tomentose stem and large leaves. In this as in some other species the outer flowers in the staminate head are often somewhat more slender than the central ones, and their stamens are more or less separate and aborted.

13. *Hemibaccharis androgyna* (T. S. Brandeg.) Blake.

Baccharis androgyna T. S. Brandeg. Univ. Calif. Publ. Bot. 6: 77. 1914.

TYPE LOCALITY: Cerro del Boquerón, Chiapas.

SPECIMEN EXAMINED:

CHIAPAS: Cerro del Boquerón, September, 1913, *Purpus* 6666 (type collection; N).

Distinct in its slender glabrous stem and narrowly lanceolate, falcate-attenuate, glabrous leaves. The scarcely mature pistillate heads are 3 to 3.5 mm. high, with about 22 pistillate flowers and 1 or 2 hermaphrodite. In the latter the anthers are reduced to vestiges on the throat, and the style is undivided and subtruncate. The staminate plant is unknown.

14. *Hemibaccharis asperifolia* (Benth.) Blake.

Baccharis asperifolia Benth. Pl. Hartw. 86. 1841.

Conyza asperifolia Benth. & Hook.; Hemsf. Biol. Centr. Amer. Bot. 2: 126. 1881.

Baccharis scabridula T. S. Brandeg. Univ. Calif. Publ. Bot. 6: 77. 1914.

TYPE LOCALITY: Mixco, Guatemala.

SPECIMENS EXAMINED:

STATE OF MEXICO: *Bilimek* 586³ (N); *Bourgeau* 1228 (N); *Purpus* 1500 (N).

OAXACA: *C. L. Smith* 262 (N); *Pringle* 6051 (N).

CHIAPAS: Cerro del Boquerón, August, 1913, *Purpus* 6665 (type collection of *B. scabridula*; N).

GUATEMALA: Mixco, 1840, *Hartweg* 589 (type collection of *B. asperifolia*; Y, photo. N). Cobán, *von Türckheim* 1354 (N), II. 1637 (N). Between San Martín and Todos Santos, *Nelson* 3617 (N).

NICARAGUA: San Rafael del Norte, *Miller & Griscom* 24 (N), 86 (N).

Distinguished by its large panicles of rather small heads (4 to 5 mm. high) and usually elliptic leaves, which are almost always scabrid above, and are more or less densely pubescent beneath. The pistillate heads contain 25 to 46 pistillate flowers and 2 to 4 hermaphrodite; the staminate heads are 20 to 27-flowered. The type collection of *Baccharis scabridula* consists of both staminate and pistillate plants, the latter with tiny submature heads with rufous pappus, but it does not appear specifically distinct from the other collections examined. A staminate specimen of the type collection of *Baccharis asperifolia*, from the herbarium of the New York Botanical Garden, has been available for examination through the kindness of Dr. N. L. Britton, confirming the identification of Bentham's species.

15. *Hemibaccharis corymbosa* (Donn. Smith) Blake.

Diplostephium corymbosum Donn. Smith, Bot. Gaz. 23: 8. 1897.

TYPE LOCALITY: Todos Santos, Guatemala.

SPECIMENS EXAMINED:

GUATEMALA: Todos Santos, Huehuetenango, altitude 3,050 meters, December 26, 1895, *Nelson* 3639 (type; N). Hacienda de Chancol, Huehuetenango, altitude 3,355 meters, January 2, 1896, *Nelson* 3644 (N).

This species differs from all others in the distinctly radiate heads, but may be included in the genus until more is known about it. The staminate plant has not yet been collected. In several heads dissected the pistillate (radiate) flowers varied from 34 to 39; the hermaphrodite were always 4. The tube of the ray flowers is 2 mm. long, and the lamina linear-elliptic, entire or bidenticulate, whitish, 2.5 mm. long, 0.3 to 0.4 mm. wide, exceeding the style branches. The achenes of the ray flowers are trigonous, 3-nerved, somewhat glandular and hispidulous, 0.8 to 1 mm. long, with a scanty, fragile, 1-seriate pappus. The achenes of the hermaphrodite flowers are 2 or 4-nerved, and apparently fertile.

DOUBTFUL SPECIES.

BACCHARIS ELEGANS SEEMANNII Schultz Bip. in Seem. Bot. Voy. Herald 303. 1856.

This variety, based on *Seemann* 2015, was described as "Var. β . *Seemannii*, Sz. Bip.; pubescens. Sierra Madre (n. 2015)," and the following note was added: "Obs. Ob flores centrales 1-2 capitulorum foemineorum hermaphroditos subgenus mihi est cum pluribus aliis speciebus e. g. *B. asperifolia*, Benth.! Pl. Hartweg, p. 86; *B. hirtella*, DC. Prod. vol. v. p. 418!" I have not seen the type, but all the specimens of *B. elegans* and its immediate allies examined have been without admixture of hermaphrodite flowers in the pistillate heads.

³ Hemsley (Biol. Centr. Amer. Bot. 2: 127. 1881) recorded this number and *Bates* 5 (not seen by me) as his 21st (unnamed) species of *Conyza*.

CONYZA THESIIFOLIA H. B. K. Nov. Gen. & Sp. 4: 75. 1820.

Said to be suffruticose, with glabrous stem, linear entire 1-nerved leaves about 3 cm. long and 1 mm. wide, and heads with central tubular hermaphrodite flowers and marginal filiform pistillate flowers. The locality is given as "in Regno Mexicano?". The species may belong to *Hemibaccharis*, or may really be a species of *Eschenbachia* (*Conyza*).



HEMIBACCHARIS PRINGLEI (GREENM.) BLAKE



HEMIBACCHARIS SIMPLEX BLAKE



HEMIBACCHARIS SALMEOIDES BLAKE



HEMIBACCHARIS TORQUIS BLAKE