

III. A Synoptic Revision of the Genus *Lamourouxia*.

LAMOUROUXIA HBK. (Dedicated to *J. V. F. C. Lamouroux*, professor of natural history at Caen, born 1773, died 1825.)—Calyx campanulate, 4-cleft; segments subequal or connate in pairs (in one species the ventral cleft much deeper than the others, giving the calyx a unilateral and spathe-like form). Corolla long, much exceeding the calyx; throat elongated and more or less ventricose, laterally compressed; limb bilabiate; posterior lip erect, somewhat galeate, entire or emarginate; the lower usually shorter, ventricose, 2-plicate and with 3 small more or less spreading lobes. Stamens 4, didynamous, usually included and ascending under the galea, rarely exserted, all fertile or the posterior pairs with reduced sterile or obsolete anthers; fertile anthers contiguous or sometimes coherent in pairs, densely woolly; cells distinct, parallel or oblique, often calcarate at the base. Style undivided; stigma terminal. Capsule ovoid, loculicidal; valves entire, with central placentæ. Seeds very numerous, small, minutely roughened or reticulated.—Chiefly perennial herbs exclusively of subtropical and western tropical America, extending from Northern Mexico to Peru, growing chiefly upon the mountains and at middle altitudes. Habit erect, decumbent, or rarely somewhat scandent. Leaves opposite, entire, dentate, serrate, crenate, or in one species dissected. Flowers orange to crimson, showy, spicate or racemose-paniculate, or somewhat corymbose.—Nov. Gen. et Spec. ii, 335, t. 167–169; Benth. in DC. Prodr. x, 539.

§ 1. EUPHRASIOIDES Benth. l. c. Fertile stamens 4, equal or nearly so; a very rudimentary fifth sometimes present.

* Leaves bipinnatifid.

1. *L. MULTIFIDA* HBK. Perennial, well-marked in the genus by its dissected foliage, scabrous-puberulent to densely and somewhat glandularly pilose: base a small woody tuber: flowers in the typical form 12 to 16 lines in length.—HBK., l. c., 339. *L. laciniata* Mart. and Gal., Bull. Acad. Brux. xii. 2, 32 (incl. var. *pilosa*, the commoner form).—Common at moderate altitudes (2,500 to 8,000 or even 11,000 feet), throughout Central and Southern Mexico to Guatemala; San Luis Potosi, *Parry* and *Palmer*, 687; Jalisco, *Pringle*, 2833; Valley of Mexico, *Bourgeau*, 612; Mexico, without locality, *Graham*; Chiapas, *Ghiesbrecht*, 704; Guatemala, Pl. Guat. *Donnell-Smith*, 813, 4013; Orizaba, *Seaton*, 134; Sierra de San Felipe, Oaxaca, *Pringle*, 4829, and *Nelson*, 1098, 1798.

VAR. *GRANDIFLORA* Benth. Flowers considerably larger, becoming 2 inches in length.—Benth., l. c., 540. *L. grandiflora* Benth., acc. to Linden, Cat. n. 10 (1855), 6.—Jalisco, *Hartweg*,

187; State of Mexico, *Pringle*, 3149; Guanajuato, *Dugès*, 385. Intermediate forms passing to the type are represented by *Ghiesbrecht's* 84 from Chiapas and his unnumbered specimen from the Plateau of Mexico, as well as by *Coulter's* 1356, without exact locality.

* * Leaves serrate, crenate, or entire.

+ Anther-cells conspicuously calcarate at base.

++ Calyx-teeth subulate: leaves entire or nearly so.

2. *L. LONGIFOLIA* Benth. Calyx 5 to 7 lines long: leaves oblong-linear, attenuate at both ends, acute, the larger 2 inches long, $1\frac{1}{2}$ to $2\frac{1}{2}$ lines broad; margins recurved.—Pl. Hartw. 22, and in DC. Prodr. x, 540.—Northwest Mexico in the Sierra Madre, *Seemann*; Jalisco near Balaños, *Hartweg*, 188.

3. *L. HYSSOPIFOLIA* Gray. Calyx 3 to 4 lines long: leaves mostly shorter and broader, oblanceolate to spatulate, acute or obtusish, 9 to 18 lines long, $2\frac{1}{2}$ to $3\frac{1}{2}$ lines broad.—Proc. Am. Acad., xxi, 404.—Southwestern Chihuahua, *Palmer*, 266.

++ ++ Calyx-teeth oblong, obtusish: leaves serrate.

4. *L. PRINGLEI*. Tomentulose, 3 to 5 feet high, branched from a somewhat ligneous base: stems terete: leaves elliptical, obtuse, 4 to 9 lines long, nearly half as broad, obtusely serrate from the middle, narrowed and shortly petiolate at the base: racemes several, rather dense; pedicels only a line or two in length: flowers 2 inches or more in length.—Garden and Forest, viii, 275, t. 39.—On cold ledges of Sierra de San Felipe, altitude 10,000 feet, 25 September, 1894, *Pringle*, 4927; and near Tamaulapam, altitude 7,800 feet, 13 November, 1894, *Nelson*, 1953.

+ + Anther-cells obtuse or acute at base, but not distinctly spurred: leaves serrate.

++ Flowers small: corolla 7 to 10 lines long.

5. *L. BREVIFOLIA* Benth. Pubescent throughout: flowers subsessile.—Benth. in DC. Prodr. x, 540.—Chachapoyas, Peru, *Mathews*, 3138.

6. *L. PARVIFLORA* Hemsl. Glabrous or glabrate: flowers short-pedicelled.—Biol. Cent.-Am. Bot., ii, 465. "Mexico, without locality, *Tate*, 31, *Mairet*, 56."

++ ++ Flowers larger; corolla 14 lines to $2\frac{1}{2}$ inches long.

= Calyx very irregular, deeply cleft anteriorly; lobes lanceolate, usually acute.

7. *L. XALAPENSIS* HBK. Calyx slender, spathe-like, 6 to 8 lines long: corolla 15 to 18 lines long.—Nov. Gen. et Spec., ii, 388. *L. spathacea* Benth., l. c., 539.—Jalapa, *Humboldt* and *Bonpland*; Orizaba, *Botteri*, 383, 1169. Bentham's *L. Xalapensis* of the Podromus exclusive of Humboldt's specimen may well have been the following.

== Calyx less irregular: lobes usually broad, ovate or oblong, obtusish, or in the first linear-oblong and acutish.

8. *L. EXSERTA*. Puberulent: stem subtetragonal, copiously branched above: leaves narrowly lanceolate, sharply serrate, acute to acuminate, 1 to $2\frac{1}{2}$ inches long, 3 to 5 lines broad, narrowed at base to slender petiole: racemes lax and secund; pedicels 2 to 4 lines long: calyx glabrous, 4 to 6 lines in length; the lobes narrowly oblong: corolla 1 to $1\frac{1}{2}$ inches long, densely pubescent: stamens conspicuously exserted.—Valley of Mexico, *Bourgeau*, 986, *Schaffner*, 367; and in rich ravines of Sierra de Clavelinas, Oaxaca, altitude 9,000 feet, 18 October, 1894, *Pringle*, 4995; also on top of Sierra Madre near Chilpancingo, altitude 9,000 to 10,200 feet, 24 December, 1894, *Nelson*, 2216, and at Tlalixtaquilla, *Nelson*, 2261.

9. *L. DEPENDENS* Benth. Hirsute: leaves ovate-lanceolate: calyx-lobes broad and often serrate: flowers rather long-pedicelled, $1\frac{1}{2}$ inches long: flowering branches pendulous.—Benth., l. c., 539.—“Guatemala, *Skinner*.” *Ghiesbrecht's* 74, 173, 176, and 706 from Chiapas may be doubtfully placed here, and *J. Donnell-Smith's* 2162, which we have not seen, has also been referred to this species.

10. *L. MACRANTHA* Mart. and Gal. Pubescent with soft spreading articulated hairs: stem rather stout, erect from a somewhat decumbent base: leaves ovate, subsessile, doubly and rather deeply crenate-serrate, obtuse: racemes erect: calyx-lobes entire: corolla $2\frac{1}{2}$ inches long, red dorsally and yellow ventrally: stamens not produced beyond the galea.—Bull. Acad. Brux., xii, 2, 32. *L. betonicaefolia* Benth., l. c.—South Mexico, 7,500 to 10,200 feet altitude, on Sierra de San Felipe, Oaxaca, *Pringle*, 4854, *Nelson*, 1070, 1343. Originally collected in Orizaba by *Galeotti*.

11. *L. OVATA* Mart. and Gal., l. c., 33. Similar to the last, but with flowers much shorter, $1\frac{1}{4}$ to $1\frac{1}{2}$ inches long: inflorescence more leafy: calyx-lobes more or less serrulate.—Oak woods, Sierra de San Felipe, Oaxaca, *Pringle*, 4762; in neighboring locality, *Nelson*, 1118. Originally collected in the same general region by *Galeotti*, 989.

§ 2. *HEMISPADON* Benth. Fertile stamens only 2, or the posterior pair at least much shorter and with reduced anthers.

* Leaves ovate or oblong, broad at base, sessile or nearly so; Mexican and Central American species.

+ Some or all of the calyx-lobes serrate.

12. *L. RHINANTHIFOLIA* HBK. Leaves very sharply and doubly serrate: flowers not densely aggregated: tube of the calyx short, campanulate, obscurely 2-3-nerved at each sinus.—Nov. Gen. et Spec., ii, 337, t. 169.—Common: San Luis Potosi, *Schaffner*, 750; *Parry and Palmer*, 686; Valley of Mexico, *Bourgeau*; Zimapan, *Coulter*, 1357; Orizaba, *Seaton*, 464; State of Mexico, *Pringle*, 5335; Guanajuato, *Dugès*, 387; Oaxaca, *Pringle*, 4661;

Nelson, 1040, 1131. *Andrieux*' 158, from Gonocatepec, referred by Hemsley to *L. viscosa*, has the pubescence, serrulate calyx-lobes, and elliptical rameal leaves of the present species, of which it is probably only a small and more densely-flowered form.

+ + Calyx-lobes entire: corolla tubular, scarcely ventricose.

++ Inflorescence loose.

13. *L. SMITHII*. Habit of the preceding: leaves of the stem ovate, sharply serrate, acute, somewhat larger, 2 inches long, an inch broad; the rameal ovate, subcordate, sessile, not elliptical and shortly petiolate as in the preceding: inflorescences considerably branched: calyx-tube short-cylindrical, 3 lines long; lobes lanceolate, acute, entire, about equal in length; nerves from the sinuses distinct, single or double: corolla 2 to $2\frac{1}{4}$ inches long.—Mountains of Jayacatlan, Oaxaca, altitude 5,000 feet, 13 August, 1894, *L. C. Smith*, 155.

++ ++ Inflorescence dense.

14. *L. VISCOSA* HBK. More or less glandular-tomentose: stem rather rigid, terete: leaves ovate-oblong, thickish, sharply-serrate.—HBK. l. c., 338. *L. cordata*, Cham. and Schlecht. *Linnaea*, v, 103. *L. coccinea*, Gray, Proc. Am. Acad., xxi, 404 (only a less pubescent form).—One of the commonest species throughout the whole length of Mexico; Sonora, *Lloyd*, 437; Chihuahua, *Palmer*, 258; *Pringle*, 656; Jalisco, *Palmer*, 578; *Pringle*, 2133, 2339; Zacatecas, *Hartweg*, 189; Huasteca, *Ervenberg*, 112; Zimapan, *Coulter*, 1358; Orizaba, *Bourgeau*, 2424; *Bilimek*, 285; *Botteri*, 86, 149; *Seaton*, 135; Oaxaca, *Pringle*, 4879; *Nelson*, 1199, 1245; Chiapas, *Ghiesbrecht*, 96, 703; Guatemala, *J. Donnell-Smith*, 4016; Mexico without locality, *Sumicrast*. So far as the characterization shows, *L. Viejensis* Oerst., Vidensk. Meddel. Kjöben., 1853, 28, from Nicaragua is also the same.

* * Leaves lanceolate, narrowly oblong, elliptical or linear, narrowed at the base, and often petioled.

+ Posterior filaments bearing reduced villous anthers.

++ Corolla short for the genus, 8 or 9 lines long: leaves incisely serrate: species of Ecuador.

15. *L. SUBINCISA* Benth. "Habit of *L. brevifolia*: leaves lanceolate, an inch or less in length."—Benth. l. c., x, 540.—Andes of Quito, *Jameson*.

++ ++ Corolla longer, an inch or more in length.

= Calyx-lobes serrulate.

16.? *L. SYLVATICA* HBK. "Somewhat twining: leaves lanceolate, acute, narrowed at base: corolla roseate."—HBK. l. c., ii, 337.—Near Ayavaca, Peru, *Humboldt* and *Bonpland*. A very

dubious species, founded upon imperfect material, but, if correctly described, belonging here.

= = Calyx costate; segments entire.

a. Mexican species.

17. *L. TENUIFOLIA* Mart. and Gal. l. c. Stem copiously branched above; branches simple, slender, ascending, very leafy: leaves narrow, lance-linear, 6 to 10 lines long, crenate-serrulate; margins recurved: inflorescence dense.—Walpers, Rep. vi, 652. *L. linearis*, Benth. l. c., x, 541.—Valley of Mexico, *Bourgeau*, 1113; *Schaffner*, 368; Chiquihuite, *Bilimek*, 284; Tula, *Berlandier*, 1261; San Luis Potosi, *Parry and Palmer*, 673. Originally collected in E. Oaxaca by *Galeotti*.

b. South American species.

18. *L. VIRGATA* HBK. Leaves linear-lanceolate, sharply but finely serrate: calyx-lobes lanceolate, acute, longer than the tube.—HBK. l. c. ii, 336, t. 167.—Near Quito, *Humboldt and Bonpland*, *Hall*, *Jameson*, *Hartweg*, *Couthouy*.

19. *L. LOXENSIS* Benth. Leaves linear-lanceolate: segments of the calyx scarcely longer than the tube.—Pl. Hartw. 147, and in DC. Prodr. x, 541.—Mountains of Loxa, United States of Columbia, *Hartweg*, 824. A doubtful species, intermediate between the preceding and following.

20. *L. SERRATIFOLIA* HBK. Leaves linear-lanceolate, conspicuously and incisely serrate with short divergent teeth.—HBK. l. c. ii, 336, t. 168.—Near Bogota, *Humboldt and Bonpland*, *Goudat*.

+ + Posterior filaments glabrous at the summit and anantherous or nearly so.

++ Leaves quite entire.

21. *L. INTEGERRIMA* Donnell-Smith. Nigrescent in drying: leaves narrowly lanceolate, attenuate at both ends, $\frac{3}{4}$ to $1\frac{1}{2}$ inches long, $1\frac{1}{2}$ to $2\frac{1}{2}$ lines wide, conspicuously 1-nerved; veins very obscure: calyx indistinctly 8-costate.—Bot. Gaz. xiii, 189.—Pansamala, Alta Verapaz, Guatemala, altitude 4,000 feet, *von Tuerckheim* (Donnell-Smith's Pl. Guat.), 1112.

++ ++ Leaves serrate, serrulate, or crenate.

= Leaves an inch or more in length.

22. *L. LANCEOLATA* Benth. Whole plant nigrescent in drying: branches divaricate: leaves narrowly lanceolate, finely, sharply and irregularly serrate, 1 to $1\frac{1}{2}$ inches long, $1\frac{1}{2}$ to $2\frac{1}{2}$ lines wide: calyx conspicuously 12-costate; segments linear-lanceolate, acute, spreading or even reflexed.—Benth. in DC. Prodr. x, 542.—South Mexico, Chiapas, *Ghiesbrecht*, 144, 705; Guatemala, *Donnell-Smith's*, 398, 3100.

23. *L. NELSONII*. Pubescent, drying green: leaves thin, oblong, acute, irregularly dentate, the larger 2 to 3 inches in length, 4 or 5 lines broad: calyx pubescent, not distinctly ribbed, 6 lines long: segments lanceolate, acute, erect: corolla over 2 inches long, red, paler and yellowish toward the base.—Six miles above Dominigillo, Oaxaca, altitude 4,500 to 5,000 feet, 30 October, 1894, *Nelson*, 1833.

— = Leaves half inch or less in length.

24. *L. MICROPHYLLA* Mart. and Gal. Leaves oblong, crenate-serrulate, 3–4 (–6) lines long, a line broad; those of the branches reflexed: calyx glabrous; teeth very short.—Bull. Acad. Brux. xii, 2, 31. *L. parvifolia*, Benth. l. c. x, 542.—Oaxaca, *Galeotti*, 1005; and on granitic hills at base of Sierra de Clavellinas, altitude 6,000 feet, *Pringle*, 6000.

25. *L. GUTIERREZII* Oerst. Shrub, 3 to 4 feet high, somewhat scandent: leaves lanceolate-elliptical, 6 to 10 lines long, 2 lines broad, somewhat scabrous: calyx somewhat villous, teeth much shorter than the tube, and (from figure of Seemann) entire.—Vidensk. Meddel. 1853, 29. *L. scabra* Benth. in Seem. Bot. Herald, 177, t. 33.—Mountains between Cartago and Candelaria, Costa Rica, *Oersted*; Volcano of Chiriqui, Veraguas, *Seemann*.

This species in the Index Kewensis is incorrectly said to be Venezuelan. Bourgeau's 101, referred hither by Hemsley, is *L. rhinanthifolia*.

26. *L. GRACILIS*. Scarcely shrubby, 1 to 1½ feet high: stems slender, terete, puberulent in lines: leaves elliptic-oblong, obtuse, narrowed at the base to short slender petioles, crenate-dentate, thin, not at all rugose, nearly or quite smooth, the larger ones 9 lines long, 3 lines broad: racemes simple, rather loose, leafy to the apex: segments of the calyx ovate-oblong, obtuse, nearly always crenate-dentate: corolla 1¼ to 1½ inches long, red with yellowish throat, moderately ventricose.—Summit of Sierra Madre near Chilpancingo, Guerrero, altitude 9,000 to 12,000 feet, 24 December, 1894, *Nelson*, 2234.

The following distributed as species of *Lamourouxia* belong elsewhere:

Mandon's 479 = *Gerardia* sp.

Bang's 543 = *Gesnera* sp.



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