

REVISION OF THE NORTH AMERICAN SPECIES OF HOFFMANSEGGIA.

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In this paper species of the United States and Mexico are included. Foreign species are omitted except where they extend into this country. The genus is taken as commonly defined, no attempt being made except to present a synoptical view of the species. This revision is based upon the material contained in the National Herbarium, in which nearly all the species are fully represented, and which has been placed in my hands through the kindness of Dr. George Vasey. I am also indebted to Dr. Sereno Watson, Dr. John M. Coulter, Dr. William Trelease, Mr. John Donnell-Smith, and Mr. I. C. Martindale, who have placed at my disposal the collections which they own or have in charge. I am especially indebted to Dr. Coulter for his many suggestions and his assistance at difficult points. The compound microscope was used continually throughout these observations, and is indispensable in testing many relationships.

Historical sketch.—This genus was established by Cavenilles, and published in his *Icones* iv. 63 (1797), as containing two species, *H. falcaria* and *H. trifoliata*. Two years later (1799), in *Icones* v. l. t. 402, he published the genus *Pomaria*, including one species, *P. glandulosa*. De Candolle defined the genus *Melanosticta* and published it in his *Memoires Leguminosæ* xii (1835), including one species, *M. Burchellii*. Torrey and Gray (*Fl. N. A.* i. 392) united them all without hesitation. Up to that time (1840) there were only 3 or 4 species described in North America. At the present time 15 species and 9 varieties have come under my observation, of which 2 species and 4 varieties seem to have been undescribed.

Characters.—The glands furnish the first and most important group of characters, and in several instances furnish specific distinctions. They may be thrown into two different divisions: stipitate glands and black sessile (or sessile) glands. The former belong to *Hoffmanseggia* proper (having petals with long claws) and the old genus *Pomaria* (having petals with short claws); while the latter are characteristic of the old genus *Melanosticta*. Another group contains both kinds. The *Melanosticta* group is further separated into three divisions by the characters of the glands on the flowers, which is sufficient to clear up

the confusion concerning *H. Jamesii* and *H. melanosticta*. The claws of the petals and the style furnish some important characters. The pod furnishes some of the most important specific distinctions, but can not be of prime importance in grouping, for the fruit of a species and its varieties may differ widely.

SYNOPSIS.

§ 1. *Stipitate-glandular* (except No. 4): *ovate stipules and ovate attenuate bracts membranaceous; leaflets oblong, nerveless; filaments straight, with short and thick hairs.*

* *Claws of petals long, densely glandular, that of vexillum thick and usually broadly dilated; filaments and oblong ovary glandular; style clavate, slightly beaked; pod falcate and with persistent sepals; herbaceous.*

1. ***H. falcaria*** Cav. Ic. iv. t. 392 (1797). Stems procumbent, 2 to 25 cm. high, from a creeping root (bearing now and then a tuber), puberulent, sparsely glandular, scarious at base: leaves with 7 to 11 pinnae; leaflets 6 to 10 pairs, puberulent or glabrate; stipules broadly ovate, scarcely acute: peduncle usually short, bearing a raceme of few flowers on suberect pedicels: sepals scarcely acute, 4 to 5 mm. long: petals with inner edge of claw densely glandular as well as back of vexillum which has a thick dilated claw: outer stamens with copious clavate glands: pod falcate, 3 to 4 cm. long, with round apex and acute base, on recurved pedicel, more or less glandular, compressed between the 8 to 12 dark obovate seeds.

Habitat: From Southern Arizona through Mexico (San Luis Potosi) to Chili and Patagonia.

Specimens examined: Arizona (*Lemmon*, 1881, in part); San Luis Potosi (*Schaffner* 832, 1876); Argentine Republic (at Cordova, 1829; Patagonia, *Andreas* 333); Chili (*Morong* 1191; *Phillip's* distribution 1324); also specimens cultivated at the botanical gardens of Montpellier (1824) and Delile (1821).

This polymorphic species has a wide distribution, and has been heretofore divided into several species and varieties. The specimens found in the United States and Mexico have been called *H. stricta* with its var. *demissa*, and *H. densiflora*, while those of South America and those cultivated in France have been called *H. falcaria*. Mr. Bentham remarks that "the above species (*H. stricta*, *demissa* and *densiflora*) agree with *H. falcaria* in their most important characters," but does not state how they differ. The only difference yet noticed between the North and South American forms is that the latter have ovaries with fewer glands and the corolla is often a deeper yellow; otherwise they agree. Some of the Morong specimens are very low, erect, very glandular, with rather dense racemes; while others are 45 cm. high, with long loose racemes. It differs from var. *stricta* in being procumbent and having the mature fruit rounded at apex, approaching that of *H. drepanocarpa* in most respects. The Schaffner and Lemmon specimens agree with the description of *H. falcaria*, but they agree more with the plants themselves. The following seem to be well marked varieties:

Var. STRICTA. Erect, 10 to 30 cm. high: stipules obtuse, villous on margin: peduncles long, bearing a loose raceme of suberect flowers: sepals obtuse: vexillum with claw usually more dilated: pod long, obtuse or acute, usually on spreading pedicels; seeds 6 to 9.

H. stricta Benth. in Gray, Pl. Wright. i. 56.

From Kansas southwestward through the United States and northern Mexico to Zacatecas and Lower California.

Specimens examined: Kansas (*Bell*, 1867); Texas (*Rererchon* 162, 806; *Nealley* 112, 335, 478; *Fusey*, 1881, 1882, 132; *Wright* 1025; *Gerard* 48; *Leroy* distribution); Arizona (*Palmer*, 1885, 1889, 59 in part; *Rothrock*, 1875, 351; *Lemmon*, 1880, in part,

34; *Smart*, 1867); California (*Vasey*, 1881; *Parish* 1410); San Luis Potosi (*Parry and Palmer* 202); Coahuila (*Palmer* 267, 268); Mexico (*Coulter* 488, type; *Gregg* 148, type; *Farlow* 182); Lower California (*Brandege*, 1889).

Type in Gray Herbarium.

Var. *DEMISSA*. Low, 7 to 20 cm. high, erect: raceme short peduncled, with few flowers on spreading pedicels which are recurved in fruit: vexillum with claw shorter, broader, and more dilated: pod smaller (3 cm. long), obtuse, slightly curved, usually constricted at one or more places.

H. demissa Benth. MS.

H. stricta, var. *demissa* Gray, Pl. Wright. i. 56.

H. densiflora Benth. in Gray, Pl. Wright. i. 55.

Habitat: Southern Arizona and New Mexico, Northwestern Texas, and San Luis Potosi near Saltillo.

Specimens examined: Arizona (*Palmer* 59; *Cous and Palmer* 238, in part); New Mexico (*Wright* 2026); Texas (*Wright* 148; *Thusher* 99; *Reverchon*; *Vasey* 1181, in part); Pope 1st Exp., place and no. not given; Coahuila (*Gregg* 268, type); Mexico (*Schumann* 182).

Type in Gray Herbarium.

Var. *RUSBYI*. Strict, 18 to 20 cm. high, scarcely branched, with the thick stems, petioles, and peduncles glandular above: leaves few, 10 to 13 cm. long; pinnae 9 to 13 (usually 11); stipules very thin, acute, puberulent, few villi on margin: flowers large: sepals broad, thin, subacute, almost naked; lamina of petals broad, that of vexillum circular and densely glandular, with claw broad, thicker, with one dilation or none: style thick.

Habitat: Ungus Springs, New Mexico.

Specimens examined: New Mexico (*Rusby* 111, type).

Type in Herb. J. Donnell-Smith and Missouri Botanical Gardens.

Var. *PRINGLEI*. Subcespitose, with the spreading branches 10 to 17 cm. high: upper stems and petioles slightly glandular: stipules pointed, villous: raceme subcapitate before anthesis, densely villous, on short peduncles: flowers large, on short pedicels: petals broad, shorter clawed, the vexillum with claw broadly dilated.

Habitat: Santa Cruz Valley (near Tucson), Arizona.

Specimens examined: Arizona (*Pringle*, 1881, in part, type).

Type in Herb. Gray, Coulter (authentic), J. Donnell-Smith, Canby and Martindale.

The very low, densely racemed and glandular forms, distributed under this number, belong to the next.

Var. *CAPITATA*. Very low, 5 to 9 cm. high, with the simple stems, foliage and inflorescence loosely subvillous and covered (except leaflets) with large, dark capitate glands: leaves 3 to 5, small; pinnae 5 to 9; leaflets subelliptical: raceme subcapitate on very short peduncle: flowers 6 to 12, small, pendent on short pedicels.

Habitat: Santa Cruz Valley (near Tucson), Arizona.

Specimens examined: Arizona (*Pringle*, 1881, in part). Flowering parts like the last, except much smaller.

Type in Herb. Gray, Coulter, Canby, J. Donnell-Smith and Martindale.

**Petals with short claws, few or no glands, the vexillum with claw scarcely or not dilated: stipules acute.

→ Vexillum with narrow claw: filaments glandless: stems low and herbaceous.

→ Style subclavate: pod falcate.

2. *H. drepanocarpa* Gray, Pl. Wright. i. 58 (1852). Spreading, glandless throughout, cinereous-puberulent, with several short stems from a thick ligneous perpendicular root, and bearing the slender peduncles (12 to 30 cm. high) of the elongated and loose raceme of few slender flowers: pinnae 7 to 11; leaflets 8 to 10 pairs: sepals slightly shorter than the very short-clawed petals: pod strongly falcate, on spread-

ang pedicels, rounded at both ends, reticulated, compressed between the 7 to 11 broadly obovate seeds.

Habitat: From Colorado to Texas and throughout southwestern United States.

Specimens examined: Colorado (*Brandegee*, 1874, 1877, 527; *Porter*, 1874); New Mexico (*Vasey*, 1881; *Wright* 352, type, 1027, type in part); Texas (*Vasey* 132, 1881); Arizona (*Pringle* 43; *Leemmon*, 1881; *Rothrock* 1008; *Cous* and *Palmer* 513; *Le Roy's* distribution); California (*Vasey*, 1881).

Type in Herb. Gray and Missouri Botanical Gardens.

3. *H. oxycarpa* Benth. in Gray, Pl. Wright. i. 55 (1852). Plant, 10 to 20 cm. high, slender, villous, glandular, from a subfrutescent base: pinnae, 7 to 11; leaflets 5 to 9 pairs, slender, glabrous or subvillous, glandular, stipellate; raceme rather dense, with several small and pendent flowers: sepals glandular on margin: petals almost naked: style glabrous, slender: pod broadly falcate, 25 by 7 mm., very acute, long stipitate, glandular, with 3 to 6 dark brown seeds.

Habitat: From western Texas to Arizona and through northeastern Mexico to Monterey.

Specimens examined: Texas (*Wright* 1024, 147; *Neally* 111, 798); Nuevo Leon (*Dr. Gregg*, 1847, type; *Edwards & Eaton* 12, type).

Types in Herb. Gray.

+++ Style cylindrical, bell-shaped above: pod linear-oblong.

4. *H. gracilis* Watson Proc. Am. Acad. xvii. 347 (1882). Low (10 to 16 cm. high), puberulent, with very slender stems and branches, glandless: pinnae 3 to 7; leaflets 5 to 8 pairs, glabrate, glandular, stipellate; stipules acute or attenuate: racemes loose, with a few suberect flowers on very long pedicels; sepals concave, oblong-obovate, blunt; vexillum with claw rather narrow: filaments with obtuse pubescence: style pubescent: pod slightly curved, 25 by 5 mm., acute, suberect on spreading pedicels, scarcely glandular, compressed between the 6 to 9 seeds.

Habitat: Coahuila, 40 miles south of Saltillo.

Specimens examined: Coahuila (*Palmer* 275, type).

Closely related to *H. oxycarpa*. Type in Herb. Gray, J. Donnell-Smith, Canby and Martindale.

The two following species I have not seen, but translate Mr. Benthams description as given in Gray, Pl. Wright. i. 57. "The first (§ *Gladiata*), including *H. gladiata* and *H. platycarpa*, Herb. coll. Trin. Dubl., with the habit and foliage of *H. stricta*, without black dots on leaves, has the flowers nearly as in *H. Drummondii*, and a straight or slightly curved pod, blunt at apex, with the upper or seminal suture more or less convex, and usually broadest below the middle."

5. *H. gladiata*. Stipules ovate, acute; pinnae 3 to 6 pairs and an odd one; leaflets oblong, nerveless and glandless: calyx acute, hirsute, glandular: petals oblong, with very short stipes; pod lanceolate, slightly incurved, minutely hirsute, and scarcely glandular. (Zimapan, Mexico, *Coulter*.)

6. *H. platycarpa*. Stipules ovate, acute; pinnae 4 to 6 pairs and an odd one; leaflets oblong, nerveless, glandless: calyx acute, hirsute, glandular: petals ovate, scarcely stipitate: pod broadly oblong, pubescent scarcely glandular. (Mexico, *Coulter*.)

++ Vexillum broad, sessile, glandular: style cylindrical: pod lunate (much curved), acute, attenuate below, glabrous: glandular-stipellate.

7. *H. Drummondii* Torr. and Gray, Fl. N. Am. i. 393 (1840). Plants 8 to 10 cm. high, glabrate, glandular, much branched, frutescent from a shrubby base: leaves small (15 to 25 cm. long); pinnae 3 (seldom 5); leaflets 4 to 6 pairs, linear (4 mm. long); stipules small: flowers with conical bases: vexillum red spotted, nearly naked below: filaments with few very short and blunt hairs, the outer glandular: pods 2 cm. long.

Habitat: From Austin to El Paso, Texas.

Specimens examined: Texas (*Wright*, 1849).

The upper stamens are scarcely dilated and with very large stipitate glands.

8. *H. Texensis*. Suffrutescent, scarcely glandular, 20 cm. high, everywhere the grayish bark covered with a fine pubescence: stems intricately branched into many very slender branchlets: leaves many: very small (10 to 18 mm. long); pinnae 3, deciduous; leaflets minute, 3 to 5 pairs; stipules minute, glandular: peduncles 2 to 4 cm. long, slender, with 2 to 5 minute flowers: vexillum with a dense tuft each side of base: stamens glandless, the pubescence rather short, thick, pointed, dense below on upper stamens: style very slender: pod 15 cm. long.

Habitat: Texas, on the Nueces.

Specimens examined: Texas (*Berlandier* 612, type).

Type in Herb. Gray.

This species is most nearly related to *H. Drummondii* in respect to the shape of leaflets, pod, petals, and style; otherwise its gray, pubescent, flexuous branches and branchlets (scarcely larger below than above), its many petioles without pinnae and short branchlets, its very small leaves, leaflets and flowers, its vexillum much tufted at base, and its stamens not glandular but much pubescent, with the upper prominently setose-appendaged, makes this a very distinct species.

← ← ← *Vexillum with broad and thick claw, glandless as well as filaments: style very long and cylindrical: pod lunate, with thin, lanceolate, deciduous sepals: stems frutescent, greenish, virgate: leaves small; stipules and bracts lanceolate, caducous.*

9. *H. microphylla* Torr. Mex. Bound. 58 (1859). Plant 2 to 12 cm. high, velvety puberulent: pinnae 3, the odd one twice as long and with 7 to 11 pairs of leaflets, the lateral with 5 or 6 pairs; leaflets 3 mm. long, pubescent: racemes many, much elongated, loose, with many flowers (buds blunt): sepals pubescent, the lower much broader, concave: style pubescent, inclined above: pod lunate, both ends acute, upper suture nearly straight, 20 by 7 mm., pubescent, 2 to 6-seeded.

Habitat: From southern California through western Sonora and Lower California.

Specimens examined: California (*Parish Bros.* 591; *S. B. Parish*, 1880; *Vasey*, 1880; *Palmer*, 1870); Sonora (*Pringle*, 1884; *Palmer*); Lower California (*Palmer* 543 in part).

Palmer's pubescent specimens of 543, from Sonora, are smaller in every respect, with fewer flowers, the leaflets often glandular on margin, and the stamens with longer pubescence. It is closely related to the next.

10. *H. glabra*. Glabrous throughout (except margin of stipules and calyx), 45 cm. (or more) high, rigid branched (usually from one side): lateral pinnae 1 cm. long, with 5 pairs of leaflets, the terminal slightly longer and with 6 pairs: racemes slender, 12 to 17 cm. long, bearing 15 to 25 small flowers (buds acute): filaments (upper) with appendage narrow, densely setose on top, projecting at right angles, the pubescence long and slender: style scarcely enlarged or inclined above: pod lunate, 15 by 6 mm., with upper suture curved, acute, base attenuate.

H. microphylla var. *glabra* Watson, Proc. Am. Acad. xxiv. 47.

Habitat: On Los Angeles Bay, Lower California

Specimens examined: Lower California (*Palmer* 543, in part type).

Type in Herb. Gray, J. Donnell-Smith and Canby.

Var. INTRICATA. Lower (about 45 cm. high), scarcely erect, with branches and branchlets more spreading, shorter and very rigid: pinnae scarcely as long and with 4 or 5 pairs of leaflets: peduncles many, very short, with few flowers (6 to 8): pod larger (20 by 7 mm.).

H. intricata Brandegee, Proc. Cal. Acad. Sci. 2. ii.

Habitat: At El Campo Aleman, Lower California.

Specimens examined: Lower California (*Brandegee*, 1889, type).

Type in Herb. Gray and National Herbarium.

These two forms are distinct from *H. microphylla* by growing (somewhat) in clumps and being more or less intricately branched (even from below), in the rigidity of the stems, in being entirely glabrous, in the pointed flowering buds, and the strongly attenuate pod.

§ 2. *With both stipitate and black sessile glands: flowers suberect, with ovate bracts and deciduous sepals: stamens somewhat declined: pod broadly ascinaeform: suffruticent.*

11. *H. caudata* Gray, Pl. Lindh. pt. ii. 179 (1850). Stems 30 to 45 cm. high, with small tack-shaped glands: pinnae 3 to 9, 2 to 4 cm. long, with 5 to 7 pairs of leaflets, the terminal one twice as long and with 11 to 15 pairs; leaflets ovate subcordate, veined, sometimes minutely black punctate beneath: raceme sparsely 6 to 9-flowered: sepals oval, concave, with both stipitate and black sessile glands: petals sessile, elliptical, with sessile glands: filaments eglandular with blunt pubescence, the upper not dilated: style cylindrical: pod with upper suture nearly straight, with dark subsessile glands: seeds large.

Habitat: From southern New Mexico (on Rio Grande) through southwestern Texas.

Specimens examined: Texas (*Wright* 146, type; *Schott*, 1851); New Mexico (Mexican Boundary Survey, 279).

Type in Herb. Gray.

This species is related to *Casalpina* in respect to sepals, petals, and pod.

§ 3. *Parts with black sessile or subsessile glands: leaflets black punctate beneath; stipules setaceous (except No. 12): bracts ovate-attenuate: calyx oblique, with the lower segment much broader, carinate-concave, at last deciduous: petals glandless below, the vexillum smallest: filaments with dense and slender pubescence: style short, enlarged above: stigma turned to the upper side, somewhat hooded: pod with muricate-setose projections and black depressed sessile or subsessile glands, acute, 2 or 3-seeded.*

* *Flowers with black flask-shaped subsessile glands: pod ovate or rhombic.*

12. *H. brachycarpa* Gray, Pl. Wright. i. 55 (1852). Herbaceous, 18 to 30 cm. high, with several slender stems from a ligneous root, few sessile glands, leafy to the top: leaves short; pinnae 5 to 7; leaflets 4 or 5 pairs, elliptical, large-punctate; stipules obovate, caducous: peduncle short, with few small flowers on non-jointed pedicels: sepals and petals with black flask-shaped subsessile glands: pod oval, cuspidate, with few glands, the margin beset with large projections: 2 broadly obovate seeds.

Habitat: From New Mexico through southwestern Texas.

Specimens examined: New Mexico (*Wright* 1023, type in part, 77, type, 179 type); Texas (*Rererchon* 36, 1510); Texas and New Mexico (*Wright*, 1851, type).

Type in Herb. Gray.

The oval pod distinguishes this species from all others.

13. *H. multijuga* Watson Proc. Am. Acad. xxi. 451 (1886). Herbaceous, stout, 60 to 90 cm. high, covered throughout (except leaflets) with flask-shaped subsessile glands: leaves large; pinnae 13 to 21; leaflets 5 to 9 pairs, tipped with a flask-shaped gland: racemes opposite the leaves (longer), many-flowered: pedicels jointed in the middle: vexillum small, with lamina densely covered with black, slender, obclavate glands: pod oblong-rhombic, 3 by 1 cm., cuspidate, 2-seeded.

Habitat: Rocky hills near Chihuahua, Chihuahua.

Specimens examined: Chihuahua (*Pringle* 148 and 371, types).

Types in Herb. Gray, J. Donnell-Smith, Canby, Martindale and Missouri Botanical Garden.

* * *Flowers with pyriform glands, intermixed (on calyx) with few black sessile ones.*

14. *H. melanosticta* Gray, Pl. Wright. i. 54 (1852). Erect, 25 to 60 cm. (or more) high, rigid, frutescent, black sessile glandular, hoary with short villous retrorse hairs: leaves few, 3 to 6 cm. long, very obtuse or retuse, loosely villous as also the rachises: racemes elongated, 15 cm. (or more) long, many-flowered, with pods early deciduous: calyx densely covered with small brown pyriform glands: petals with few villi above on margin and veins, the vexillum densely villous below, with minute pyriform glands above: style with large setose projections and black sessile glands below: pod suberect on straight pedicels, broadly ascinaform, 23 by 9 mm., rounded at base, covered with large projections; seeds usually 3, oblong-obovate, 3 by 5 mm., angular, greenish.

Pomaria melanosticta Schauer, Linnaea, xx. 748.

Habitat: Chisos Mountains, southwest Texas.

Specimens examined. Texas (*Nealley* 110, 448).

These Nealley specimens correspond mostly with Schauer's description, and differ from the two following forms in the many very small pyriform glands on the vexillum, the broadly ascinaform pod on straight pedicels, and the small angular greenish seeds.

VAR. PARRYI. More slender throughout, not so woody or rigid: leaves spreading, longer; pinnae 3 to 5 (usually 5); leaflets larger, and never more than three pairs: raceme of a few pendent and larger flowers: sepals not so glandular: petals with no villi on margin or veins, and vexillum glandless: ovary long, with sides parallel: pod rhombic (both ends acute), 3 by 1 cm., pendent on curved pedicels: seeds 3 or 4, ellipto-obovate (not angular), 6 by 4 mm., brownish.

Habitat: New Mexico, below San Carlos on the Rio Grande.

Specimens examined. New Mexico (*Parry* in Mexican Boundary Survey, 283, type).

Type in Herb. Gray.

VAR. GREGGII. Stems branched: pubescence scarcely villous; foliage as in var. *Parryi*, except not so long, and the pinnae with 3 or 4 (usually 3) pairs of leaflets: petals with few and the vexillum with several black depressed sessile glands, with no villi on margin or on veins: style with no projections or glands: stigma short, opening small: pod subulate, 25 by 6 mm., base usually incurved, pointed: seeds 2 or 3, like var. *Parryi*.

Habitat: Southern Coahuila.

Specimens examined: Coahuila (*Gregg* 497).

* * * *Flowers (as well as the entire plant) with black depressed sessile glands.*

15. *H. canescens*. Tall, herbaceous (scarcely suffrutescent below), hoary and velvety, with a dense short-villous pubescence: leaves slender (5 to 9 cm. long); pinnae 5 to 9 (usually 7); leaflets 4 to 7 pairs, 5 to 9 mm. long: racemes lateral, loose (dense at first), with 10 to 20 pendent flowers: sepals black with glands: vexillum eglandular, with claw broadly dilated: style with pubescence, glands and setose projections below: pod broadly falcate, 27 by 7 mm., velvety with setose projections: seeds dark, circular or oblong (4 mm. long).

Type in Herb. Gray, and J. Donnell-Smith.

Habitat: Coahuila, near Saltillo.

Specimens examined. Coahuila (*Palmer* 269, type).

This species is most nearly related to *H. Jamesii*, but very different in being tall and herbaceous: stems not flexuous: hoary and velvety throughout with short-villous (not appressed) pubescence: long and thick peduncles: sepals attenuate-lanceolate, with now and then a flask-shaped gland: vexillum glandless (seldom a gland): style short, with neither membranaceous side nor slit from stigma: pod long, sides parallel, both ends tapering equally, densely covered with glands, pubescence and long setose projections: seeds small.

16. *H. Jamesii* Torr. and Gray, Fl. N. Am. i. 393 (1840). Canescently pubescent, with many suffrutescent stems (20 to 35 cm. high) from a thick ligneous root: leaves many, short; pinnae 5 to 7; leaflets 5 to 10 pairs; racemes lateral, loose, with nodding

flowers: petals glandular; style with pubescence, glands, and short projections below and with the membranaceous portion split from stigma: pod sublunate, 20 by 8 mm., broadest above middle, with very short stellate projections: seeds 2 or 3, oblique, obovate, 5 to 7 by 4 to 6 mm.

Pomaria glandulosa Torr. Ann. Lyc. N. Y. ii. 193, not of Cav.

Habitat: From Colorado and Texas to California.

Specimens examined: Colorado (*Fremont*, 1845; *Green*, 1872; *Parry* 409); New Mexico (*Wright* 1022; *Rothrock* 1874; *Parry* 62; *Fendler* 173, 187; *Wislizenus* 452, 35; *Rusby* 110; *Bigelow*; *Le Roy* Distribution); Texas (*Lindheimer* 603, 286; *Jermy* 730; *Nealley* 320; *Wright* 145; *Reverchon* 7, 161, 803); California (*Thurber* 744).

Type in Herb. Gray.

Var. *POPINOENSIS*. Herbaceous, taller, with thick stems: upper stems and flowers black with large glands; pinnæ 7 to 9; leaflets more glandular: racemes denser: petals with villous veins: filaments larger, more villous.

Habitat: Kansas.

Specimens examined. Kansas (*Popinoe*, 1876, type).

Type in National Herbarium.

These forms are characterized mostly by the slit of stigma and the tapering base of the pod.

17. *H. fruticosa* Watson Proc. Am. Acad. xxi. 451 (1886). Chestnut-brown shrub, 120 to 180 cm. high, with branches, foliage, and inflorescence canescent with a fine pubescence: leaves 2 cm. long; pinnæ 3 to 5; leaflets 3 or 4 pairs, slightly punctate as also petioles; stipules and bracts lacinate: racemes many, terminal, short (5 to 6 mm. long), with 9 to 12 small flowers: pedicels slender, jointed near the base: sepals costate: vexillum with pyriform glands, the claw broadly dilated: upper filaments with large setose dilations: style short, curved, scarcely enlarged above: pod lunato both ends acute, cinereous with minute projections.

Habitat: Coahuila, mountains near Jimulico.

Specimens examined: Coahuila (*Pringle* 230, type).

Type in Herb. Gray, and J. Donnell-Smith.