

THE HAWAIIAN GENUS NEOWIMMERIA (LOBELIACEAE)

Otto & Isa Degener

Thanks to Dr. R. Melville's note (Kew Bull. 19: 206. 1965), we here belatedly typify the Hawaiian genus Neowimmeria by the species Lobelia grayana E. Wimm. (in Annal. Naturhist. Mus. Wien 56: 369. 1948) = N. grayana (E. Wimm.) Deg. & Deg. in Fl. Haw. K₁₆, March 29, 1963. The type for the species was collected by the United States Exploring Expedition of 1838-1842, and exists in fragmentary condition in the Gray Herbarium of Harvard University. The above typification of the genus should legitimize the species names N. costata, N. dunbariae, N. hillebrandii, N. hypoleuca, N. niihauensis, N. remyi, N. tortuosa and N. yuccoides, all of which are new combinations proposed by Degener & Degener in the same publication on March 29, 1963.

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MATERIALS TOWARD A MONOGRAPH OF THE GENUS LIPPIA. II

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LIPPIA ALNIFOLIA Schau.

Tall shrub, glandular-dotted throughout; branches strict, as thick as a goose-quill, subterete, fuscous, strigose-pubescent and scabrous; principal internodes shorter than the leaves; leaves decussate-opposite, ovate or subrotund-elliptic, about the size and shape of those of Alnus glutinosa (L.) Gaertn., narrowed at the base into the petiole, very obtuse at the apex, very shiny above, penninerved, coarsely crenate, venose and rugulose, strongly aromatic with a camphor-like odor, short-strigose and scabrous above, the hairs simple or subpapillose at the base, villosulous beneath, diminishing in size toward the apex of the stems and branches; peduncles axillary, 2--4 per axil, about 2.5 cm. long, thickened upwards, patulous, pubescent; heads subglobose-ovoid, about 8 mm. wide; bractlets membranous, broadly ovate, 4 mm. or more in length, short-acuminate at the apex, concave, many-nerved, pubescent, ciliate-margined, loosely imbricate, shorter than the corolla-tube, the outer ones larger and subinvolute; calyx tubular, villosulous, shortly 4-fid; corolla white, its tube 6 mm. long, straight, slender below, subventricose above the middle, villosulous, the limb rather large, the lobes rounded, the lateral ones reflexed, the back concave and crisped; fruit small, 2 mm. long, obcordate-oblong, very smooth, fuscous, included by the fruiting-calyx, easily split into 2 parts.

This apparently rare species was based on several collections made by Carl Friedrich Philipp von Martius "In campis graminosis Brasiliae, in prov. Minarum e. gr. ad Munbucas deserti Minarum novarum, Julio, nec non inter frutices montis Serra de Sincora prov. Bahiensis, Octobri", deposited in the Martius Herbarium in the Botanical Museum at Munich. Lippia brasiliensis is based on A. S. Muller 469 from Vicosia, Escola, Minas Gerais, Brazil, collected on April 18, 1933, and deposited in the Britton Herbarium at the New York Botanical Garden, gathered for the fungous infection on its leaves. Lantana odora is based on a Martius collection from Minas Gerais deposited in the Munich herbarium and there photographed by Macbride as a cotype of Lippia alnifolia under his type photograph number 20321.

The species is placed by Schauer (1851) in Section Zapania, Subsection Axilliflorae. He says of it "trita odorem fortem subcamphorato aromaticum spargentia."

In all, only 1 herbarium specimen and 3 mounted photographs of a cotype collection have been examined by me.

Citations: BRAZIL: Minas Gerais: Martius s.n. [Macbride photo 20321] (It—photo of cotype, Kr—photo of cotype, N—photo of cotype); A. S. Muller 469 (N).

LIPPIA AMERICANA L., Sp. Pl., ed. 1, 633. 1753.

Synonymy: Lippia hemisphaerica Jacq., Enum. Syst. Pl. Carib., ed. 1, 25. 1760. Lippia arborescens, foliis conjugatis oblongis, capitulis squamosis & rotundis Houst. ex P. Mill., Gard. Dict., ed. 5, Lippia. 1763. Lippia pyramidata Crantz, Inst. 1: 546. 1766. Lippia (Americana) arborescens foliis conjugatis oblongis, capitulis squamosis & rotundis Houst. ex P. Mill., Gard. Dict., ed. 8, Lippia 1. 1768. Lippia capitulis pyramidatis L. ex P. Mill., Gard. Dict., ed. 8, Lippia 1, in syn. 1768. Lippia (Hemisphaerica) capitulis hemisphaericis Jacq. ex P. Mill., Gard. Dict., ed. 8, Lippia 2. 1768. Lippia americana, arborescens, foliis conjugatis, oblongis, capitulis squamosis & rotundis Houst. ex P. Mill., Dict. Jard. 4: 472—474. 1785. Lippia hemisphaerica capitulis hemisphaericis Jacq. ex P. Mill., Dict. Jard. 4: 472—474. 1785. Lippia floribunda H.B.K., Nov. Gen. & Sp. Pl., ed. pict. 216. 1817 [not L. floribunda Briq., 1900, nor Hort., 1959, nor R. A. Phil., 1891]. Lippia floribunda Kunth ex Spreng. in L., Syst. Veg., ed. 16, 2: 753. 1825. Lippia floribunda Humb. & Bonpl. ex Steud., Nom. Bot., ed. 2, 2: 54. 1841. Lippia hemisphaerica L. ex Steud., Nom. Bot., ed. 2, 2: 54. 1841. Lippia floribunda Humb. & Kunth ex D. Dietr., Syn. Pl. 3: 599. 1843. Lippia pauciserrata Turcz., Bull. Soc. Nat. Mosc. 36 (2): 203. 1863. Lippia hemisphaerica Cham. ex Pittier, Supl. Pl. Usual. Venez. 55. 1939. Lippia hemisphaerica Jacq. apud Pittier, Cat. Fl. Venez. 2: 333. 1947. Lippia hemisphaerica Cham. apud Daniel,

Verbenac. Cent. Antioq. 5. 1947. Lippia hemispherica Cham. ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947. Lippia fruticosa Kunth ex Moldenke, Résumé Suppl. 10: 5, in syn. 1964.

Bibliography: L., Sp. Pl., ed. 1, 633. 1753; Jacq., Enum. Syst. Pl. Carib., ed. 1, 25 (1760) and ed. 2, 25. 1762; P. Mill., Gard. Dict., ed. 5, Lippia. 1763; Jacq., Select. Stirp. Amer. Hist. 176, pl. 179. 1763; P. Mill., Gard. Dict., ed. 7, Lippia. 1764; Crantz, Inst. 1: 546. 1766; P. Mill., Gard. Dict., ed. 8, Lippia 1 & 2 (1768) and ed. 6, Lippia. 1771; Jacq., Select. Stirp. Amer. Hist. Picta pl. 167. 1780; Houst., Reliq. pl. 12. 1781; P. Mill., Dict. Jard. 4: 472--474. 1785; Gaertn., Fruct. & Sem. Pl. 1: 235--236 & 266--267, pl. 51, fig. 2, & 56, fig. 2. 1788; Gil & Xuares, Osserv. pl. 5. 1790; Lam., Tabl. Encycl. Méth. Bot. [Illustr.] 3: 91, pl. 539, fig. 1 & 2. 1797; Dum. Cours, Bot. Cult., ed. 2, 7: 130--131. 1814; H. B. K., Nov. Gen. & Sp. Pl., ed. pict., 216. 1817; H.B.K., Nov. Gen. & Sp. Pl. 2: 267--268. 1818; Choisy, Mém. Soc. Phys. & Hist. Nat. Genev. 2: 98. 1823; Spreng. in L., Syst. Veg., ed. 16, 2: 751 & 753. 1825; Steud., Nom. Bot., ed. 2, 2: 54. 1841; D. Dietr., Syn. Pl. 3: 596 & 599. 1843; Walp., Repert. Bot. Syst. 4: 43 & 54. 1845; Schau. in A. DC., Prodr. 11: 579. 1847; Morren, Belg. Hort. 1: 151. 1851; Turcz., Bull. Soc. Nat. Mosc. 36 (2): 203 & 204. 1863; Bocq., Adansonia 3: 244. 1863; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 152. 1895; P. C. Standl., Contrib. U. S. Nat. Herb. 23: 1248. 1924; Stapf, Ind. Lond. 4: 125. 1930; Pittier, Supl. Pl. Usual. Venez. 55. 1939; Moldenke in Woodson & Schery, Ann. Mo. Bot. Gard. 27: 336. 1940; Moldenke, Carnegie Inst. Wash. Publ. 522: 164. 1940; Robledo, Lecc. Bot. 2: 498. 1940; Moldenke, Prelim. Alph. List Invalid Names 31. 1940; Moldenke, Suppl. List Invalid Names 6. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 17, 24, 31, 32, 34, & 95. 1942; Moldenke, Alph. List Invalid Names 31 & 32. 1942; Moldenke in Lundell, Fl. Texas 3 (1): 53. 1942; Moldenke, Lilloa 8: 413 (1942) and 10: 367. 1944; Moldenke, Castanea 10: 41. 1945; Moldenke, Alph. List Cit. 1: 7, 169, 190, 194, & 266. 1946; Pittier, Cat. Fl. Venez. 2: 333. 1947; Daniel, Verbenac. Cent. Antioq. 5. 1947; Moldenke, Alph. List Invalid Names 14 & 15. 1947; Moldenke, Phytologia 2: 384 & 385. 1947; Moldenke, Bol. Soc. Venez. Cienc. Nat. 11: 45. 1947; Moldenke, Lilloa 14: 16. 1948; Moldenke, Castanea 13: 116. 1948; Moldenke, Alph. List Cit. 2: 361, 416, 530, 544, 558, & 610 (1948), 3: 693, 820, 893, 903, 906, & 947 (1949), and 4: 1148, 1164, 1175, 1208, 1210, 1248, 1259, & 1261. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 9. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 30, 41, 60, 63, 70, 72, & 189. 1949; Moldenke, Phytologia 3: 285. 1950; Moldenke, Bol. Soc. Venez. Cienc. Nat. 11: 289. 1950; F. A. Barkley, Determinac. Ejemp. Herb. Fac. Nac. Agron. Medellin 2 (1): 11 & 14. 1950; Moldenke, Résumé 36, 48, 67, 71, 80, 84, 312, 313, 316, & 460. 1959; Troncoso, Darwiniana 12: 257. 1961; Moldenke, Résumé Suppl. 8: 4 (1964) and 10: 2 & 5. 1964.

Illustrations: Houst., Reliq. pl. 12. 1781; Gaertn., Fruct. & Sem. Pl. 1: pl. 56, fig. 2. 1788; Gil & Xuares, Osserv. pl. 5. 1790; Lam., Tabl. Encycl. Méth. Bot. [Illustr.] 3: pl. 539, fig. 1 & 2. 1797.

An herb. woody or somewhat woody below, or a slender, sprawling, arching, scrambling, or scandent shrub or undershrub, 1--5 m. tall, unarmed, subglabrous, with a strong aromatic odor; trunk sometimes 15--20 cm. in diameter; branches elongate, drooping or pendulous to subscandent, light-green, the adult ones subterete, yellowish, and glabrous; branchlets tetragonal, sparsely appressed-strigose and glandular-punctate; leaves decussate-opposite or ternate, green or light-green, membranous, widely spreading or reflexed, deciduous, ovate or oblong-lanceolate, shiny, acuminate at the apex, entire or crenate-serrate above the middle, acuminate and entire at the base and attenuate into the petiole, scabrous above, pale and glabrous beneath or sparsely strigose on the veinlet-reticulation and pubescent in the vein-axils, the lower ones about 8 cm. long and 3.5 cm. wide, the upper ones smaller; inflorescence axillary; peduncles 1--3 per axil, subequaling the petiole; heads hemispheric, becoming ovate or pyramidal-subglobose, about the size of a pea (*Pisum sativum* L.), many-flowered, plainly angulate; bractlets cuneate-obovate, subequally imbricate in 8-farious fashion, recurved, abruptly cuspidate or broadly very obtuse and very short-apiculate at the apex, subequaling the corolla, many-nerved, slightly narrower than the calyx villosity, the lower ones somewhat larger; flowers not conspicuous; calyx 1--1.5 mm. long, equaling or shorter than the corolla-tube, acutely bifid, bifariously villous with long hairs on the keel, otherwise shortly white-pubescent; corolla small, hypocrateriform, not conspicuous, varying from pale-green or greenish-white to cream, white, or pale-yellow, its tube very exiguous, the limb hirtellous or pubescent on the outer surface; fruit obcordate, fuscous or black, smooth, included at the base of the calyx.

The type of this species, which is also the type of the genus, is sheet number "1" under genus 801 in the Linnean Herbarium at the Linnean Society, London, labeled "americana", and probably collected by William Houstoun in Vera Cruz, Mexico, although this information is not given on the sheet. In his original description, however, Linnaeus (1753) states that the plant is from that locality. Standley (1924) lists the species as only doubtfully from Mexico, and I have as yet seen no material (other than the type itself) from there. The Linnean specimen shows one head of inflorescence in each leaf-axil, about 3/4 inch long, on a peduncle about 1/2 inch long, the leaves exactly like those of the plants currently passing as *L. hemisphaerica* Jacq. from Colombia, but the general habit of the plant seems to be like that of *L. alba* (Mill.) M. E. Br. One wonders if Linnaeus was in error in ascribing the type specimen to Houstoun from Mexico.

The type of *L. pauciserrata* was gathered by Louis Joseph Schlim (no. 274) at Aguachica, Ocana, Santander do Norte, at an altitude of 800 feet, Colombia, in November, between 1846 and 1852 -- an

isotype in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva having been photographed by Macbride as his type photograph number 24657. The type of L. hemisphaerica was collected "in sylvaticis regni Novo-Granatensi pr. Carthagenam", according to Jacquin (1760). Schauer (1847) describes the branchlets of L. hemisphaerica as hispid-pilose, which raises the possibility of this name belonging to the synonymy of L. americana f. hyptoides (Benth.) Moldenke. Perhaps his descriptive term, however, applies to the Ruiz collection from "in Peruvia ad Guayaquil" which he also cites, rather than to Jacquin's type. He says of L. hemisphaerica "Simillima praecedenti [L. americana], tamen distincta facilis capitulis obtuse-bracteatis haud angulatis, calyce minore brevius villosus. Calyx semilineam longus, acute bifidus, villo bracteam non excedente. Cor. calyce duplo longior, extus puberula."

The name, Lippia fruticosa Kunth, seems to be based on an unnumbered collection made by Gustav Karl Wilhelm Hermann Karsten at Diballa, Rio Hache, and deposited in the herbarium of the Naturhistorisches Museum at Vienna.

The L. floribunda of Philippi, referred to in the synonymy above, is actually a synonym of Aloysia reichii Moldenke, that of Briquet is Lippia moritzii Turcz., while that accredited to "Hort." is Lantana achyranthifolia Desf. Walpers (1845) places Dalea lippiastrum Gaertn. in the synonymy of Lippia americana, but according to Choisy (1823) this name belongs to Microdon ovatus (L.) Choisy in the Selaginaceae.

Lippia americana is placed by Briquet (1895) in Subgenus Zapania, Section Dipterocalyx. Kunth (1818) states that it is closest to L. hirsuta L. f. The L. hyptoides Benth., often included in its synonymy, is actually the basynym of what is here regarded as L. americana f. hyptoides (Benth.) Moldenke. The specific epithet, as also that of L. hemisphaerica, is sometimes uppercased.

Lippia americana seems to inhabit thickets and dry thickets, woods and deep wooded canyons, the edges of woods, savannas, shrubby hillsides, and sandy soil near beaches, and has been found along streams and roadsides, at altitudes from sea-level to 1665 meters, flowering in March and from May to December, in fruit from October to January, in June and August. Common names recorded for it are "barelago", "belita", "lippie d'Amérique", "lippie hémisphérique", "mano de Dios", "oreganito macho", and "tree lippia".

Haught describes the species as "abundant in this region" [Góajira, Colombia] and "abundant on roadsides", while H. H. Smith says of it in Magdalena "very common in dry forest below 1000 feet, fls. Sept. to Nov., leaves fall off about the end of Dec. and the smaller branches die." Sandeman found it "in full exposure among semi-xerophytic scrub" in Cajamarca, Peru.

Daniel (1947) says of it: "En los lugares bajos [in Antioquia]

y en sitios arenosos se suele encontrar otra forma que llama la atención por su simetría y por la disposición regular de sus capítulos al parecer esféricos; es Lippia hemisférica Cham., que tiene sus flores blancas agrupadas en capítulos casi sésiles y axilares. La muestra en estudio proviene de Megua y se debe su colección al diligente entusiasmo del Rdo. Hno. Elías mientras estuvo en Barranquilla por los años de 1933."

The corollas are described as "cream" on Asplund 7685; as "greenish-white" on Asplund 15733; as "pale-green" on Asplund 15879; as "pale-yellow" on Allen 1094; and as "white" on Asplund 15752, Cuatrecasas & Castañeda 24879, Elías 1094, Haught 4407 & 6726, F. W. Pennell 12064, and Schlim 274.

It is of interest to note here how Miller (1768) differentiates between L. americana and L. hemisphaerica and what he says of them: "1. Lippia (Americana) arborescens foliis conjugatis oblongis, capitulis squamosis & rotundis. Houst. Tree Lippia with oblong leaves growing by pairs, having round scaly heads. Lippia capitulis pyramidatis, Lin. Sp. 883. Lippia with pyramidal heads. 2. Lippia (Hemisphaerica) capitulis hemisphaericis. Jacq. Amer. 25. Lippia with hemisphaeric heads. The first sort in the country of its native growth, commonly rises to a height of sixteen or eighteen feet, with a rough bark: the branches come out by pairs opposite, as do also the leaves, which are oblong, pointed, and a little sawed at their edges. From the wings of the leaves come out the foot-stalks, which sustain many pyramidal scaly heads, about the size of a large gray Pea, in which are many small yellow flowers appearing between the scales, which are succeeded by the seed-vessels.

"The second sort grows naturally in Carthagená in New Spain, where it rises with shrubby stalks ten or twelve feet high, sending out slender branches toward their top, garnished with oval spear-shaped leaves three inches long, ending in acute points, smooth on their upper surface, which are placed opposite; the foot-stalks of the flowers come out opposite just above the leaves, each supporting a pyramidal head of white flowers which peep out from the scales of the head; these are succeeded by capsules having two cells, including small seeds.

"The seeds of the first sort were sent by Dr. Houstoun to several curious gardens in Europe, where some of the plants have been raised; but as the country from whence they came is very warm, so the plants will not thrive in this climate, unless they are preserved in a warm stove. The seeds should be sown on a hot-bed, and the plants may be treated in the same manner as other shrubby plants which are natives of warm countries: which is, to keep them always in the stove, plunged in the bark-bed, observing to give them a large share of air in warm weather, and frequently refresh them with water; but in winter they must be watered more sparingly, and be kept in a moderate degree of warmth, otherwise they will not live through the winter, especially while they are young; but when they have acquired strength, they may be preserved

in a less share of warmth. As the plants advance in their growth, they should be shifted into larger pots, but this should not be too often repeated; for if they are removed into new pots every spring, it will be as often as they require; so that when these, and many other exotic plants, are too often removed, they do not thrive so well as when they are permitted to fill the pots with their roots. The best time to shift these plants is in April, at which time the tan of the hot-bed should be stirred, and fresh tan mixed with it, to increase the heat. The earth in which these plants are placed, should be fresh and light, but not too rich."

Lamarck (1797) distinguishes the two as follows: L. hemisphaerica -- "capitulis hemisphaericis", L. americana -- "capitulis ovato-subrotundis". Lam., Tabl. Méth. Bot. 3: 91, pl. 539 (1797) is often cited as "Lam. Ill. 3. pl. 529", but the plate number referred to is 539. Gaertn., Fruct. & Sem. Pl. 1: 266--267, pl. 56, fig. 2 (1788) is sometimes erroneously cited as plate "55".

Herbarium material of this species has been misidentified and distributed in herbaria as "Rubiaceae". On the other hand, the N. J. Andersson 83, A. S. Hitchcock 20111, and Hartweg 686, distributed as L. hemisphaerica, are actually L. americana f. hyptoides (Benth.) Moldenke, the last-mentioned collection being the type of the form, and Holway & Holway 807, Killip & Smith 14238, 14342, & 14518, Pittier 10541, and Killip, Dugand, & Jaramillo 38334 are L. americana f. pilosa Moldenke, the last-mentioned collection being the type of the form, while the Mocquerys s.n. [Duaca, 1893-94] (W--2383050), distributed as this by Troncoso, is a species of Cordia in the Ehretiaceae; the Collector undesignated 1 and Herb. Mus. Paris 1, distributed as L. floribunda by her, are L. moritzii Turcz., while Galeotti 787 is L. pringlei Briq.

Schauer (1847) cites under L. americana a Linnean specimen from Vera Cruz [doubtless the Houstoun collection which is the type of the species], Billbery s.n. [doubtless an error for "Billberg"] from Cartagena, Colombia, Mutis s.n. from "in regno Novo-Granatensi", and Hartweg 686 from Guayaquil, Ecuador, all except the first deposited in the Berlin herbarium, now destroyed. The last-mentioned collection, however, is the type collection of f. hyptoides. Under L. hemisphaerica he cites a Jacquin plant from "in sylvis regni Novo-Granatensi pr. Carthagenam" and a Ruiz collection from Guayaquil, also in the Berlin herbarium, now destroyed. Pollen of P. H. Allen 1094 is preserved in the slide collection of the Harvard University herbarium.

In all, 63 herbarium specimens and 8 mounted photographs, including type material of most of the names involved, have been examined by me.

Citations: MEXICO: Vera Cruz: Houstoun s.n. [Herb. Linnaeus G. 801, S. 1] (Ls--type, N--photo of type, Z--photo of type). PANAMA: Herrera: P. H. Allen 1094 (G, N, N). COLOMBIA: Atlántico:

Dugand 501 (N), 3604 (W--1854152), 3611 (S); Elias 326 (W--1344826), 344 (W--1344843), 391 (W--1344889), 1037 (N), 1094 (N, N, W--1499779), s.n. [Barranquilla, XII.28] (Um--127); Kattán, Araque Molina, & Barkley 19At017 (N, N); F. W. Pennell 12064 (W--1143339). Bolívar: Araque Molina & Barkley 19Bo016 (N); Billberg 26 (Lu, N, S), s.n. [Carthagena, 1826] (S, S); Collector undesignated s.n. (S); Heriberto 161 (N, W--1036925); A. C. V. Schott 7 (C). Goajira: Cuatrecasas & Castañeda 25518 (Fg); Haught 4407 (N, N, W--1709346). Magdalena: Cuatrecasas & Castañeda 24879 (Z); Espina & Giacometto B.4a [Herb. Mus. Yale School Forest. 20986] (N, N, W--1484814); Haught 3810 (N, S), 3873 (N), 6726 (Hw); H. H. Smith 450 [Herb. Hort. Then. I.6254] (Br, Cm, N, N, S, Vt, W--532973). Santander: Araque Molina & Barkley 18S318 (N). Santander do Norte: Schlim 274 [Macbride photos 24657] (Br, Br, F--photo, Kr--photo, Kr--photo, N, N--photo, Si--photo, Z--photo). Department undetermined: Collector undesignated 199 (F--1337816); F. C. Lehmann 7914 [in Colombia et Ecuador collectae] (W--1323012). ECUADOR: Guayas: Asplund 7685 (S), 15879 (S). El Oro: Asplund 15733 (S), 15752 (S). PERU: Cajamarca: Sandeman 4131 (K). Department undetermined: Ruiz 4783 [Peruvia et Chili] (W--249771). LOCALITY OF COLLECTION UNDETERMINED: Collector undesignated 98 (Q); Herb. Bot. Mus. Lund s.n. [ex America meridionali] (Lu); Karsten s.n. [Diballa, Rio Hacha] (V).

LIPPIA AMERICANA f. *HYPTOIDES* (Benth.) Moldenke, *Phytologia* 4: 292. 1953.

Synonymy: *Lippia hyptoides* Benth., *Pl. Hartw.* 122. 1843.

Lippia guayaquilensis Turcz., *Bull. Soc. Nat. Mosc.* 36 (2): 202. 1863.

Bibliography: Benth., *Pl. Hartw.* 122. 1843; Turcz., *Bull. Soc. Nat. Mosc.* 36 (2): 202. 1863; Jacks. in Hook. f. & Jacks., *Ind. Kew.* 2: 95. 1894; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 34 & 95. 1942; Moldenke, *Phytologia* 2: 385. 1947; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 70 & 190. 1949; Moldenke, *Biol. Abstr.* 27: 3121. 1953; Moldenke, *Phytologia* 4: 267 & 292 (1953) and 5: 24. 1954; Moldenke, *Résumé* 80, 81, 84, 313, 460, & 461. 1959; Moldenke, *Résumé Suppl.* 1: 19 & 25. 1959.

This form differs from the typical form of the species in having its branches and branchlets rather densely hispid.

The plant is a shrub or subshrub, 2--3.1 m. tall, or a tree, erect; branches and branchlets pilose-hispid or hispid, the branches terete or obscurely tetragonal, with sparse and spreading white hispid hairs above; leaves decussate-opposite, ovate-lanceolate or ovate, 7.5--8.7 cm. long, firmly membranous, green on both surfaces, short-petiolate, acuminate at the apex, serrate-crenate along the margins, narrowed at the base, scabrous above with short white conic tubercles, some of which end in short white hairs, strigose on the venation beneath, otherwise glabrous

and smooth, "venulae tamen etiam minores pilis nonnullis hinc inde hirsutae", the upper leaves among the inflorescences smaller, gradually passing into small lanceolate bracts; flowering portion of the branches 6--12 inches long; peduncles 4--6 mm. long, often 3 in each leaf-axil, one-headed; spikes subglobose, short-pedunculate, whorled, aggregate in leafy inflorescences, 6 mm. in diameter, very densely imbricate, many-flowered; bractlets broadly obovate-cuneate, obtuse and puberulent at the apex; calyx conspicuously compressed, puberulent on the outside, long-ciliate with dense white and stiff distichous hairs on the keel, bilobed at the apex, the lobes carinate and acute; corolla white, half again as long as the calyx, the throat dilated, the upper lip abbreviated and emarginate, the lower twice as long and trifid; fruiting-calyx subcoherent with the 2-parted fruit; nutlets included by the dry pericarp, spontaneously splitting at maturity.

The type of this form was collected by Carl Theodor Hartweg (no. 686) in woods near Guayaquil, Guayas, Ecuador, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The type of L. guayaquilensis was gathered by William Jameson (no. 890) in the "cerrito" of Guayaquil in May of 1845. Turczaninow describes his plant as follows: "Lippia ramis obtuse tetragonis sparse pilosis; foliis oppositis ternisve lanceolatis, utrinque attenuatis acuminatis integerrimis aut sub apice serraturis 1--2 parum conspicuis munitis, supra punctulatis, subtus ad nervationes tantum pilosulis; capitulis axillaribus pedunculatis 4--6 globosis petiolum subaequantibus; bracteis trapezoides longitudine florum; calycibus dorso bicarinatis; carinis longe ciliatis; corollae tubo brevi calycem excedente; coccis maturitate secedentibus. Lippia asperrifoliae Rich. affinis; at folia vulgo majora integerrima aut vix serrulata."

The form has been collected in river valleys, at altitudes from sea-level to 2200 meters, flowering in March, May, and June, fruiting in May. Bentham says "Species pluribus notis L. lasiocalycinae Cha. et Schl. affinis." Weberbauer 6346 shows the leaves more deeply and closely toothed than usual.

Material has been misidentified and distributed in herbaria under the names L. americana L., L. alba (Mill.) N. E. Br., L. hemisphaerica Jacq., and Lantana sp. The subspecific epithet is sometimes uppercased.

In all, 9 herbarium specimens and 1 mounted photograph, including type or phototype material of all the names involved, have been examined by me.

Citations: ECUADOR: Guayas: N. J. Andersson 83 (N, S, S, S); Hartweg 686 (N--isotype); A. S. Hitchcock 20111 (N, W--1195152); Jameson 390 (W--1544549), 890 (Z--photo). PUNA ISLAND: Eggers 14739 (W--1322867). PERU: Piura: Ellenberg 1493 (Ut--115373b); Weberbauer 6013 (W--1497159), 6346 (W--1495459).

LIPPIA AMERICANA f. PILOSA Moldenke, Phytologia 4: 292. 1953.

Bibliography: Moldenke, Phytologia 4: 266, 267, & 292. 1953;

Moldenke, Biol. Abstr. 27: 3121. 1953; Moldenke, Résumé 67, 80, & 460. 1959.

This form differs from the typical form of the species in having its young branches conspicuously long-pilose, the hairs mostly appressed.

The plant is an erect herb, 1—1.6 m. tall, woody below, or a spreading shrub to 4 m. tall, with white, greenish-white, or cream-colored flowers.

The type of the form was collected by Ellsworth Paine Killip, Armando Dugand G., and Roberto Jaramillo Mejía (no. 38334) in a deep wooded canyon, at 380—600 meters altitude, Quebrada Cabaña, Hacienda El Cucharó, between Tocaima and Pubenza, Cundinamarca, Colombia, on May 8, 1944, and is deposited in the Britton Herbarium at the New York Botanical Garden.

Common names recorded for the plant are "belita" and "mano de Dios". Collectors often say "heads white" or "inflorescence white", but certainly are referring here only to the color of the corollas. Pittier refers to the flowers as "greenish-white", while Asplund describes them as "cream". The plant has been found in thickets, along trails, at the edge of woods, and in deep wooded canyons, at altitudes of 30 to 1075 meters, flowering in May, July, August, and November to January, fruiting in January, May, and November. Killip & Smith 14342 is conspicuously pilose!

Herbarium material has been misidentified and distributed in herbaria under the names *L. americana* L., *L. hemisphaerica* Jacq., and *L. hemispherica* Cham. In all, 15 herbarium specimens, including the type, have been examined by me.

Citations: COLOMBIA: Atlántico: Elias 873 (W--1543601). Bolívar: Killip & Smith 14238 (N, W--1350230), 14342 (N, W--1350336), 14518 (W--1350505). Cundinamarca: Killip, Dugand, & Jaramillo 38334 (N—type). Méta: F. R. Fosberg 19396 (W--2059691). Department undetermined: Heriberto 451 (W--1067132). VENEZUELA: Zulia: H. Pittier 10541 (N, Ve--10784, W--1187218). ECUADOR: Guayas: Asplund 7685 (W--1931119); Holway & Holway 807 (N); Schimpff 1124 (W--1619533).

LIPPIA ANGUSTIFOLIA Cham., Linnaea 7: 377. 1832 [not *L. angustifolia* Morong, 1904].

Synonymy: *Lippia graminifolia* Kuntze, Rev. Gen. Pl. 3 (2): 253, in textu. 1898. *Lippia angustifolia* Cham. & Schlecht. ex Moldenke, Alph. List Invalid Names Suppl. 1: 13, in syn. 1947. *Lippia angustifolia* H.B.K. ex Moldenke, Alph. List Invalid Names Suppl. 1: 13, in syn. 1947. *Riedelia angustifolia* Cham. ex Moldenke, Alph. List Invalid Names Suppl. 1: 19, in syn. 1947. *Lippia angustifolia* Schau. ex Moldenke, Résumé 310, in syn. 1959.

Bibliography: Cham., Linnaea 7: 377. 1832; Steud., Nom. Bot., ed. 2, 2: 54. 1840; Walp., Repert. Bot. Syst. 4: 44. 1845; Schau. in A. DC., Prodr. 11: 588. 1847; Schau. in Mart., Fl. Bras. 9: 242. 1851; Hiern, Vidensk. Meddel. Kjøbenh. 1877-1878: 99. 1877;

Morong, Britton, & Vail, Ann. N. Y. Acad. Sci. 7: 196. 1892; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Kuntze, Rev. Gen. Pl. 3 (2): 253. 1898; Briq. in Chod., Bull. Herb. Boiss., sér. 2, 2: 819. 1902; Briq. in Chod., Pl. Hassler. 1 (9): 198. 1902; Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 498. 1904; Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 314. 1904; Herter, Flórua 104. 1930; Moldenke, Lilloa 5: 419 & 424. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37, 41, 43, & 95. 1942; Moldenke, Alph. List Cit. 1: 170, 201, & 264. 1946; Augusto, Fl. Rio Grande do Sul 235. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 13 & 19. 1947; Moldenke, Lilloa 14: 40. 1948; Moldenke, Phytologia 2: 481. 1948; Moldenke, Alph. List Cit. 2: 444, 485, & 598 (1948), 3: 689, 751, 772, 846, 847, 856, 922, & 923 (1949), and 4: 1124, 1250, & 1257. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80, 99, 104, & 189. 1949; Moldenke, Phytologia 3: 376. 1950; Stellfeld, Trib. Farmac. 19 (10): 168. 1951; Angely, Fl. Paran. 7: 12. 1957; Moldenke, Résumé 93, 116, 125, 310, 343, & 460. 1959; Angely, Fl. Paran. 16: 59 (1960) and 17: 46. 1961; Troncoso, Bol. Soc. Argent. Bot. 9: 184. 1961; Troncoso, Darwiniana 12: 258, 259, 286, 287, & 289, fig. 15. 1961; Moldenke, Résumé Suppl. 8: 4. 1964.

Illustrations: Troncoso, Darwiniana 12: 286, fig. 15. 1961.

Shrub or subshrub, 1-2 m. tall; stems suffrutescent, lignescent below, slender, strict, virgate, angular, strigillose above, simple or racemose-branched at the apex; branches few; lower internodes elongate, slightly shorter than the subtending leaves; leaves decussate-opposite, sessile, the blades lanceolate, 5-6.3 cm. long and 8-10 mm. wide or larger and elongate to 10 cm., acute at the apex, serrate with a few acute spreading teeth toward the apex, cartilaginous and subrevolute along the margins, lineate above, sparsely strigillose on both surfaces with short often callose-based setae, the floral leaves shorter and linear-lanceolate; midrib stout, the laterals prominulous beneath or obsolete, rarely conspicuous; inflorescence leafless, terminal, long-pedunculate; peduncles slender or filiform, elongate; heads small, about 6 mm. wide, globose, a few at the apex of the stems or branches, dense, racemose, elongating in age to 12.5 mm.; bractlets ovate, cuspidate-acuminate at the apex, strigose-canescenscent on the back, closely imbricate, shorter than the corolla; flowers dioecious; calyx very small, bifid, villous; corolla yellow, infundibular, about 3 mm. long, pubescent outside toward the apex, the lowest lobe of the limb expanded, subcordate, and acuminate; fruit obcordate-subglobose, adhering for half its length to the diphyllous fruiting-calyx, easily splitting; cocci dark and subnitid on the back, the commissural surface oblique and whitish.

This species is based on several collections made by Friedrich Sellow "in montibus Serra da Lappa dictis ad praedia Baixis et Viardem", in Minas Gerais, Brazil, in September, and deposited in the herbarium of the Botanisches Museum at Berlin, now destroyed, but where one was photographed by Macbride as his photograph number 17495. Lippia angustifolia Cham. & Schlecht. is based on Du-

sén 2334 and L. angustifolia Schau. on Dusén 1236a, both from Paraná, Brazil, and deposited in the United States National Herbarium at Washington, but are mere misaccreditations; L. angustifolia H.B.K., another misaccreditation, is based on Dusén 11365 from a rather marshy campo at Desiro Ribas, Paraná, collected on February 17, 1911, and deposited at Stockholm. The name, L. angustifolia Morong, belongs in the synonymy of L. morongii Kuntze.

Lippia angustifolia has been found on campos, wet campos, and rather marshy campos, open moist banks and riverbanks, in swamps and shrubby marshes, dry grasslands, and almost marshy thickets, at 800 meters altitude, flowering from September to April. Schauer (1847) places it in his Section Zapania, Subsection Paniculatae. He cites Riedel s.n. and Lund s.n. from "in agro Sorocabensi, Decembri-Martio", São Paulo, and Sellow s.n. and Pohl s.n. from "ad fluvios Taboca et Paracatu" in Minas Gerais. Hiern (1877) also cites Lund s.n. from Sorocaba.

Troncoso (1961) places the species in her Subgenus Lippia, Section Lippia, Series Paniculatae. She reduces L. bothrioura Briq. to synonymy here and says "Establezco esta sinonimia basándome en el ejemplar Dusén 11365 del Brasil, determinado como L. angustifolia Cham. y que se halla en el Herbario de Kew. Un duplicado del mismo se encuentra en el Darwinion y coincide exactamente con la descripción de Chamisso. Especie dioica. Los ejemplares examinados, Hassler 7471 y Dusén 11365, son ♀, en cambio Rodriguez 129 posee pies ♂ et ♀. He podido así dibujar los dos sexos. Chamisso en la descripción de su especie, describe detalladamente los estambres, en cambio no ha visto fruto, lo que me hace pensar que su ejemplar era ♂. Lippia angustifolia pertenece junto con L. scaposa Briq. a la serie Paniculatae (Sch.) Briq. caracterizada por inflorescencias terminales en cabezuelas hemisféricas más o menos racimosas o cimosa racimosas." She cites: BRAZIL: Paraná: Dusén 11365 (K, Si). PARAGUAY: Hassler 7471 (Cb); T. Rojas 3627 (Si). ARGENTINA: Misiones: Burkart 14149 (Si); F. M. Rodriguez 129 (Si). I am, however, maintaining Briquet's taxon -- of which Hassler 7471 is the type collection -- as distinct, at least for the time being.

The Morong, Britton, & Vail, Ann. N. Y. Acad. Sci. 7: 196 (1892) reference cited in the bibliography above is sometimes cited by other workers as "Morong, Paraguay (1892) 196" or is dated "1893", and Briq. in Chod., Pl. Hassler. 1 (9): 198 (1902) is sometimes cited as "Plantae Hasslerianae IX (1902) 198."

Herbarium material of L. angustifolia has been misidentified and distributed in herbaria under the names L. hieraciifolia Cham., Lantana sp., and Verbena sp. On the other hand, the Morong 860, distributed as L. angustifolia, is actually L. morongii Kuntze.

In all, 43 herbarium specimens and 5 mounted photographs, including type material of all the names involved, have been exam-

ined by me.

Citations: BRAZIL: Minas Gerais: Mosén 970 (S, S); Regnell III.947 [Uberava, Nov. 29, 1848] (S, W--201129), III.947 [Caldas, Jan. 7, 1868] (N, S), 947b (S); Sellow s.n. [Brasília merid.; Macbride photos 17495] (Kr--photo of cotype, N--photo of cotype, N--photo of cotype, Vt--cotype); Widgren 1233 (Br), s.n. [1845] (N, S, W--1322884). Paraná: Dusén 1236a (N, W--1481652), 2434 [Herb. Rio de Jan. 14860] (N, S, W--1199428), 11365 (S); Hatschbach 661 [Rambo 36858] (N, Rb); G. Jönsson 1236a (S), 1333a (S). Rio Grande do Sul: Rambo 25780 (Rb). São Paulo: Riedel & Lund 2074 (N). State undetermined: Herb. Rio de Jan. 32216 (Ja). PARAGUAY: Fiebrig 4684 (Cb, Cb, N, N, N--photo, Z--photo); Hassler 9117 (V), 7971 (N, V--564); Pedersen 4325 (N, W--2283773). ARGENTINA: Corrientes: Ibarrola 3956 (N, S). Misiones: Ekman 2010 (Mi, N), 2011 (S), 2012 (N, S); Grüner 743 [Herb. Osten 23193] (Ug); Niederlein s.n. [Herb. Mus. Nac. Hist. Nat. Buenos Aires 23604] (Ra).

LIPPIA ANTAICA Loes. & Moldenke ex Moldenke, *Phytologia* 2: 19--20. 1941.

Synonymy: Lippia antaica Loes. ex Moldenke, *Suppl. List Invalid Names* 5, in syn. 1941.

Bibliography: *Moldenke, Phytologia* 2: 19--20. 1941; *Moldenke, Suppl. List Invalid Names* 5. 1941; *Moldenke, Known Geogr. Distrib. Verbenac.*, [ed. 1], 35, 80, & 95. 1942; *Moldenke, Alph. List Invalid Names* 29. 1942; *Moldenke, Alph. List Cit.* 1: 325 (1946) and 4: 1113. 1949; *Moldenke, Known Geogr. Distrib. Verbenac.*, [ed. 2], 73 & 189. 1949; *E. J. Salisb., Ind. Kew. Suppl.* 11: 138. 1953; *Moldenke, Résumé* 84, 310, & 460. 1959.

Shrub, to 1.2 m. tall; Branches slender, apparently strict and virgate, acutely tetragonal, brownish, appressed-puberulent throughout; principal internodes 2--3 cm. long; nodes not annulate; leaves decussate-opposite, small; petioles very slender, 1--2 mm. long or obsolete, densely short-pubescent; leaf-blades firmly chartaceous or subcoriaceous (when mature), flabelliform or subrotund, obovate when immature, to about 2 cm. long and wide when mature, with numerous smaller thinner and more obovate ones in their axils, rounded at the apex, subtruncate or truncate at the base (the immature and smaller ones acute or subcuneate at the base), regularly and uniformly crenate-serrate from the base to the apex with rounded teeth, the margins revolute, very scabrous and bullate above, puberulent on the venation, densely pubescent over the entire surface beneath; midrib, secondaries, and veinlet reticulation deeply impressed above, the larger parts prominent beneath; inflorescence axillary, a pair at each node, capitate; peduncles very slender, erect, 5--10 mm. long, densely appressed-puberulent with grayish hairs like the branches; heads densely many-flowered, about 8 mm. long and 10 mm. wide; bractlets ovate, 2.5--3 mm. long, subacute at the apex, densely short-pubescent;

corolla 4--5 mm. long, its limb about 3 mm. wide.

The type of this rare species was collected by August Weberbauer (no. 5918) below Limatambo, at an altitude of 2300--2400 meters, Cuzco, Peru, in June, 1911, and is deposited in the herbarium of the Chicago Natural History Museum.

The species has been collected at altitudes of 2100 to 2400 meters, flowering in April and June. In all, 2 herbarium specimens and 2 mounted photographs, including type material of both names involved, have been examined by me.

Citations: PERU: Cuzco: Vargas 9429 (N); Weberbauer 5918 (F--628843--type, N--photo of type, Z--photo of type).

LIPPIA ARECHAVALETAE Moldenke ex Herter, *Revist. Sudam. Bot.* 4: 185, nom. nud. (1937); Moldenke, *Lilloa* 5: 420. 1940.

Bibliography: Herter, *Revist. Sudam. Bot.* 4: 185 (1937) and 6: 97. 1939; Moldenke, *Lilloa* 5: 420. 1940; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 41 & 95. 1942; Herter, *Revist. Sudam. Bot.* 7: 225. 1943; Moldenke, *Lilloa* 10: 342 & 377. 1944; Moldenke, *Alph. List Cit.* 1: 12. 1946; Moldenke, *Phytologia* 2: 336. 1947; Moldenke, *Bol. Soc. Venez. Cienc. Nat.* 11: 46. 1947; H. N. & A. L. Moldenke, *Pl. Life* 2: 49. 1948; Moldenke, *Lilloa* 14: 40. 1948; Moldenke, *Alph. List Cit.* 2: 357, 448, 457, & 532 (1948), 3: 780, 875, 876, & 922 (1949), and 4: 1166. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 80, 100, & 189. 1949; Rosengurt, *Lilloa* 20: 137, 138, & 174. 1949; Stellfeld, *Trib. Farmac.* 19 (10): 168. 1951; Moldenke, *Phytologia* 4: 267. 1953; E. J. Salisb., *Ind. Kew. Suppl.* 11: 138. 1953; Angely, *Fl. Paran.* 7: 12. 1957; Moldenke, *Résumé* 93, 116, 119, & 460. 1959; Angely, *Fl. Paran.* 16: 59 (1960) and 17: 46. 1961; Troncoso, *Bol. Soc. Argent. Bot.* 9: 184. 1961; Moldenke, *Résumé Suppl.* 10: 4. 1964.

Perennial herb, woody at the base, or low subshrub; stems slender, densely puberulent with very minute appressed hairs and densely strigose with much longer appressed albidous hairs covering the lower puberulence; leaves decussate-opposite, sessile, numerous, the blades firmly chartaceous, rather thick and stiff, elliptic, 5.5--20 mm. long (or the lowest still more reduced), 2--8 mm. wide, acute at the apex, entire, often slightly subrevolute along the margins, obtuse or rounded at the base, rather sparsely strigillose and also puberulent above, more densely puberulent on the lamina beneath and strigose on the venation; secondaries numerous, subparallel, ascending, almost straight, impressed above; inflorescence axillary, abundant, solitary in each axil, decussate-opposite, erect, 1--3.5 cm. long, surpassing the subtending leaves; peduncles very slender, 0.6--2.6 cm. long, puberulent and strigose; bractlets densely glandular-pubescent; flowers dioecious; corolla yellow or golden-yellow to orange or "yellow and red".

The type of this distinctive species was collected by José Arechavaleta (no. 11) — in whose honor it was named — at Salto, Tacuarembó, Uruguay, in November and December, 1898, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin

Botaniques at Geneva. The species has been collected in rocky pastures, arroyos, and dry clearings, on rocky hills, between stones and shrubbery, and on campos, at altitudes of 500 to 1026 meters, flowering from September to February. Rosengurtt calls it "rare" at Paysandú and describes it as "subarbusto bajo, de lugares protegidos contra el ganado, como pedregales y bosques."

The flowers are described as "yellow and red" or "orange, yellow, and red" on Rosengurtt B.3921, "golden-yellow" on Herter 60165, and "yellow" on Berro 3007, 3008, 5786, & 7480, Hatschbach 3370, Herb. Osten 3756, and Smith & Klein 11485.

Herbarium material of this species has been misidentified and distributed in herbaria under the names L. pseudo-thea Schau. and Verbena arechavaletae Osten. A note on Osten 3255 reads "cf. L. intermedia Cham. sed flor. axillares".

In all, 27 herbarium specimens and 2 mounted photographs, including the type, have been examined by me.

Citations: BRAZIL: Paraná: Hatschbach 3370 (Z); Hertel 6 [Herb. Mus. Paran. 1960] (Mp). Santa Catarina: Smith & Klein 11485 (W-2249377); Smith, Reitz, & Sufridini 9278 (W-2249358). State undetermined: Sellow s.n. [Brasilia] (Vt). PARAGUAY: Fiebrig 6493 (W-1159378). URUGUAY: Arechavaleta 11 [Briquet 23] (Cb--type, Cb--isotype, N--isotype, N--photo of type, Ug--isotype, Ug--isotype, Ug--isotype, Z--photo of type), s.n. [Herb. Osten 3756] (Ug); Berro 3007 (N), 3008 (N), 5786 (N), 7480 (N), 7481 (N); Chebataroff s.n. [San Javier, Jan. 1939] (Ug--4697); Collector undesignated s.n. [Arenales de San Javier, near the Rio Uruguay, Feb. 1940] (Ug--5866); Herter 60165 (N); Osten 3255 (Ug); Rosengurtt B.3252 (N), B.3921 (N, N, Si). ARGENTINA: Entre Ríos: Herb. Herter 4481 (N).

LIPPIA ARECHAVALETAE var. MICROPHYLLA Moldenke, Lloydia 13: 223. 1950.

Bibliography: Moldenke, Lloydia 13: 223. 1950; Moldenke, Phytologia 3: 376. 1950; Moldenke, Résumé 93 & 461. 1959.

This variety differs from the typical form of the species in having its leaves uniformly smaller, oblong-elliptic, 6--13 mm. long, 2.5--7 mm. wide, imbricate, entire, and very slightly sub-revolute along the margins.

The type of the variety was collected by Padre Balduino Rambo (no. 2751) in dry thickets at Morro dos Bois near São Leopoldo, Rio Grande do Sul, Brazil, on September 9, 1936, and is deposited in the herbarium of the Colegio Anchieta at Porto Alegre, Brazil. Thus far the taxon is known only from the type collection. In all, 2 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: BRAZIL: Rio Grande do Sul: Rambo 2751 (E--photo of type, F--photo of type, N--isotype, N--photo of type, Rb--type, Z--photo of type).

LIPPIA ASPERRIMA Cham., Linnaea 7: 215--217. 1832.

Synonymy: Lippia asperima var. asperima Moldenke, Résumé 310, in syn. 1959.

Bibliography: Cham., Linnaea 7: 215--217. 1832; Steud., Nom. Bot., ed. 2, 2: 54. 1840; D. Dietr., Syn. Pl. 3: 597. 1843; Walp., Repert. Bot. Syst. 4: 45. 1845; Schau. in A. DC., Prodr. 11: 581. 1847; Morren, Belg. Hort. 1: 154. 1851; Schau. in Mart., Fl. Bras. 9: 232. 1851; Hiern, Vidensk. Meddel. Kjøbenh. 1877-1878: 98. 1877; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 311 & 313. 1904; Briq. in Chod. & Hassler, Bull. Herb. Boiss., sér. 2, 4: 1157. 1904; Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 493. 1904; T. Herzog, Meded. Rijksherb. Leiden 29: 44. 1916; Gallinal, Bergalli, Campal, Aragone, & Rosengurt, Stud. Nat. Mead. Urug. 81. 1938; Moldenke, Lilloa 5: 420--421. 1940; Ragonese, Darwiniana 5: 413. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37, 40, 41, 43, & 95. 1942; Herter, Revist. Sudam. Bot. 7: 225. 1943; Rosengurt, Estud. Prad. Nat. Urug. 3: 235. 1943; Moldenke, Lilloa 10: 342 (1944) and 12: 148. 1946; Moldenke, Alph. List Cit. 1: 12, 27, 39, 51, 95, 201, 263, & 264. 1946; Moldenke, Phytologia 2: 385 & 386 (1947) and 2: 481. 1948; Moldenke, Lilloa 14: 40--41, 43, 44, & 48. 1948; Moldenke, Alph. List Cit. 2: 376, 381, 384, 440, 441, 444, 458, 585, 587, 598--600, 627, & 628 (1948), 3: 705, 732, 733, 745, 781, 857, 875, 910, 911, 913, & 967 (1949), and 4: 1088, 1089, 1091, 1165, 1237, 1256, 1257, & 1302. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80, 97, 99, 100, 104, & 189. 1949; Rosengurt, Lilloa 20: 132, 137, & 174. 1949; Moldenke, Phytologia 3: 290. 1950; Stellfeld, Trib. Farmac. 19 (10): 168. 1951; Moldenke, Inform. Mold. Set 49 Spec. 2. 1954; Moldenke, Phytologia 5: 96. 1954; Angely, Fl. Paran. 7: 12. 1957; Moldenke, Résumé 93, 114, 116, 119, 125, 310, & 461. 1959; Angely, Fl. Paran. 16: 59 (1960) and 17: 46. 1961; Troncoso, Darwiniana 12: 259. 1961.

Perennial glutinous herb, often rough, creeping and suffrutescent, or bush, subshrub, or shrub, 0.3--1 m. tall, with a woody xylopodium; roots woody, thick; stems herbaceous above, erect, fastigiate, subtetragonal, glandular-hirtellous and viscid, the hairs short, patent, rather rigid, and glanduliferous; principal internodes subequaling or shorter than the leaves; leaves decussate-opposite, rather rigid, green, subsessile, oblong-lanceolate, 2.5--7.5 cm. long, 1.2--2.5 or more cm. wide, acute at the apex, coarsely crenate-serrate with obtuse teeth, impressed-penninerved, strigose and very rough above and on the larger veins beneath, often sticky, the larger venation prominent beneath, impressed above; peduncles filiform, axillary, shorter than the subtending leaves; heads subglobose, involucre, 8--10 mm. wide, convex during anthesis, many-flowered, ovoid in fruit; bractlets ovate, acuminate at the apex, loosely imbricate, half equaling the head in involucre fashion at the base, subequaling the corolla-tube, strigose; calyx very short-pubescent; corolla hypocrateriform, varying from yellow, clear-yellow, or yellow-orange, to rosy-yellow, orange, or "yellow and red", the tube villosulous at the apex, the limb vil-

losulous on the back, very finely glistening hairy above, unequally 4-fid, the lobes short, truncate-obtuse, the throat villosulous; fruit hidden among the equally long bractlets, pubescent, easily splitting into often unequal nutlets.

The type of this common species was collected by Friedrich Sellow "e Brasilia tropica" and was deposited in the herbarium of the Botanisches Museum at Berlin, now destroyed. Schauer (1847) places the species in his Section Zapania, Subsection Axilliflorae. It has been collected in fields, grassy or brushy places, low wet ground or wet places, light woods, pastures, grassy clearings, cultivated soil, and dry barren scrubland, at the edge of woods, and on rocky and grassy slopes, campos and dry grassy campos, dry plains, and steppes, at altitudes of 216 to 1500 meters, flowering from August to March. Morel describes it as a "rare plant" in Formosa, but Jørgensen tells us that it is extremely common or "abundant" on the campos at Villa Rica and at Las Palmas. Rosengurtt calls it "rare" in fields at Paysandú. He also describes it (1943) as "Hierba hemicriptófito, florece a fines de primavera y en verano. Habita campos vírgenes poco pastoreados, prefiriendo los lugares abonados, alrededor de cuevas de animales salvajes, nidos, dormitorios, etc. Es escasa." He found it to be frequent on rocky and grassy slopes at Arroyo Tres Arboles. In his 1949 work he says of it "campestre escasa, principalmente en pedregales!"

A. G. Schulz says about his no. 8689: "flor amarilla, luego anaranjada y finalmente rojiza. Hay muchas flores sin caliz; otras con un solo sépalo y otras las más escasas, con 2 sépalos libres" and "bosquecillos ralos en suelo arcilloso, duro; flor amarillo; luego anaranjado y rojizo; caliz de sépalos libres, muchos flores sin caliz." For his no. 8692 he says: "Flores amarillas; pasada la antesis son anaranjadas y luego rojizas" and "bosquecillos ralos; suelo arcilloso-calcares; flor amarillo, luego anaranjado y rojizo; caliz grande, entero." Venturi 2432 has the leaves extra long and narrow.

For horticulturists, interested in color variants, the following are the corolla colors as given by various collectors: "clear-yellow" — Hassler 2403; "rosy-yellow" — A. G. Schulz 2916; "orange" — Hassler 6348; "yellow-orange" — Anisits 2252; "yellow and red" — Venturi 2432; and "yellow" — R. M. Aguilar 468, Berro 1968, Burkart 4149, Herb. Osten 12177 & 20647, W. Hoehne 2662, Ibarrola 1300, 3233, & 4348, Job 1643, Jørgensen 2631 & 3775, Kuntze s.n. [Jujuy, Oct. 1892], Malme s.n. [Las Palmasco, 20/3/1903], T. Meyer 3452, Moldenke & Moldenke 19747, Osorio s.n. [Valle Eden, Feb. 18, 1947] & s.n. [Cerro Tobatinga, Feb. 24, 1947], Osten 6565, 7198, 9179, & 9180, Rambo 3040, Rosengurtt B.3002, Schreiter 5062 & s.n. [Muffecas, Nov. 15, 1917], C. L. Schulz 1010, Sparre 1238, Terribile 381, Venturi 7359, and J. West 6285.

The Ragonese, Darwiniana 5: 413 (1941) reference in the bibliography above is sometimes cited as "Ragonese, Santa Fe (1941) 412"; T. Herzog, Meded. Rijksherb. Leiden 29: 44 (1916) is sometimes ci-

ted as "Herzog, Bolivia III (1916) 44"; and Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 493 (1904) is often cited as "Plantae Hasslerianae XI (1904) 493". The label on D'Orbigny 1146 was originally inscribed "Peru", but this was later crossed out.

Briquet (1904) compares his L. trachyphylla with the present species as follows: "Espèce très caractérisée, voisine du L. asperrima Cham. dont elle diffère par ses feuilles ovées et pétio-lées, ses tiges rampantes diffusément rameuses, ses pédoncules plus courts, a indument strigoso-appliqué à glandes stipitées très courtes et localisées sous les capitules, ses corolles d'un rose-violace (jaunes dans le L. asperrima) etc."

Herbarium material of L. asperrima has been misidentified and distributed in herbaria under the names L. asperifolia Rich., "L. aff. asperrima Cham.", L. imbricata Kuntze, L. recolletae Morong, L. reptans Kunth, L. turnerifolia Cham., L. turnerifolia Cham. & Schlecht., L. turnerifolia var. camporum Griseb., and even Mimosa bimucronata var. hexandra (the last-mentioned probably a case of label-crossing). On the other hand, Venturi 531, 1375, & 7359, distributed as L. asperrima, are L. contermina Briq.; Herb. Osten 18188, Herb. Mus. Argent. Cient. Nat. 16278, D. Rodriguez 409, T. Rojas 2541, and Rosengurt B.3383 are L. morongii Kuntze; and Herb. Inst. Bot. S. Paulo 23346 and F. C. Hoehne s.n. [Villa Velha, Ponta Grossa, Nov. 3, 1928] are L. pumila Cham.

Schauer (1851) cites Riedel s.n. and Sellow s.n. from "In prov. S. Pauli et Matto Grosso pascuis humilis e. gr. pr. Camapuan, Novembri." Ragonese (1941) cites his no. 2630 and no. 4470 from Santa Fé, Argentina, while Rosengurtt (1949) cites his B.3383 -- the last-mentioned, however, is actually L. morongii. Troncoso (1961) cites Hassler 7456 as this species, even though Briquet (1904) had regarded it as a cotype of his L. phaeocephala, which Troncoso maintains that it is not.

In all, 151 herbarium specimens and 2 mounted photographs of L. asperrima have been examined by me.

Citations: BRAZIL: Paraná: Jönsson 35a (S). Rio Grande do Sul: Bornmüller 206 (C, Cb, V--6631); Osorio s.n. [Cerro Tobatinga, Feb. 24, 1947] (Ug--14141); Rambo 3040 (Rb); Swallen 7687 (W--1933118). São Paulo: W. Hoehne 2662 (Bh, N). BOLIVIA: Cochabamba: M. Cárdenas 5292 (W--2250812). Santa Cruz: Steinbach 2712 (N, Ra--33057). Province undetermined: D'Orbigny 1146 [Herb. Reichenb. f. 127452] (N). PARAGUAY: Anisits 1925 (S), 2252 (S); Fiebrig 4777 (Cb); Hassler 6348 (Ca--944337, N, S), 9312 (N, N--photo, V, Z--photo), 11590 (Ca--930254, Go, N, S, W--1056991); Jørgensen 3775 [Herb. Osten 22239] (Du--197835, N, S, Ug, W--1483630), s.n. [Herb. Mus. Argent. Cienc. Nat. 28/2067] (N); Kuntze s.n. [Std Paraguay, IX. 92] (N); Osten 9178 (Ug), 9179 (S), 9180 [Herb. Osten 9012] (S), 9182 (Ug); T. Rojas 12967 (N, Ur), s.n. [San Bernardino; Hassler

2403; Herb. Hicken 21; Herb. Osten 7539] (Ug). URUGUAY: Arechavaleta 14 (Cb), 15 (Ug), 16 (Cb, Ug), 17 (Cb, Cb, Ug, Ug); H. H. Bartlett 21030 (W--2320218); Berro 1968 (N); Gallinal, Aragone, Bergalli, Campal, & Rosengurt 1953 (W--1742785); Legrand 2007 (Ug), 2011 (Ug), 2569 (Ug); Osorio s.n. [Valle Eden, Feb. 18, 1947] (Ug--13839); Osten 3321 (Ug), 6565 (Ug); Rosengurt B.2356 (N), B.3002 (N); Rosengurt & Gallinal 5730 (Sp--54241); Schröder s.n. [Santa Isabel; Herb. Osten 16592] (Ug). ARGENTINA: Chaco: R. M. Aguilar 468 (N); Jørgensen 2631, in part [Herb. Inst. Miguel Lillo 32173; Herb. Osten 11918] (N, Ug); Malme s.n. [Las Palmas, 20/3/1903] (S); T. Meyer 2674 (N); A. G. Schulz 1497 (N), 2916 (N), 8689 (Cb, Hk), 8692 (Cb, Hk); C. L. Schulz 1010 (N); Venturi 36 (W--1043610). Corrientes: Ibarrola 1300 (S), 3217 (N), 3233 (N), 3883 (N), 4348 (N, S). Entre Ríos: Burkart 4149 [Herb. Osten 22468] (Ug). Formosa: Jørgensen 2631, in part [Herb. Osten 13679] (Ug); I. Morel 96 (N), 559 (N, S), 785 (N), 834 (N), 1137 (N), 1288 (N, Vi). Jujuy: E. K. Balls B.5931 (Ca--683618); Kuntze s.n. [Jujuy, Oct. 1892] (N, W--701569); Moldenke & Moldenke 18748 (N); J. West 6285 (Ca--561723). Misiones: Bertoni 1491 (Ca); Ekman 1997 (N, S), 2013 (S); Grüner 701 [Herb. Osten 23168] (Ug); Montes 225 (S), 1088 (N, Ur); G. J. Schwarz 783 (Ca); Vattuone & Bianchi L.28 (W--1043492). Salta: Job 1543 (N); T. Meyer 3452 [Herb. Inst. Miguel Lillo 35569] (En, N); Moldenke & Moldenke 19747 (Es, Lg, N, Sm); O'Donell 4648 (N); Pierotti 219 (N), 1131 (Ca); A. Ringuelet 115 (N); J. T. Roig 15427 (Es); Schreiter 5062 [Herb. Osten 20647] (Ug), s.n. [Cerro San Lorenzo, Oct. 18, 1925; Herb. Mus. Argent. Cienc. Nat. 26/1342] (N); A. G. Schulz 6575 (Z); Sparre 1176 (S), 1238 (S); Wall & Sparre s.n. [4/12/46] (Ew), s.n. [5/12/46] (Ew, Ew, Ew). Santa Fé: Castellanos s.n. [Herb. Mus. Argent. Cienc. Nat. 19614] (N); Feddersen s.n. [Aurelia, near S. Fé] (Cp); Job 801 (N); Kuntze s.n. [Ceres, X.92] (N); Ruiz Leal 14245 (Rl); Terribile 381 (N), 422 (N). Tucumán: Barkley & García 128 (N); Moldenke & Moldenke 19716 (N), 19755 (Es, Es, Lg, N); Monetti 1138 [Herb. Inst. Miguel Lillo 32176] (N); Ruiz Leal 12157 (Rl); Schreiter s.n. [Muñecas, Nov. 15, 1917] (Ug), s.n. [Muñecas, Dec. 16, 1923; Herb. Inst. Miguel Lillo 37994] (N, Ug--4944); Venturi 2432 [Herb. Osten 17235] (Ug, W--1591257, W--1591258), 2627 (Ra--24/129, W--1591261), 3614 (W--1591277); Wall & Sparre s.n. [20/11/46] (Ew), s.n. [24/11/46] (Ew).

LIPPIA ASPERRIMA var. *LONGIPEDUNCULATA* Moldenke, *Lilloa* 5: 421. 1940.

Bibliography: Kuntze, *Rev. Gen. Pl.* 3 (2): 252. 1898; Thiselt-Dyer, *Ind. Kew. Suppl.* 2: 106. 1904; Moldenke, *Lilloa* 5: 421 & 423 (1940) and 8: 424. 1942; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 1], 40, 41, 43, & 95. 1942; Herter, *Revist. Sudam. Bot.* 7: 225.

1943; Rosengurtt, *Estud. Prad. Nat. Urug.* 3: 235. 1943; Moldenke, *Lilloa* 10: 378. 1944; Moldenke, *Holmbergia* 4: 150. 1945; Moldenke, *Alph. List Cit.* 1: 12, 96, 218, & 219. 1946; Moldenke, *Alph. List Invalid Names* 13. 1947; Moldenke, *Phytologia* 2: 386. 1947; Moldenke, *Lilloa* 14: 43. 1948; Moldenke, *Alph. List Cit.* 2: 629 (1948), 3: 689, 693, 859, 874--876, & 913 (1949), and 4: 1165 & 1166. 1949; Moldenke, *Phytologia* 3: 74. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 80, 97, 99, 100, 104, & 190. 1949; Rosengurtt, *Lilloa* 20: 131, 137, & 174. 1949; Moldenke, *Résumé* 93, 114, 116, 119, 125, 310, & 461. 1959; Moldenke, *Résumé* 10: 3--5. 1964.

This variety differs from the typical form of the species in that its peduncles far exceed the leaves during anthesis, being 4.5--11.5 cm. in length. The plant is an herb, 5--20 cm. tall; branchlets and peduncles finely glandular-puberulent, strigose with white appressed hairs; leaf-blades cuneiform, 1.1--4 cm. long, 0.8--1.8 cm. wide, acute at the apex, cuneate at the base, coarsely serrate with large triangular and acute teeth from the middle to the apex, strigose with white appressed hairs on the upper surface; corolla yellow, yellow with red spots, or orange.

The type of this variety was collected by José Arechavaleta (no. 12) at Salto, Uruguay, in September, 1898, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva.

The bibliography of this taxon is inextricably mixed with that of *L. imbricata* Kuntze, with which this plant was for a long time confused. Recent examination of Kuntze's type, however, deposited in the Britton Herbarium at the New York Botanical Garden and collected by Carl Ernst Otto Kuntze on March 20, 1892, at Parotani, Bolivia, at an altitude of 2400 meters, and photographed by Macbride as his type photograph no. 17516, has convinced me that it is conspecific with the widespread *Lantana achyranthifolia* Desf.

On the other hand, the specimens cited as *Lippia imbricata* in *Lilloa* 5: 423 (1940), 10: 378 (1944), and 20: 174 (1949), and *Holmbergia* 4: 150 (1945), and in my *Alph. List Cit.* [see bibliography, above] -- with the exception of the Kuntze collection -- are either *Lippia asperrima* var. *longipedunculata* Moldenke or *L. villafloridana* Kuntze. The *Herb. Inst. S. Paulo* 54241 and *Rosengurtt & Gallinal* 5730, distributed and cited as *L. imbricata*, are typical *L. asperrima* Cham. The *Arechavaleta* 15, distributed and cited by me in my *Alph. List Cit.* 1: 12 (1946), is actually *L. morongii* Kuntze. The *Castellanos* s.n. [Florida, 2.XI.1946; *Herb. Inst. Miguel Lillo* 15773], s.n. [Artigas, 30.I.1948; *Herb. Inst. Miguel Lillo* 15764], & s.n. [Santa Ana do Livramento, 24.II.1947; *Herb. Inst. Miguel Lillo* 15763], *Gallinal*, *Aragone*, *Bergalli*, *Campal*, & *Rosengurtt* PE.5171, *Legrand* 3489, and *Rosengurtt* B.4581, distributed and cited by me as *L. imbricata*, are all *L. villafloridana*.

The variety has been found on dry rocky sunny campos, in spiny

woods and grassy meadows, in fields, and adventive especially along roadsides, at altitudes of 60--80 meters, flowering in April, September, and November to January, fruiting in November and December. Rosengurtt says of it "campestre, frecuente en pedregales", "frecuente en los campos, sobre las márgenes del Río Uruguay", "en los campos rocosos", "sobre las lomas arenosas cubiertas de pasto a lo largo del Río Yi", "común en prados matas cryptófitas", and "frecuente en laderas". Schulz says for his no. 1499 "planta abundante; pelos no glandulosos; terrenos arcilloso-halófilos, duros y secos." The corolla is described as "orange" on A. G. Schulz 1499, as "yellow with red spots" on Rosengurtt B.2254, and as "yellow" on Anisits 1876, Rodrigo 604, and Rosengurtt B.4210.

The Rosengurtt, Estud. Prad. Nat. Urug. 3: 235 (1943), cited in the bibliography above, is sometimes cited as "Rosengurtt, Flora de Palleros (1943) 235."

Herbarium material has been misidentified and distributed in herbaria under the names L. imbricata Kuntze, L. turnerifolia Cham., and "Phyla nodiflora var." On the other hand, Arechavaleta 15, distributed as L. asperrima var. longipedunculata, is actually L. morongii Kuntze.

In all, 17 herbarium specimens, including the type, and 2 mounted photographs have been examined by me.

Citations: PARAGUAY: Anisits 1876 (S). URUGUAY: Arechavaleta 12 (Cb--type, Cb--isotype, N--isotype, N--photo of isotype, N--photo of type, Ug--isotype, Ug--isotype); Gallinal, Aragone, Bergalli, Campal, & Rosengurtt 1616 (N); Herb. Mus. Hist. Nat. Montev. 5607 (Ug), 5608 (Ug); Herter 2033a [Herb. Herter 50765] (S); Rosengurtt B.2180 (N, N), B.2254 (N), B.4210 (N). ARGENTINA: Chaco: T. Meyer 113 [Herb. Osten 22703] (Ug); A. G. Schulz 1499 (N). Corrientes: A. P. Rodrigo 604 (N).

LIPPIA ASPERRIMA var. ROTUNDATA Moldenke, Phytologia 1: 466--467. 1940.

Bibliography: Moldenke, Phytologia 1: 466--467 (1940) and 1: 504. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 95. 1942; Moldenke, Alph. List Cit. 2: 368 & 552. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 189. 1949; Moldenke, Phytologia 3: 287 & 290. 1950; Stellfeld, Trib. Farmac. 19 (10): 168. 1951; Angely, Fl. Paran. 7: 12. 1957; Moldenke, Résumé 93, 125, & 461. 1959; Angely, Fl. Paran. 16: 60 (1960) and 17: 46. 1961.

This variety differs from the typical form of the species in having its leaf-blades obtuse or rounded at the apex. It is a perennial herb; petioles 1--4 mm. long, margined; leaf-blades elliptic, 1.8--3.7 cm. long, 1.2--2.4 cm. wide, regularly serrate almost to the base with blunt teeth, acute at the base and prolonged into the short petiole; venation decidedly impressed above, only the midrib and secondaries slightly prominulous beneath;

peduncles 3--3.5 cm. long. The branchlets are densely glandular-pubescent with short dark hairs and are also copiously hirsute with white spreading hairs twice as long, less densely so in age. The hairs on the upper surface of the leaves apparently become bulbous-based in age, first along the margins of the leaves, but finally over the whole lamina, but the upper leaf-surface is scabrous at all times.

The type of this variety was collected by Frederico Carlos Hoehne at Ponta Grossa, Paraná, Brazil, on November 1, 1928, and is deposited in the herbarium of the Instituto Botanico at São Paulo, Brazil. The plant has been found in rocky places, flowering in October and November.

In all, 3 herbarium specimens, including the type, and 2 mounted photographs have been examined by me.

Citations: BRAZIL: Paraná: F. C. Hoehne s.n. [Ponta Grossa, Nov. 1, 1928] (N--isotype, N--photo of type, Sp--23268--type, Z--photo of type). ARGENTINA: Misiones: Grtner 935 [Herb. Osten 23174] (Ug).

LIPPIA BALANSAE Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 305--306. 1904.

Synonymy: Lippia calliclada Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 306--307. 1904. Lantana jorgenseni Moldenke, Lilloa 5: 412--413. 1940. Lippia jorgenseni Moldenke, Suppl. List Invalid Names 5, in syn. 1941.

Bibliography: Briq., Ann. Conserv. & Jard. Bot. Genève. 7-8: 305--307. 1904; Briq. in Chod. & Hassler, Pl. Hassler. 2 (10): 490. 1904; Prain, Ind. Kew. Suppl. 3: 104. 1908; Moldenke, Lilloa 5: 412--413. 1940; Moldenke, Suppl. List Invalid Names 5. 1941; Moldenke, Alph. List Invalid Names 31. 1942; Moldenke, Lilloa 8: 423. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 40, 41, 94, & 95. 1942; Moldenke, Alph. List Cit. 1: 26 & 27. 1946; Moldenke, Lilloa 14: 41. 1948; H. N. & A. L. Moldenke, Pl. Life 2: 49 & 66. 1948; Moldenke, Alph. List Cit. 2: 440 & 600 (1948), 3: 692 (1949), and 4: 1237. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 99, 188, & 189. 1949; E. J. Salisb., Ind. Kew. Suppl. 11: 132. 1953; Moldenke, Résumé 116, 305, 313, & 461. 1959; Troncoso, Darwiniana 12: 258, 259, & 269, pl. 2. 1961; Moldenke, Résumé Suppl. 5: 5 & 7 (1962) and 8: 2. 1964.

Illustrations: Troncoso, Darwiniana 12: 269, pl. 2. 1961.

Small tree, slender medium-sized shrub, or bush, 1--4 m. tall; stems very aromatic; branches ascending, tetragonal or hexagonal, loosely pubescent throughout with somewhat crisped hairs; branchlets slender, sordid-green, tetragonal or hexagonal, ascending, virgate, shortly pilosulous with somewhat crisped hairs to puberulent or short-pubescent, especially when young, the pubescence longer and denser at the nodes; middle internodes 2--4 cm. long; leaves medium-sized, fragrant or very aromatic, with the odor of witch-hazel (Hamamelis) when crushed, decussate-opposite or ternate, subsessile or short-petiolate; petioles slender, 2--5.8 mm. long, rather densely short-pubescent with crisped hairs; leaf-

blades rather thick and heavy, firm-textured or subcoriaceous, sordid-green above, paler beneath, broadly ovate to elliptic or lanceolate, sometimes narrow-elliptic, 1--4 cm. long, 0.4--2.5 cm. wide, evenly convex along the margins but more so below the middle, acute or subacute to rather obtuse at the apex, densely serrate or crenulate to serrulate-crenulate from almost the base to the apex with regular small rounded teeth (the teeth 0.5--1 mm. long and 0.2--1 mm. apart), acuminate or broadly rounded-coarctate as well as 3-plinerved and entire at the base, often cuneately narrowed into the petiole, short-pilose and very scabrous or appressed-pubescent above and more or less bullate (when mature), scattered-pilose or rather densely and loosely short-pubescent to densely velutinous-pubescent and densely resinous-punctate beneath; midrib, secondaries, and veinlet reticulation impressed above, prominent beneath; inflorescence axillary, capitate, more or less racemosely grouped toward the apex of the branches; peduncles very slender, 0.8--3 cm. long, subequaling or slightly surpassing the subtending leaves, tetragonal, short-pubescent with antrorse or somewhat crisped hairs or sparsely puberulent, varying to glabrescent, sometimes sparsely glandulose, 6--8 per node; heads small, subspheric, about the size of a large pea (Pisum sativum), 5--6 mm. long, 6--8 mm. wide, many-flowered, conspicuously white-villous among the bractlets; bractlets small, lanceolate or ovate-elongate to ovate-acuminate, 2--4 mm. long, acute or subacute at the apex, lightly or densely short-pubescent with brownish hairs on the outer surface, glabrescent on the inner surface, the lower ones scarcely surpassing the flowers, the rest somewhat shorter than the flowers; flowers fragrant; calyx minute, campanulate, about 1 mm. long, 2-lipped, the lips entire or obscurely lobulate, exalate, antrorsely pubescent on the outer surface; corolla hypocrateriform, pale-yellow to rose, pale-rose, or pinkish-rose, small, surpassing the calyx by only 2--2.5 mm., its tube exerted, puberulent or pubescent above, the limb unequally 4-lobed, the posterior lobe longer, 0.7--0.8 mm. long, the rest scarcely 0.5 mm. long; stamens and pistil included, normal for the genus; nutlets small, ovate, 1--2 mm. long, hard, glabrous.

The type of this distinctive species was collected by Benedict Balansa (no. 1033) -- in whose honor it was named -- at Pâturages d'Itangu, near Villa Rica, Paraguay, on February 17, 1876, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva, where Macbride photographed it as his type photograph number 24645. The type of L. calliclada is Balansa 1033a from Caaguazu, Paraguay, collected on November 6, 1874, and also deposited in the Delessert Herbarium. The type of Lantana jorgenseni was collected by Pedro Jørgensen Hansen (no. 3778) -- in whose honor it was named -- at Villa Rica, Paraguay, in October, 1930, and is deposited in the Britton Herbarium at the New York Botanical Garden.

Jørgensen describes the plant as very common; Archer notes that "this plant could easily serve as basis of extraction of an essen-

tial oil". It has been collected in anthesis in October and from December to February. The flowers are described as "rose" on Archer 4826 and Hassler 6735, as "pinkish-rose" on Balansa 1033, and as "pale-yellow, pale-rose, or pink" on Jørgensen 3778.

Briquet (1904) describes the venation of the leaves of his L. balansae as "nervo medio pennato, omnibus reticulum connexis, rete valido paginam superiorem rugante et fodiente, subtus valde prominulo" and the fruit as "mericarpio parva dura, cum calicis extus adpresse prorsus pubescentis laciniis secedentis" and says of it "Cette espèce se place tout près du L. rubiginosa Schauer...dont elle se distingue facilement par ses feuilles (ternées) plus grandes, largement ovées, très scabres (et non strigoso-pubescentes) en dessus, à nervation très réticulée-rugueuse mais assez différente par la disposition des nervures latérales, par ses pédoncules égalant ou dépassant un peu les feuilles (et non pas notablement plus courts), ses bractées densément pubescentes extérieurement (et non pas à peine pubérulentes-glanduleuses et ciliées sur les marges)."

Of his L. calliclada he says: "Le L. calliclada est fort voisin du L. Balansae. Nous aurions été tenté d'y voir une variété remarquable, si l'absence de formes intermédiaires ne s'opposait, au moins dans l'état actuel de nos connaissances, à cette réduction. Le L. calliclada s'écarte du L. Balansae par ses feuilles étroitement elliptiques, cunéiformes et plus nettement pétiolées à la base, non scabres à la face supérieure. Les feuilles supérieures plus réduites, dépassées par les pédoncules rassemblés en une sorte de grappe lui donnent aussi un aspect un peu différent. L'apparence général des L. Balansae et calliclada repellent plutôt celle des Lantana que des Lippia, mais les caractères du fruit ne laissent aucun doute sur leurs vraies affinités." He describes its leaf-venation as "nervo medio pennato, omnibus $\pm$ reticulescens sed laminam parum rugantibus" and the fruit as "cum calice fisso extus pilis longis prorsus versis vel patulis oblecta secedentia."

Troncoso (1961) says "Especie muy característica por sus hojas generalmente ternadas y capítulos pequeños, subesféricos, pedunculados en número de 2--3 por axila. He visto un isotipo en el Herb. de Paris pero no me fue posible dibujarlo. Reproduzco el fototipo del Chicago Nat. Mus. No. 2645. L. calliclada Briq., según su autor es una especie muy afín a L. balansae. Considero que se trata de la misma especie. Los caracteres que da Briquet para diferenciarla, forma y tamaño de las hojas y capítulos a veces en racimos terminales, son muy vagos y difíciles de delimitar, más bien se tratan de variaciones dentro de la especie."

The Briq. in Chod. & Hassler, Pl. Hassler. 2 (10): 490 (1904) reference cited above is sometimes cited as "Plantae Hassleranae I (1904) 490" or as "Briq., Plant. Hassler. 2: 490."

Herbarium material of this taxon has been misidentified and distributed in herbaria under the name L. germinata H.B.K. On the other hand, the Jørgensen 2471 and Herb. Osten 11876, distributed

as L. balansae, are actually L. alba (Mill.) N. E. Br.

Troncoso (1961) cites the following specimens, not as yet seen by me, from Paraguay: Balansa 1033 (P--isotype); Hassler 6735 (Cb, P), 8653 (Bm, Cb, P), 12484 ("BAF", Bm, Cb); Jørgensen 3778 (P, Si); T. Rojas 4826 (Si), 4893 (Si), 9211 (Si).

In all, 24 herbarium specimens and 3 mounted photographs, including type or phototype material of most of the names involved, have been examined by me.

Citations: BRAZIL: Minas Gerais: Heringer 3835 (Z). PARAGUAY: Archer 4679 (W--1705498), 4826 (W--1705562); Balansa 1033 [Macbride photos 24645] (It--photo of type, Kr--photo of type, N--photo of type); Hassler 4608 (N), 6735 (Ca--944338, N, N, S, V--260), 8653 (Ca--929819, N, N, V--1209), 12484 (Ca--929699, N, W--1057388); Jørgensen 3778 [Herb. Osten 22236] (Du--197832, It, N, N, S, Ug, W--1483813), s.n. [Villarica; Herb. Mus. Argent. Cienc. Nat. 28/2070] (N).

LIPPIA BAUMII Gürke in Warb., Kunene-Sambesi Exped. 350. 1903.

Synonymy: Lippia asperifolia Hochst. ex Moldenke, Alph. List Invalid Names Suppl. 1: 13, in syn. 1947 [not L. asperifolia Benth., 1947, nor H.B.K., 1863, nor Poepp., 1832, nor Reichenb., 1828, nor A. Rich., 1801, nor L. C. Rich., 1959].

Bibliography: Gürke in Warb., Kunene-Sambesi Exped. 350. 1903; Prain, Ind. Kew. Suppl. 3: 104. 1908; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 51 & 95. 1942; Moldenke, Phytologia 2: 340 & 341. 1947; Moldenke, Alph. List Invalid Names 13. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 50. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 117--119, 121, & 189. 1949; Moldenke, Alph. List Cit. 4: 996 & 1173. 1949; Moldenke, Résumé 144, 146, 147, 152, 310, & 461. 1959.

Shrub, to 0.5 m. tall; stems erect, hirtous-pubescent; branches elongate, divaricate; leaves decussate-opposite, sessile, lanceolate, to 6 cm. long and 2 cm. wide (the upper ones considerably smaller), rather obtuse at the apex, serrate along the margins, strigose-hirsute on both surfaces with rather long appressed hairs, canescent beneath; inflorescence axillary in the upper leaf-axils, extraordinarily long-pedunculate; peduncles very slender, to 11 cm. long, solitary, often twice as long as the subtending leaves, hirtellous-pubescent; bractlets closely imbricate, sessile, strigose-hirsute with appressed hairs, canescent, the lowermost ovate-lanceolate, to 12 mm. long and 5 mm. wide, acuminate at the apex, decreasing in size and especially in width toward the apex of the heads, the uppermost lanceolate or lanceolate-linear, 3--5 mm. long and 1 mm. wide, acute at the apex; calyx 1.5 mm. long, 2-parted almost to the base, not alate, the lobes broadly ovate, acute at the apex, strigose-hirsute on the outer surface; corolla yellow, its tube 5 mm. long, 3--4 times longer than the calyx.

The type of this species was collected by H. Baum (no. 515) -- in whose honor it was named -- in sandy soil at 1200 meters alti-

tude between Ungombekike on the Rubango and Kuito, in Southwest Africa, on December 9, 1899, and was deposited in the herbarium of the Botanisches Museum at Berlin, now destroyed. The name, L. asperifolia Hochst., appears to be based on Baum 250, also from Southwest Africa, deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. The L. asperifolia of H.B.K., of Poeppig, and of A. Richard are synonyms of L. alba (Mill.) N. E. Br., that of Benth and of Reichenbach are Phyla scaberrima (A. L. Juss.) Moldenke, and that of L. C. Richard is Lippia javanica (Burm. f.) Spreng.

Gürke (1903) says of this plant: "Die Art gehört zur Unterattung Zapania (Scop.) Benth. § Euzapania Briq., Gruppe der Axilliflorae (Schauer) Briq. Sie ist verwandt mit der weit verbreiteten Lippia asperifolia Rich., obwohl sie habituell gar keine Ähnlichkeit mit ihr hat. Die neue Art hat einen auffallend sparrigen Wuchs mit weit abstehenden Zweigen, grauweiße Behaarung und sehr lang gestielte Köpfchen; auch beträgt die Länge des Kelches nur 1/3 derjenigen der Blumenkronenröhre."

The species has been collected at altitudes of 1200 to 2185 meters, flowering in October and December, fruiting in October. Herbarium material has been misidentified and distributed in herbaria under the names L. asperifolia A. Rich. and L. wilmsii H. H. W. Pearson.

In all, 4 herbarium specimens and 5 mounted photographs, including type material of both names involved, have been examined by me.

Citations: TANGANYIKA: Haarer 2263 (Br). KENYA: Thorold 2733 (Br). SOUTHWEST AFRICA: Baum 250 (Br), 515 (Br—istype, F—photo of isotype, N—photo of isotype, N—photo of isotype, Si—photo of isotype, Z—photo of isotype).

LIPPIA BELLATULA Moldenke, Résumé Suppl. 10: 3 & 5 (1964), Phytologia 10: 170. 1964.

Synonymy: Lippia bicolor Mart. & Schau. ex Schau. in A. DC., Prodr. 11: 587. 1847 [not L. bicolor Kunth & Bouché, 1845, nor Kunth, 1942]. Lippia bicolor Mart. ex Moldenke, Résumé Suppl. 10: 5, in syn. 1964.

Bibliography: Kunth & Bouché, Ind. Sem. Hort. Berol. 1845: 10. 1845; Schau. in A. DC., Prodr. 11: 587. 1847; Schau. in Mart., Fl. Bras. 9: 240. 1851; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 95 (1942) and [ed. 2], 80 & 189. 1949; Moldenke, Alph. List Cit. 3: 691 & 711. 1949; Moldenke, Résumé 93 & 461. 1959; Moldenke, Résumé Suppl. 10: 3 & 5. 1964; Moldenke, Phytologia 10: 170. 1964.

Shrub, to 1 m. tall; stems squarrose, branched; branchlets subtetragonal, hirtous; leaves small, varying from decussate-opposite or more or less approximate to ternate, sessile, variable in size and shape, ovate or subrotund to subreniform, 4--8 mm. long, 3--6

mm. wide, rigid, patulous, acute at the apex, crenate along the margins, strigose-hispidulous above and along the revolute margins, hirtous-tomentose and somewhat canescent beneath; inflorescence axillary; heads subsessile, solitary, 5- or 6-flowered, exerted, about 4 aggregate at the apex of the branchlets, conglomerate, subinvolucrate; bractlets herbaceous, rigid, ovate, subacuminate at the apex, loosely imbricate, hispidulous, about half as long as the corolla-tube; calyx hardly more than 1 mm. long, bifid, hirsute, the lobes somewhat bidentate; corolla rose, yellow in the throat, pubescent on the outer surface, its tube straight, cylindric, about 4 mm. long, subventricose at the middle, the limb somewhat larger, the lobes rotund; fruit medium in size, subglobose, dark, obscured by the mature calyx; cocci subequal, separating with difficulty.

The type of this rare species was collected by Carl Friedrich Philipp von Martius (no. 1983) in fields at Villa do Rio de Contas, Bahia, Brazil, and is deposited in the herbarium of the Botanisches Museum at Munich, where it was photographed by Macbride as his type photograph number 20322. The L. bicolor of Kunth & Bouché and of Kunth are synonyms of L. callicarpaefolia H.B.K.

Schauer places our plant in his Section Zapania, Subsection Axilliflorae. It has been collected in anthesis in October and is known thus far only from the type collection, of which 3 mounted photographs have been examined by me.

Citations: BRAZIL: Bahia: Martius 1983 [Macbride photos 20322] (It--photo of type, Kr--photo of type, N--photo of type).

LIPPIA BOCAINIENSIS Glaz., Bull. Soc. Bot. France 58, Mém. 3: 541, hyponym, 1911.

Bibliography: Glaz., Bull. Soc. Bot. France 58, Mém. 3: 541. 1911; Prain, Ind. Kew. Suppl. 5: 153. 1921; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 95 (1942) and [ed. 2], 80 & 189. 1949; Moldenke, Alph. List Cit. 4: 1300. 1949; Moldenke, Résumé 93 & 461. 1959.

Nothing is known to me of this supposed species except what little is said about it in the original publication, where it is recorded as "L. bocainiensis Glaz., n. sp.?" and the type is stated to be Glaziou 11340 from "Campos da Bocaina, au Sobrado, S. Paulo", Brazil. It is described merely as "Frutescent, fl. lilas. Août-septembre. C", with specimens deposited in the herbaria at Paris, Berlin, Kew, Copenhagen, and elsewhere, the Paris one probably to be regarded as the actual type; the Berlin one is now destroyed.

LIPPIA BOLIVIANA Rusby, Mem. Torrey Bot. Club 4: 243--244. 1895.

Bibliography: H. H. Rusby, Mem. Torrey Bot. Club 4: 243--244. 1895; Durand & Jacks., Ind. Kew. Suppl. 1: 250. 1903; Briq., Ann. Conserv. & Jard. Bot. Genev. 7-8: 305. 1904; H. H. Rusby, Bull. N. Y. Bot. Gard. 4: 432. 1907; Hayek in Engl., Bot. Jahrb. 42: 166. 1908; Moldenke, Lilloa 5: 422. 1940; F. L. Herrera, Sinop. Fl. Cuzco 1: 351. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed.

1], 40 & 95. 1942; Moldenke, *Lilloa* 10: 378 (1944) and 12: 148. 1946; Moldenke, *Alph. List Cit.* 1: 28, 92, & 201. 1946; Moldenke, *Phytologia* 2: 386. 1947; Moldenke, *Lilloa* 14: 41. 1948; Moldenke, *Alph. List Cit.* 2: 370 (1948), 3: 735 (1949), and 4: 1073, 1075, 1079, & 1293. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 97, 104, & 189. 1949; H. N. & A. L. Moldenke, *Anal. Inst. Biol. Mex.* 20: 9. 1949; Moldenke, *Résumé* 114, 125, & 461. 1959; A. Maria, *Pl. Vall. Coch.* 38. 1962; Moldenke, *Résumé Suppl.* 3: 13. 1962.

Bush or shrub, 0.3—1.8 m. tall, loose and spreading in growth; stems upright, stiff; branches clothed with slender exfoliating strips of bark, brown, terete; branchlets very numerous and slender, erect, 18—25 cm. long, purplish, obscurely tetragonal; internodes 1 to nearly 2 cm. long, very minutely scabrate; leaves decussate-opposite, thick and rigid, aromatic, narrowly oblanceolate, 1.5—2.5 cm. long, 3—7 mm. wide, rounded and retuse at the apex, obscurely serrate toward the apex with blunt thick and rigid teeth, revolute-margined, cuneate at the base and subpetiolate, rugose and papillose above, purple-reticulate beneath; peduncles axillary, solitary, very slender, 4—10 mm. long, papillose; heads small, flattened, about 4 mm. long, 5—13 mm. wide; bractlets closely appressed, oval-obovate, strongly concave, acute at the apex, ciliate; calyx ovoid, nearly 2 mm. long, bifid, densely hispid, the teeth minutely notched; corolla hypocrateriform or infundibular, white to whitish to yellowish-white or pink-white, about 4 mm. long, pubescent, the limb 4-lobed, the upper lobe deeply cleft, the lower obovate, longer than broad; ovary oval, about as long as the style, both together about 2 mm. long, the stigma lateral, not so large as in *Lantana achyranthifolia* Desf.; mature fruit not seen.

The type of this species was collected by Miguel Bang (no. 979) in the vicinity of Cochabamba, Cochabamba, Bolivia, in 1891, and is deposited in the Columbia University herbarium at the New York Botanical Garden. The original publication is cited at the Instituto Miguel Lillo as "Rusby, Bolivia Memoirs IV (1895) 243" and Dr. Rusby's 1907 publication as "Rusby, Bolivia (1907) 432." The specific name is often upercased.

The plant has been found in rocky soil, stony soil among cacti, dry bush country, and exposed declivities in the mountains, on hills and hillsides, bare stony open hillsides, and rocky slopes, and among bushes on rocky slopes, at altitudes of 2385 to 3000 meters, flowering from January to March and in June and July. Common names recorded for it are "cedron de monte" and "cedronsillo". Maria (1962) says of it: "De constitución leñosa, alta de 1 a 1,8 mts. de hojas lanceoladas diminutas, atrae la atención y se presenta agradable a la vista por su penacho de flores blancas diminutas. Es bastante común en las laderas del Tunari y Alalay" and cites his no. 175/3a.

Herbarium material has been misidentified and distributed under the names *L. suffruticosa* (Griseb.) Hieron. and *Aloisia* sp. On the other hand, the Ruiz Leal & Roig 18894, distributed as *L. bo-*

liviana, is actually the very closely related L. integrifolia (Griseb.) Hieron. of Argentina.

The flowers are described as "pink-white" on R. E. Fries 1222, as "yellowish-white to white" on Eyerdam 24885, and as "white" on Balls 6296, Cárdenas 746, 2378, & 2476, Kuntze s.n., and T. Meyer 4547.

In all, 28 herbarium specimens, including the type, have been examined by me.

Citations: PERU: Cuzco: F. L. Herrera 1534 (W--1342313). BOLIVIA: Cochabamba: Asplund 4166 (S, Us); Balls 6296 (W--1777834); M. Bang 979 (C--type, Pa--isotype); M. Cárdenas 746 (W--1743896), 2378 (W--1877083), 2476 (W--1877089); Eyerdam 24885 (Ca--658374, Ew); Kuntze s.n. [Rio Tapacari, 19 Maerz 1892] (N); A. Maria 175 (Z); Troll 1391 (B). Potosí: Fiebrig 3111 [Herb. Osten 15223] (S, Sp, Sp--33504, Ug, W--1178002). Tarija: R. E. Fries 1222 (S, S). Province undetermined: M. Bang 2531 (C, Pa, W--1322890); Kuntze s.n. [Parotani, 20 Maerz 1892] (N). ARGENTINA: Salta: T. Meyer 4547 (Ca--906130, N). San Juan: H. H. Bartlett 20558 (Ca--772500).

LIPPIA BOTHRIOURA Briq., Bull. Herb. Boiss., sér. 2, 4: 1162. 1904.

Bibliography: Briq., Bull. Herb. Boiss., sér. 2, 4: 1162. 1904; Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 498. 1904; Prain, Ind. Kew. Suppl. 3: 104. 1908; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 41 & 95. 1942; Moldenke, Lilloa 8: 423 (1942) and 10: 378. 1944; Moldenke, Alph. List Cit. 1: 264. 1946; Moldenke, Phytologia 2: 337. 1947; Moldenke, Lilloa 14: 41. 1948; Moldenke, Alph. List Cit. 2: 458 (1948) and 3: 692 & 911. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 99, 100, & 139. 1949; Moldenke, Résumé 116, 119, & 461. 1959; Troncoso, Darwiniana 12: 259 & 287. 1961.

Tall herb or subshrub, 0.5--2 m. tall; stems erect, robust, obtusely tetragonal, green, branched; branches erect or ascending, antrorsely strigose, rather close below, densely canescent above; principal internodes regularly 4--12 cm. long; leaves decussate-opposite, sessile or subsessile, green, rather rigid, elliptic-lanceolate, to 7 cm. long and 1.5 cm. wide, acute or short-acuminate at the apex, somewhat convex along the margins and often somewhat revolute, entire or rather coarsely serrate toward the middle with teeth to 1.5 mm. high, entire and cuneate-attenuate at the base, antrorsely strigose or substrigose-roughened; midrib and secondaries plainly visible, somewhat reticulate, prominent beneath and often somewhat impressed above; inflorescence terminal, thyrsoid-paniculate; peduncles obsolete or to 2 cm. long, axillary in the axils of reduced leaves, canescent, broader after anthesis and minutely villosulous, beautifully foveolate with rhombic areoles; heads small, thick, at first ovoid-subglobose, later more elongate, to 10 mm. long and 2 mm. wide, thickening after anthesis; bracts or bract-like leaves lanceolate, more or less can-

escent, shorter than the peduncles; bractlets canescent on the outer surface, the lower ones scarcely equaling the flowers, ovate, acuminate at the apex, the inner ones much narrower; calyx very small, campanulate, about 0.5 mm. long during anthesis, obscurely 2-lipped, repandly 4-denticulate, pubescent toward the apex on the outer surface; corolla hypocrateriform, yellow, pubescent above, exserted 2--2.5 mm. from the calyx mouth, its tube cylindric at the base, somewhat ampliate toward the apex, the lobes small, ovate-rotund, the anterior one slightly larger, about 0.5 mm. long; stamens and pistil normal for the genus, included; cocci minute, 0.6 mm. long and 0.5 mm. wide, dehiscent with the canescent mature calyx segments, smooth, excavated on the inner surface.

The type of this species was collected by Emil Hassler (no. 7471) in a swamp in the region of the upper Río Apa, in northern Paraguay, in November, between 1885 and 1902, and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva, where it was photographed by Macbride as his type photograph no. 24646.

Briquet (1904) describes the leaf venation as follows: "nervo medio et nervis lateralibus acroscopis [=macroscopis?] parum reticuloescentibus subtus prominulis, paginem superiorem saepe aliquod fodiens" and also says "Cette remarquable espèce appartient à la section Euzapania groupe Paniculatae; son inflorescence à nombreux capitules disposées en thyse la rapproche des L. vernonioides Cham., L. oxycnemis Schauer et L. herbacea Mart. Les deux premiers s'écartent immédiatement par leurs capitules strobilacés et le dernier par les capitules tétragones-ovoïdes, outre de nombreux autres caractères. Dans le L. bothrioura, les capitules s'allongent un certain temps par le sommet, mais leur forme générale ne change pas, car les fleurs et fruits tombent à la partie inférieure, au fur et à mesure qu'il se développe de nouveaux boutons au sommet. Les organes tombés laissent à nu un axe régulièrement creusé de fossettes losangiques (d'où le nom spécifique bothrioura), plus volumineux que le pédoncule, d'un aspect fort élégant."

The Briq. in Chod. & Hassler, Pl. Hassler. 2 (11): 498 (1904) reference listed above is cited at the Instituto Miguel Lillo as "Plantae Hasslerianae XI (1904) 498."

The species has been found growing in swamps and on the banks of rivers, flowering from November to January. The Schröder collection cited below probably represents this taxon, but it possesses no leaves and exhibits 1--3 peduncles per leaf-axil and sometimes a branchlet there, too.

Troncoso (1961) reduces the species to synonymy under L. angustifolia Cham., but it seems sufficiently distinct to me. In all, 5 herbarium specimens, including type material, and 3 mounted photographs have been examined by me.

Citations: PARAGUAY: Hassler 7471 [Macbride photos 24646] (Ca--944340--isotype, It--photo of type, Kr--photo of type, N--isotype,

N--photo of type, S--isotype). URUGUAY: Berro 4757 (N); Schröder s.n. [San Gregorio, Jan. 1926; Herb. Osten 19436] (Ug).

LIPPIA BRACTEATA Carr., Rev. Hortic. 53: 380. 1881 [not L. bracteata Clausen, 1947].

Synonymy: Lippia bracteata Hort. ex Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894.

Bibliography: Carr., Rev. Hortic. 53: 380 & 478. 1881; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 73 & 95 (1942) and [ed. 2], 162 & 189. 1949; Moldenke, Résumé 220 & 461. 1959; Moldenke, Résumé Suppl. 10: 4 & 5. 1964.

Nothing is known to me of this taxon except what is stated in the original description: "Plante très-vigoureuse, fortement villeuse, laineuse sur toutes ses parties herbacées. Rameaux quadrangulaires. Feuilles opposées-décussées, grandes, longuement ovales-acuminées, épaisses, scabres, fortement réticulées en dessus, à face inférieure tomenteuse par des poils argentés laineux. Inflorescence capitiforme rappelant celle des Lantana, subsphérique, au sommet d'un pédoncule d'environ 5 centimètres de longueur; bractées nombreuses, papyracées, accrescentes, sessiles et élargies à la base, d'un rose vineux ou violacé. Fleurs axillaires petites, longuement tubuleuses, à tube blanc terminé par quatre divisions étalées, très-petites, ovales arrondies, d'un rouge brique ou fauve. Cultivée avec soin et soumise à des pincements appropriés, cette espèce pourrait devenir une belle plante d'ornament pour les serres d'abord, puis pour les jardines, où, mise en plein terre pendant l'été, elle fleurirait continuellement. Serre chaude, serre tempérée ou orangerie, suivent qu'on tient à avoir des fleurs pendant l'hiver."

The article in which this description appears is not signed, but the editor-in-chief of the journal in which it appears was at that time Elie Abel Carrière, so it seems likely that the name should be accredited to him. The L. bracteata of Clausen is a synonym of L. lupulina Cham.

LIPPIA BRACTEOSA (Mart. & Gal.) Moldenke, Phytologia 2: 226. 1947.

Synonymy: Lantana bracteosa Mart. & Gal., Bull. Acad. Roy. Brux., sér. 1, 11 (2): 326. 1844. Lippia nutans Robinson & Greenm., Am. Journ. Sci. 150 [ser. 3, 50]: 162. 1895. Lippia bracteosa Mart. & Gal. ex P. C. Standl., Contrib. U. S. Nat. Herb. 23: 1246, in syn., sphalm. 1924. Lippia nutans Bob Greenm. ex Moldenke, Résumé Suppl. 10: 6, in syn. 1964.

Bibliography: Mart. & Gal., Bull. Acad. Roy. Brux., sér. 1, 11 (2): 326. 1844; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 28. 1894; Robinson & Greenm., Am. Journ. Sci. 150 [ser. 3, 50]: 162. 1895; Durant & Jacks., Ind. Kew. Suppl. 1: 250. 1903; P. C. Standl., Contrib. U. S. Nat. Herb. 23: 1244 & 1246. 1924; Moldenke, Prelim. Alph. List Invalid Names 30. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 17 & 96. 1942; Moldenke, Phytologia 2: 226 &

330. 1947; Moldenke, *Alph. List Invalid Names* 11, 13, & 15. 1947; Moldenke, *Alph. List Cit.* 2: 393 & 473 (1948), 3: 829, 830, 834, 835, & 872 (1949), and 4: 1211 & 1294. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 31 & 189. 1949; E. J. Salisb., *Ind. Kew. Suppl.* 11: 138. 1953; Moldenke, *Résumé* 36, 303, 311, 316, & 461. 1959; Moldenke, *Résumé Suppl.* 10: 6. 1964.

Shrub, 0.8--1.8 m. tall, unarmed; stems grayish, glabrate; branchlets pale-brown, angulate, sparingly puberulent or tomentose-villous; leaves decussate-opposite, subsessile or short-petiolate; petioles to 4 mm. long, canaliculate and hispid-pubescent above; leaf-blades thickish, ovate-oblong or ovate, about 2.5 cm. long and 1.7 cm. wide, acutish at the apex, cuneate at the base, serrate along the margins, rugose or strongly rugose-warty, hispidulous and slightly shiny above, paler and rather densely pubescent or canescent-villous beneath; peduncles slender, about 1.8 cm. long, subequaling the subtending leaves, opposite in the upper leaf-axils, commonly recurved or nodding, pubescent; heads globose or hemispheric, about 2.5 cm. wide; bractlets foliaceous, large, thin, pale, subchartaceous or scarious, 8--12 mm. long, 4--6 mm. wide, obtuse at the apex, reticulate, glandular-pubescent on both surfaces, ciliate, the lowest ovate, the upper more elliptic; flowers short-pedicellate, about 7 mm. long; calyx densely pubescent; corolla yellowish, shorter than the bractlets.

The type of this distinctive species was collected by Henri Guillaume Galeotti (no. 761) on calcareous mountains at Tehuacan de las Granadas, at 6500 feet altitude, in the Cordillera of Oaxaca, Mexico, in August, 1840, and is deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. The type of *L. nutans* was gathered by Cyrus Guernsey Pringle (no. 5650) in Las Hoyas Canyon, at 4500 feet altitude, Oaxaca, Mexico, in November, 1894, and is probably deposited in the Gray Herbarium of Harvard University.

Martens & Galeotti (1844) make this comment: "Species nostra bracteis magnis imbricatis quae cum bracteis coni Humuli lupuli *L.* similitudinem quamdam gerunt a caeteris speciebus facile distinguitur."

The species has been collected in dry bushwoods and on the dry slopes on canyons, at altitudes of 1000 to 2665 meters, flowering and fruiting in February, July to September, and November. *Purpus* 10146 and 10380 could have been collected either in Chiapas or in Jalisco -- the labels carry both state names. In my 1940 and 1942 publications I regarded *Lantana bracteosa* as synonymous with *Lippia callicarpaefolia*, but this was in error. Herbarium material has been misidentified and distributed in herbaria as *L. callicarpaefolia* H.B.K. and *L. cardiostegia* Benth.

In all, 27 herbarium specimens and 4 mounted photographs, including type material of all the names involved, have been examined by me.

Citations: MEXICO: Chiapas: *M. C. Carlson* 1648 (Mi); *Purpus* 10146 (Ca--278031, S). Jalisco: *Purpus* 10380 (N, Po--146421).

Oaxaca: C. Conzatti 1564 (Me), 4248 (Me); Galeotti 761 (Br--type, F--photo of type, N--photo of type, Si--photo of type, Z--photo of type); Pringle 5650 (Me, Me, Vt), 6175 (Br, C, Ca--104913, Cm, Io--38727, Me, Me, Me, Mi, Mm--15408, S, Vt); Rose & Rose 11368 (N). Puebla: Purpus 2570 (Ca--139667, N), 3926 (Ca--139666).

LIPPIA BRADEI Moldenke, Phytologia 3: 61--62. 1949.

Bibliography: Moldenke, Phytologia 3: 61--62 & 74. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 189. 1949; E. J. Salisb., Ind. Kew. Suppl. 11: 138. 1953; Moldenke, Résumé 93 & 461. 1959.

Shrub; branchlets slender, obtusely tetragonal, densely short-pubescent with erect glandular-capitate hairs, the brownish bark splitting irregularly into longitudinal fissures; nodes rather obscurely annulate; principal internodes 1--2.5 cm. long; leaves decussate-opposite; petioles very slender, about 3 mm. long, densely short-pubescent with erect glandular-capitate hairs; leaf-blades coriaceous, suborbicular, 7--11 mm. long, 6--12 mm. wide, regularly undulate-repand and slightly subrevolute along the margins, rather densely short-pubescent on both surfaces with capitate hairs but the glandular tips soon wearing off; midrib very slender, impressed above, prominent beneath; secondaries very slender, 3 or 4 per side, ascending, impressed above, prominent beneath, terminating in the sinuses of the marginal undulations; veinlet reticulation limited to a few more or less parallel tertiaries which connect the secondaries at right angles, subimpressed above, prominulous beneath; inflorescence axillary, capitate, 2 per node, surpassing the subtending leaves, widely divergent in fruit; peduncles slender, 1--1.5 cm. long in anthesis, elongate to 4 cm. in fruit, densely glandular-pubescent like the branchlets; heads hemispheric, 1--1.5 cm. wide, densely many-flowered; bractlets large, elliptic, about 5 mm. long and 1.5 mm. wide, densely glandular-pubescent, subacute at the apex; corolla lilac, its tube about 4 mm. long, densely glandular-puberulent on the outer surface, its limb about 3 mm. wide.

The type of this distinct species was collected by Friedrich Markgraf, Henrique Lahmeyer de Mello Barreto, and Alexandre Curt Brade (no. 3369) on rock of Algonquian age at Montes Claros, Serra do Calixto, Minas Gerais, Brazil, on November 11, 1938, and is deposited in the Britton Herbarium at the New York Botanical Garden. The species is named in honor of Dr. Brade, distinguished botanist, respected colleague and friend, for many years with the Jardim Botânico at Rio de Janeiro. It is known to me thus far only from the type collection, and only the type specimen and 4 mounted phototypes have been examined by me.

Citations: BRAZIL: Minas Gerais: Markgraf, Mello Barreto, & Brade 3369 [Herb. Jard. Bot. Rio Jan. 40069] (F--photo of type, N--type, N--photo of type, Sg--photo of type, Z--photo of type).

LIPPIA BURTONII J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 281. 1900.

Bibliography: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 281. 1900; K. Schum. in Just, Bot. Jahresber. 28 (1): 496. 1902; Thiselt.-Dyer, Ind. Kew. Suppl. 2: 106. 1904; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 49 & 95. 1942; H. N. & A. L. Moldenke, Pl. Life 2: 52. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 115 & 189. 1949; Moldenke, Phytologia 3: 292 & 293. 1950; Moldenke, Résumé 142, 148, 426, & 461. 1959; Moldenke, Résumé Suppl. 1: 9. 1959.

Undershrub; branchlets woody, slender, slightly bristly; leaves sessile, ternate, oblong, crenate along the margins, rugose like those of L. javanica, scabrous above, densely pubescent and with raised veins beneath; heads many from a single node, very short-pedunculate, globose, about 8 mm. in diameter; bractlets ovate, 3--4 mm. long, acuminate at the apex, very hairy; corollas not longer than the bractlets.

The type of this species was collected by Sir Richard Francis Burton -- in whose honor it was named -- at Mondanda in the Republic of Congo Leopoldville in September, 1863, and is deposited in the herbarium of the Royal Botanic Gardens at Kew. The species has been found growing on waste farmlands, flowering in March and September, fruiting in March. Deschamps says of it: "plante annuelle, hauteur 40 cm., feuillage vert clair, fleurs mauves en inflorescence, Usage: sert dans les maladies des yeux." Quarré 1370 is placed here tentatively.

Herbarium material has been misidentified and distributed in herbaria under the names L. asperifolia Rich., L. ukambensis Vatke, and Lantana salvifolia Jacq. On the other hand, the Peter 2229, distributed as L. burtonii, and 42873 as "Lippia n. sp. aff. L. burtonii", are both L. javanica (Burm. f.) Spreng.

Baker (1900) separates the 8 tropical African species of this genus known to him more or less as follows:

1. Bractlets orbicular, obtuse.
 2. Peduncles very short.....L. oatesii Rolfe.
 - 2a. Peduncles long.....L. radula J. G. Baker.
 - 1a. Bractlets cuspidate.
 3. Leaves small.
 4. Leaves orbicular or obovate.....L. somalensis Vatke.
 - 4a. Leaves oblong, rugose....L. javanica (Burm. f.) Spreng.
 - 1b. Bractlets acuminate.
 5. Leaves opposite.....L. ukambensis Vatke.
 - 5a.....L. burtonii J. G. Baker.
 - 1c. Bractlets acute.....L. plicata J. G. Baker.

In all, 6 herbarium specimens, including the type, and 9 mounted photographs have been examined by me.

Citations: NIGERIA: Dalziel 696 (F--photo, K, N, N--photo, Sg--photo, Si--photo, Z--photo). CONGO LEOPOLDVILLE: R. F. Burton s. n. [Sept. 1863] (F--photo of type, K--type, N--photo of type, Sg--photo of type, Z--photo of type); L. Deschamps 45 (Br); Quarré 1370 (Br). TANGANYIKA: Peter 51781 [O.I.65] (B).

LIPPIA CAFFRA Sond., Linnaea 23: 88. 1850.

Bibliography: Sond., Linnaea 23: 88. 1850; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 52 & 95 (1942) and [ed. 2], 122 & 189. 1949; Moldenke, Résumé 153 & 461. 1959.

Suffruticose herb or shrub, 6 inches tall, with the general habit and foliage of Lantana rugosa Thunb., but differing in pubescence, the hairs subvillous and spreading; stems terete or obsoletely tetragonal; branches and branchlets terete, villous-pubescent; leaves decussate-opposite, petiolate; petioles 6 mm. long; leaf-blades oblong-ovate, acute at the apex, obtuse at the base, coarsely dentate along the margins, softly hirsute-pubescent, subincanous beneath, the larger ones 2.5 cm. long and 1.4 cm. wide; peduncles axillary, solitary, subequaling the leaves, very villous; flowering heads subglobose; bractlets herbaceous, ovate, acuminate at the apex, pubescent, the outer ones involucrate and 6 mm. long, the inner ones 2 mm. long and somewhat shorter than the corollas; calyx about 1 mm. long, very hirsute, much shorter than the corolla-tube; corolla 4 mm. long, pubescent on the outer surface, the limb short, somewhat 2-lipped, the upper lip subemarginate, the lower lip 3-fid.

The type of this little-known species was collected by Carl Ludwig Philipp Zeyher along the Aapjes River, Transvaal, in the Republic of South Africa. It is known to me only from the original description.

LIPPIA CALLENSI Moldenke, Phytologia 3: 378, nom. nud. (1950);

Am. Journ. Bot. 38: 326--327. 1951.

Bibliography: Moldenke, Phytologia 3: 378. 1950; Moldenke, Am. Journ. Bot. 38: 326--327. 1951; G. Taylor, Ind. Kew. Suppl. 12: 82. 1959; Moldenke, Résumé 142 & 461. 1959.

Herb; stems apparently simple, rather stout, obtusely tetragonal, deeply 4-sulcate, very conspicuously 4-costate, especially below, very densely brownish-pubescent; nodes annulate; principal internodes elongate, 6--18 cm. long; leaves decussate-opposite, remote, sessile, firmly thick-chartaceous, lanceolate-elliptic, 6--13 cm. long, 1--3 cm. wide, obtuse or subacute at the apex, crenate along the margins from the base to the apex with low, rounded, divergent teeth, attenuate-acute at the base, very short-ly pubescent or puberulent above, more densely short-pubescent on the venation beneath and pilosulous on the lamina, decidedly roughened above when mature; midrib slender, flat or subprominulous in a slight channel above, prominent beneath; secondaries very slender, numerous, close, 9--15 per side, arcuate-ascending, flat above, prominulent beneath, not anastomosing; veinlet reticulation abundant, obscure above, prominulous beneath; inflorescence axillary and terminal, long-pedunculate, paniculate-spicate; peduncles stout, upwardly arcuate, 6--12 cm. long, sulcate, very densely pubescent with brownish multicellular hairs, the terminal one usually terminated by a pair of foliaceous bracts similar to the leaves in all respects but only 1.3--2.5 cm. long and 1--1.2

cm. wide; spikes very densely flowered and white-lanate, subcapitate, 8--12 mm. long, 8--13 mm. wide, 1--3 at the apex of the peduncle, sessile or short-stipitate on axillary inflorescences, the stalks 1--2.5 cm. long on the terminal inflorescence and densely pubescent like the stems and peduncles; a pair of bracts often subtending each spike or each group of 3 spikes, the bracts ovate, foliaceous, about 1 cm. long and almost as wide, acuminate at the apex, densely brownish-tomentellous on both surfaces; bractlets lunate-flabelliform, about 3 mm. long and 6 mm. wide, nigrescent on the inner surface, very densely white-villous or -lanate on the outer surface; corolla surpassing the bractlets by about 4 mm.

The type of this very distinct species was collected by Father H. Callens (no. 2275) -- in whose honor it was named -- at Panzi, Republic of the Congo, on February 8, 1950, and is deposited in the Britton Herbarium at the New York Botanical Garden. In all, 3 herbarium specimens, including the type, have been examined by me.

Citations: CONGO LEOPOLDVILLE: Callens 1272 (N), 2275 (N-type), 3966 (N).

LIPPIA CALLENSI var. VILLOSA Moldenke, Phytologia 3: 419. 1951.

Bibliography: A. Chev., Sudania 1: 100. 1911; Moldenke, Biol. Abstr. 25: 3051. 1951; Moldenke, Phytologia 3: 419 & 456 (1951) and 4: 189. 1953; Moldenke, Résumé 140, 142, & 461. 1959.

This variety differs from the typical form of the species in having its leaves often whorled, obovate-elliptic, to 6 cm. wide, its heads smaller and denser, less than 1 cm. wide, and the pubescence on the stems fulvous-villous, very dense and velutinous toward the apex.

The type of this variety was collected by W. Mullenders (no. 2093) in a herbaceous savanna, at an altitude of 870 meters, at Kassendjim, Haut Lomami, Republic of the Congo, on February 27, 1948, and is deposited in the herbarium of the Jardin Botanique de l'Etat at Brussels. The plant is described by Mullenders as herbaceous, 1 m. tall, with blue flowers, growing in the savanna formations, flowering in January and February. Chevalier (1911) collected it in December and cites his no. 6550 as Icacina senegalensis Juss. of the Icacinaceae.

In all, 5 herbarium specimens, including the type, and 2 mounted photographs have been examined by me.

Citations: CENTRAL AFRICAN REPUBLIC: Ubangi-chari: A. Chevalier 6550 (Br, N). CONGO LEOPOLDVILLE: Mullenders 2093 (Br--type, N--photo of type, Z--photo of type), 2331 (Br, N).

LIPPIA CALLICARPAEFOLIA H.B.K., Nov. Gen. & Sp. Pl. 2: 268--269. 1818.

Synonymy: Lippia callicarpaefolia Humb. & Bonpl. ex Steud., Nom. Bot., ed. 2, 2: 54. 1840. Lippia mexicana Cav. ex Steud., Nom. Bot., ed. 2, 2: 54, in syn. 1840 [mot L. mexicana Hocking, 1955, nor Moldenke, 1947]. Lippia bicolor Kunth & Bouché, Ind.

Sem. Hort. Berol. 1845: 10. 1845. Lippia calocephala Zucc., Del. Sem. Hort. Monac. 4. 1846. Lippia callicarpaefolia Humb. & Kunth ex Benth., Pl. Hartw., 245 [as "callicarpaefoliae"]. 1846. Lippia callicarpaefolia Kunth ex Schau. in A. DC., Prodr. 11: 591. 1847. Lippia iodantha Robinson & Greenm., Garden & Forest 9: 103 & 105, fig. 11. 1896. Lippia bicolor Kunth ex P. C. Standl., Contrib. U. S. Nat. Herb. 23: 1246, in syn. 1924. Lippia callicarpaefolia Kunth ex Hegi, Illustr. Fl. Mittel Eur. 5 (3): 2240. 1927. Lippia callicarpifolia H.B.K. ex A. B. Seymour, Host Ind. Fungi N. Am. 588. 1929 [not L. callicarpifolia Schau., 1959]. Lippia arborea Sessé & Moc. ex Moldenke, Prelim. Alph. List Invalid Names 30, in syn. 1940. Lippia involucrata Sessé & Moc. ex Moldenke, Prelim. Alph. List Invalid Names 31, in syn. 1940. Phryma arborea Sessé & Moc. ex Moldenke, Prelim. Alph. List Invalid Names 36, in syn. 1940. Lippia arborea Pavon & Moldenke ex Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 35 & 95, nom. nud. 1942. Lippia callicorpifolia Kunth ex Moldenke, Alph. List Invalid Names Suppl. 1: 13, in syn. 1947. Lippia gigantea Harv. ex Moldenke, Alph. List Invalid Names Suppl. 1: 14, in syn. 1947. Lippia callicorpaefolia Kunth ex Moldenke, Résumé Suppl. 10: 5, in syn. 1964.

Bibliography: H.B.K., Nov. Gen. & Sp. Pl. 2: 268—269. 1818; Steud., Nom. Bot., ed. 2, 2: 54. 1840; Walp., Repert. Bot. Syst. 4: 54—55. 1845; Kunth & Bouché, Ind. Sem. Hort. Berol. 1845: 10. 1845; Benth., Pl. Hartw. 245. 1846; Zucc., Del. Sem. Hort. Monac. 4. 1846; Schau. in A. DC., Prodr. 11: 591—592. 1847; Turcz., Bull. Soc. Nat. Mosc. 36 (2): 204. 1863; Bocq., Adansonia 3: 244. 1863; Podwissotzki, Zeitschr. Allg. Oesterr. Apoth. Ver. 21 (30): 469—471. 1883; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 152. 1895; Robinson & Greenm., Garden & Forest 9: 103 & 105, fig. 11. 1896; Barnhart, Bull. Torrey Bot. Club 29: 597. 1902; Loes. in Fedde, Repert. Nov. Sp. 9: 366. 1911; Loes., Verh. Bot. Ver. Brand. 53: 78. 1912; P. C. Standl., Contrib. U. S. Nat. Herb. 23: 1244 & 1246. 1924; Hegi, Illustr. Fl. Mittel Eur. 5 (3): 2240. 1927; A. B. Seymour, Host Ind. Fungi N. Am. 588. 1929; Stapf, Ind. Lond. 4: 125. 1930; A. W. Hill, Ind. Kew. Suppl. 9: 161. 1938; Moldenke, Alph. List Common Names 27. 1939; Moldenke, Prelim. Alph. List Invalid Names 29—31 & 36. 1940; Leon Alvarez, Contrib. Estud. Acc. Estrog. Salvia 1—53, mss. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 17, 20, 35, & 95. 1942; Moldenke, Alph. List Invalid Names 28—31 & 36. 1942; Moldenke, Phytologia 2: 107. 1945; Moldenke, Alph. List Cit. 1: 33, 251, & 262. 1946; Moldenke, Phytologia 2: 330 & 347. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 13 & 14. 1947; Moldenke, Alph. List Cit. 2: 351, 352, 357, 389, 393, 414, 526, 540—543, & 573 (1948), 3: 685, 696, 766, 774, 801, 820, 830, 878, 919, 926, 960—962, & 973 (1949), and 4: 999, 1074, 1081, 1235, 1256, & 1294. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 31, 35, 73, 162, & 189. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 9.

1949; Moldenke, Inform. Mold. Set 49 Spec. 2 (1954) and 51 Spec. 3. 1956; Moldenke, Résumé 36, 42, 84, 220, 310--313, 334, 360, 460, & 461. 1959; Moldenke, Phytologia 8: 131. 1961; Moldenke, Résumé Suppl. 3: 33 (1962), 8: 4 (1964), 10: 2, 3, 5, & 6 (1964), and 11: 7. 1964; Langman, Select. Guide Lit. Flow. Pl. Mex. 421, 440, 588, 596, & 1010. 1964.

Illustrations: Robinson & Greenm., Garden & Forest 9: 105, fig. 11. 1896.

Shrub or low bush to tree, 1--4.5 m. tall; branches tetragonal, short-hirsute or hirtous-tomentose, canescent; twigs slender, tetragonal, densely tomentose; leaves decussate-opposite, petiolate; petioles slender, short, 1--2 cm. long, canaliculate, densely floccose- or incanous-tomentose; leaf-blades dark-green or dark grass-green above, silvery-gray or gray-green and reticulate beneath, thickish-chartaceous, elliptic or ovate to ovate-oblong, 5--12.5 cm. long, 3--7.5 cm. wide, acute at the apex, acute or obtuse to abruptly decurrent and narrowed into the short petiole at the base, regularly serrate or crenate from the base to the apex with small blunt or subacute somewhat spreading teeth, rather densely hirsute-pubescent or softly pilose with bulbous-based hairs above, becoming rough and reticulate-bullate or rugose-scabrous in age, very densely floccose-lanate or softly incanous and pilose-tomentose to tomentose or canescent-tomentose beneath, reticulate-venose, the venation impressed above; inflorescence axillary, clustered, usually 2--4 in each axil, or in terminal, sessile, subsimple, bracteate panicles 5--7.5 cm. long, the branches subverticillate, tetragonal, hirtous-tomentose and incanous; peduncles very slender, numerous, 5--6 cm. long, densely hirsute-tomentose, ascending; heads semi-globose, 1--2 cm. long, 1.5--2.5 cm. wide, about the size of a *Prunus spinosa* fruit, pedunculate, purple; bracts at first pale-green, then orange, finally rose-purple, ovate or broadly ovate, acute at the apex, reticulate-venose, sericeous-pubescent on the outside, twice as long as the flowers, imbricate; flowers sessile, 3 mm. long; calyx campanulate, compressed, sub-bidentate, very densely white-pilose; corolla infundibular, pale-yellow or yellow to orange, or whitish and turning brown [also described as "purple", but this probably refers to the bracts], glabrous, the tube longer than the calyx, the limb 4-fid, the lobes rounded, the upper somewhat smaller, emarginate, the throat glabrous; stamens 4, didynamous, inserted at the apex of the corolla-tube, included; filaments very short; style glabrous, included; stigma obliquely capitate; fruit dry, dark, ovate, about the size of a mustard seed (*Sinapis arvensis*), invested by the fruiting-calyx, 2-locular, smooth, glabrous, the cells 1-seeded.

The type of this very handsome species was collected by Friedrich Heinrich Alexander von Humboldt and Aimé Jacques Bonpland at an altitude of 2336 meters near Mexico City, Federal District, Mexico, flowering in May, and is deposited in the Humboldt and Bonpland herbarium at the Muséum National d'Histoire Naturelle at Paris, where it was photographed by Macbride as his type photo-

graph no. 39486. The type of L. arborea was collected by José Antonio Pavon, probably in Mexico, although the label is inscribed "Peru", and is deposited in the Delessert Herbarium at the Conservatoire et Jardin Botaniques at Geneva. The name, L. gigantea, seems to be based on Herb. W. H. Harvey s.n. [Hort. Daudin, France, 1848] and is deposited in the Dudley Herbarium at Stanford University.

The L. mexicana of Hocking, referred to in the synonymy above, is a synonym of Phyla scaberrima (A. L. Juss.) Moldenke, while that of Moldenke is Lippia tepicana Moldenke; L. callicarpifolia Schau. is a synonym of L. pringlei Briq. The reference, Robinson & Greenm., Garden & Forest 9: 103 & 105, fig. 11", referred to above, is sometimes cited as "Pringle, Garden & Forest 9: 103". Lantana bracteosa Mart. & Gal. and Lippia bracteosa Mart. & Gal. are sometimes included in the synonymy of L. callicarpaefolia — as, for instance, by Standley (1924) — but belong to Lippia bracteosa (Mart. & Gal.) Moldenke, which see. Walpers (1845) reduces L. callicarpaefolia to synonymy under L. umbellata Cav. Schauer (1847) places the species in his Section Rhodolippia, Subsection "A".

The species has been found in oak woods and forests, damp pine and oak forests, open or low spiny deciduous woods, damp quebradas, dry spots, and rocky rubble at the base of waterfalls in canyons, at the edges of oak forests, and on bushy or brushy hillsides, bushy or thickety slopes, mountain or bracken slopes, rocky slopes in oak forests, exposed open slopes, hills and dry rocky hills, barrancas and the slopes of barrancas, at altitudes of 500 to 3000 meters, flowering from October to March and in May, fruiting in November and December.

Hinton describes the plant as "not very frequent" in Guerrero, where Frye reports that the plants are cropped by livestock. Hegi (1927) says that it "wird wie Salvia benutzt". Seymour (1929) affirms that it is infested by the fungi Prospodium lippiae (Speg.) Arthur, Puccinia lippiae Speg., and Uredo lippiae Speg. Common names reported for it are "rosa cimarrona", "rosa de castilla cimarrona", and "salvia real". Leon Alvarez (1941) states that it has estrogenic action like that of Salvia officinalis L.

The flowers are described as "pale-yellow" on P. C. Standley 58896, "yellow" on Steyermark 31462, "orange" on Hinton 11156 & 14868, "whitish turning brown" on Steyermark 33914, and "purple" on Hinton 11100, 11633, & 12945.

Herbarium material has been misidentified and distributed in herbaria under the names "L. involucratae affinis", L. lupulina Cham., L. umbellata Cav., and Labiatae. On the other hand, the Pittier 4429, distributed as L. callicarpaefolia, is actually L. controversa Moldenke; Purpus 421 is L. hypoleia Briq.; Moritz 1640 is the type collection of L. moritzii Turcz.; Edw. Palmer 479, Pringle 1733 & 2743, Purpus 508 & 8206, and Seler & Seler 4337 are

L. pringlei Briq.; Linden 141 is L. substrigosa Turcz.; and M. E. Jones 23235 is L. tepicana Moldenke

In all, 97 herbarium specimens and 7 mounted photographs and other illustrations, including type of phototype material of most of the names involved, have been examined by me.

Citations: MEXICO: Federal District: Humboldt & Bonpland s.n. [Macbride photos 39486] (Kr--photo of type, N--photo of type, N--photo of type). Guerrero: Frye & Frye 3133 (G, Se--63348); Hinton 9838 (Au, It, K, Rf, Ur), 11100 (Fs, La, N), 11156 (La), 11302 (G, La, N), 11633 (G, La, N, Rf), 14868 (G, N, N, Rf); Lyonnet & Elcoro 1163 (W--1745973); Mexia 9103a (G, N); H. E. Moore 5567 (G, N); Núñez s.n. [Huitzuco, 1922] (Me, Me); Rowntree s.n. [near Taxco, Dec. 6, 1938] (Fs); Seler & Seler 4252 (G, Gg--245895); Urbina s.n. [Enero de 1886] (Me). México: Hinton 2620 (A, N, N, N, N), 2989 (A, N, N, N); Matuda 27513 (Cb), 27853 (Cb), 30020 (Ss), 32091 (Ss). Michoacán: Hinton 12383 (G, N, N, Rf), 12945 (G, N, Rf). Morelos: Gold 25880 (Z); E. Lyonnet 2917 (W--1748451); Pringle 6201 (A, Br, C, Ca--104930, Cm, G, Gg--152307, Io--38720, It, Me, Me, Mi, Mm--15410, S, Vt), 11084 (Cm, G, It, N); Schiefer 184 (G, Vi). Vera Cruz: Née 96 (Q). State undetermined: Bartling s.n. (M); C. A. Ehrenberg s.n. (Vt); Haenke 1574 (N); Herb. Meisner s.n. (M); Lemmon & Lemmon 204 (Ca--100955, G); Pavon s.n. ["Peru"] (Cb, N, N--photo, N--photo, Z--photo); Quarles van Ufford 135 (Ut); Sessé, Mociffo, Castillo, & Maldonado 2217 (Q), 2220 (Q). GUATEMALA: Baja Verapaz: P. C. Standley 69695 (N). Chimaltenango: P. C. Standley 79841 (N). Chiquimula: Steyermark 30975 (F--1036176), 31462 (F--1047003). Quezaltenango: Hartweg 560 (N); Steyermark 33914 (F--1059351). Sacatepéquez: P. C. Standley 58896 (N). Sololá: P. C. Standley 62750 (N). CULTIVATED: France: Herb. W. H. Harvey s.n. [hort. Daudin, 1848] (Du--166571). MOUNTED ILLUSTRATIONS: Robinson & Greenm., Garden & Forest 9: 105, fig. 11. 1896 (A--drawing).

LIPPIA CAMPESTRIS Moldenke, *Phytologia* 2: 414. 1948.

Bibliography: Moldenke, Phytologia 2: 414. 1948; Moldenke, Castanea 13: 116. 1948; Moldenke, Alph. List Cit. 4: 1251. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 189. 1949; Stellfeld, Trib. Farmac. 19 (10): 169. 1951; E. J. Salisb., Ind. Kew. Suppl. 11: 138. 1953; Angely, Fl. Paran. 7: 6, 7, & 12 (1957) and 12: 17. 1958; Moldenke, Résumé 93 & 461. 1959; Angely, Fl. Paran. 16: 60 (1960) and 17: 46. 1961.

Dwarf perennial, woody at the base; stems numerous, simple, 15--17 cm. tall, rather densely glandular-pubescent and also hirsutulous with much longer, divaricate, white, glandless hairs; nodes not noticeably annulate; leaves decussate-opposite, sessile; leaf-blades ovate, 7--16 mm. long, 4--10 mm. wide, the lower pairs increasingly smaller, subacute or obtuse at the apex, roun-

ded or cordate at the base, entire, ciliate, hirsutulous-pubescent on both surfaces and somewhat glandulose beneath; larger venation rather obscure above, very faintly subprominulous beneath; inflorescence axillary, 2 per node, in the median or upper axils; peduncles very slender, 1.5--2.3 cm. long, rather densely glandulose-pubescent and hirsutulous; heads hemispheric, less than 1 cm. long; bractlets ovate, about 5 mm. long, 2 mm. wide at the base, triangular-attenuate at the apex, densely glandular-pubescent and hirsutulous; corolla about 7 or 7.5 mm. long, the tube about equaling the bractlets, uniformly puberulent outside, the limb puberulent on the back, glabrous within.

The type of this species was collected by Per Karl Hjalmar Dusén on a campo at Jaguariahyva, Paraná, Brazil, on October 9, 1911, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. The taxon is known thus far only from the type collection. In all, 2 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: BRAZIL: Paraná: Dusén s.n. [Jaguariahyva, 9.10. 1911] (F--photo of type, N--isotype, N--photo of type, S--type, Si--photo of type, Z--photo of type).

LIPPIA CANDICANS Hayek in Fedde, Repert. Nov. Sp. 2: 86. 1906.

Bibliography: Hayek in Fedde, Repert. Nov. Sp. 2: 86. 1906; Prain, Ind. Kew. Suppl. 4: 142. 1913; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 37 & 95. 1942; Moldenke, Alph. List Cit. 1: 223 (1946) and 3: 695. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 80 & 189. 1949; Moldenke in Dawson, Los Angel. Co. Mus. Contrib. Sci. 7: 10 & 11, fig. 2. 1957; Moldenke, Résumé 93 & 461. 1959; Moldenke, Résumé Suppl. 8: 2. 1964.

Illustrations: Moldenke in Dawson, Los Angel. Co. Mus. Contrib. Sci. 7: 10, fig. 2. 1957.

Shrub; branches tetragonal, appressed subsericeous-tomentose; leaves decussate-opposite, petiolate, ovate-lanceolate or lanceolate, acute at the apex, attenuate into the petiole at the base, narrowly crenate-serrate, appressed sericeous-tomentose above and canescent, incanous-tomentose beneath; inflorescences 2 or 3 in the axils of the uppermost reduced leaves, subequaling the subtending leaf, ovoid-globose, 4--5 mm. long; bractlets ovate-triangular, acute at the apex, lightly red-glandulose and appressed-tomentose; peduncles red-glandulose and appressed-tomentose; corolla hypocrateriform, surpassing the subtending bractlet, red-glandular and pilose on the outside.

The type of this handsome species was collected by George Gardner (no. 3942) in Goiás, Brazil, and is deposited in the herbarium of the Naturhistorisches Museum in Vienna, where it was photographed by Macbride as his type photograph no. 34329. Hayek (1909) says of it "Affinis L. sericeae Schau., a qua habitu graciliore, indumento brevior adpresso et capitulis minoribus valde differt." The plant has been found growing on sandstone ridges, flowering in April. In all, 3 herbarium specimens, including the type collection, and 3 mounted photographs have been examined by me.

Citations: BRAZIL: Gofas: E. Y. Dawson 14695 (Z); G. Gardner 3942 [Macbride photos 34329] (It--photo of type, Kr--photo of type, M--isotype, N--photo of type). Minas Gerais: Heringer 3789 (B).

LIPPIA CARDIOSTEGIA Benth., Bot. Voy. Sulphur 153--154. 1846.

Synonymy: Lippia brenesii Standl., Field Mus. Publ. Bot. 18: 1009. 1938.

Bibliography: Benth., Bot. Voy. Sulphur 153--154. 1846; Jacks. in Hook. f. & Jacks., Ind. Kew. 2: 95. 1894; P. C. Standl., Field Mus. Publ. Bot. 18: 1009. 1938; Moldenke, Alph. List Common Names 23. 1939; B. H. Davis, Mycologia 32: 170. 1940; Moldenke, Phytologia 2: 21. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 17, 20--23, & 95. 1942; Anon., Homenaje al Prof. A. M. Brenes 3. 1944; Moldenke, Phytologia 2: 70 & 107. 1945; Moldenke, Alph. List Cit. 1: 23, 24, 192, & 224. 1946; E. J. Salisb., Ind. Kew. Suppl. 10: 134. 1947; Moldenke, Alph. List Invalid Names 13. 1947; Moldenke, Phytologia 2: 331 & 384. 1947; Moldenke, Bol. Soc. Venez. Cienc. Nat. 11: 44. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 51. 1948; Moldenke, Alph. List Cit. 2: 351, 390, 408, 469, 478, 536, 549, & 606 (1948), 3: 657, 714, 817, 819, 821, 946, 958--962, & 973 (1949), and 4: 999, 1001, 1176, 1180, 1186, 1187, 1227, & 1296. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 31, 35, 37--39, & 189. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 9. 1949; Matuda, Am. Midl. Nat. 44: 576. 1950; Moldenke, Phytologia 3: 451. 1951; Calpouzoz, Econom. Bot. 8: 228. 1954; Moldenke, Résumé 37, 42, 44, 45, 47, 311, & 461. 1959; Moldenke, Résumé Suppl. 2: 4 (1960), 3: 10 & 11 (1962), and 11: 4. 1964.

Suffrutescent bush, shrub, or tree, 1--5 m. tall, densely and strictly branched, strong-scented with a pungent marigold (Tagetes) odor; stems slender, arching; bark pale-gray or gray, smooth and glabrous; branchlets slender, rather densely strigose with short whitish hairs; principal internodes short or elongate; leaves decussate-opposite, the larger ones petiolate; petioles slender, 5--14 mm. long, strigillose-scabrous; leaf-blades subcoriaceous, somewhat stiff, opaque green above, paler beneath, broadly elliptic to ovate, sometimes oblong-ovate, 3--6.5 cm. long, 1.5--4 cm. wide, shortly acuminate to obtuse at the apex, cuneate-acute or attenuate at the base and often contracted-decurrent into the petiole, closely serrate or crenate-serrate along the margins, roughly scabrous and densely white-punctate above, often subbullate because of the impressed venation, scabrous and very rough beneath, with the midrib and veins very prominent; secondaries about 6 per side; inflorescence capitate, 2--6 per node; peduncles slender, 1--2.5 cm. long, strigillose-scabrellous; heads in the fruiting condition scarcely elongate, globose, 8--10 mm. wide; bractlets small, chartaceous, green or brown, broadly ovate, acute or subacuminate at the apex, scabrous or glabrate, to 6 mm. long in the fruiting stage, scarcely enlarged; perianth not surpassing the bractlets; calyx compressed, 2-

dentate, scarcely more than 1 mm. long, densely white-pilosulous; corolla hypocrateriform, white or greenish-white to pale greenish-yellow, about 3 mm. long, the tube slender, glabrous on the outer surface, the limb 1.5 mm. wide, the lobes broadly rounded, densely puberulent on the outer and sparsely puberulent on the inner surface.

The type of this species was collected at the "Gulf of Fonseca", between Honduras and El Salvador [not "Mexico" as stated in the Index Kewensis!] and is deposited in the Bentham Herbarium at the Royal Botanic Gardens, Kew. The type of L. brenesii was collected by Alberto Mora Brenes (no. 6477) along the Camino de San Gerardo, Santiago de San Ramon, Costa Rica, in December, 1928, and is deposited in the herbarium of the Chicago Natural History Museum.

Lippia cardiostegia has been found growing on hills, dry rocky and brushy rocky slopes, brushy and dry or damp brushy slopes, and green grassy open slopes, in hedges and thickets, dry or grassy thickets, damp or wet thickets, rocky fields, dry forests, border growths and shrubbery, at 150 to 1800 meters altitude, flowering from August to May, fruiting from October to February and in May. Stork & Horton found it growing in shade in thick black soil on lava in El Salvador, while A. Smith encountered it in the Pacific tropical zone in dry secondary growth, nearly open exposure, on clay loam soil in Costa Rica. Standley calls it "common" in Guatemala, and C. L. Smith refers to it as "plentiful around base of hills or peaks" in Nicaragua. The specific name is sometimes uppercased for no valid reason. Common names reported for it are "chiligua", "coronchoch", "oreganillo", "oregano montes", and "orégano montés". The name "oreganillo" is also applied to L. graveolens H.B.K., L. myriocephala Schlecht. & Cham., and L. umbellata Cav.

The Kellerman s.n. [Laguna, January 20, 1906] is the type host collection for the fungus Cercospora cardiostegiae B. H. Davis. C. F. Baker 206 in the Britton Herbarium has the spikes abnormally elongated. Matuda 743 gives no indication on its label as to the exact locality of its collection, but it probably was gathered in Chiapas. Some collectors refer to the leaves of this species as "membranous", but this is a palpable error, since they are conspicuously subcoriaceous.

Herbarium material has been misidentified and distributed in herbaria under the names L. asperifolia Rich., L. myriocephala Cham. & Schlecht., L. umbellata Cav., and Lantana involucrata L. On the other hand, the M. C. Carlson 1648, distributed as Lippia cardiostegia, is actually L. bracteosa (Mart. & Gal.) Moldenke.

Standley (1938) says "Material of this plant has been referred previously to L. myriocephala Schlecht. & Cham., from which it is amply distinct, and to L. asperifolia Rich." He cites the following collections from Costa Rica, not as yet seen by me: Brenes 5855, Pittier 7519, P. C. Standley 41349, Tonduz 13631,

and M. Valerio 1521, presumably in the herbarium of the Chicago Natural History Museum.

In all, 103 herbarium specimens, including the type collection of L. brenesii, have been examined by me.

Citations: MEXICO: Chiapas: Matuda 743 (Mh, Mi, N, N), 938 (Mi, N), 1670 (A, Mh, Mi, N, N, N). GUATEMALA: Chiquimula: P. C. Standley 74739 (N); Steyermark 30305 (F—1056265), 30569 (F—1052041). Escuintla: P. C. Standley 60217 (A, N). Guatemala: P. C. Standley 61418 (N). Huehuetenango: Steyermark 50770 (N). Jutiapa: P. C. Standley 75004 (N), 75922 (N). Santa Rosa: Heyde & Lux 4385 (G); P. C. Standley 60713 (N), 77708 (N), 78412 (N), 78809 (N). Suchitepéquez: P. C. Standley 62061 (N). Department undetermined: Friedrichsthal 148 (V), 878 [Mniogalpa] (V), 1118 [Lapunte] (V, V), s.n. [1841/XIV] (V, V, V); Kellerman s.n. [Laguna, January 20, 1906] (N, N). HONDURAS: Gracias: Hjalmarson s.n. [1852] (S). EL SALVADOR: Ahuachapán: P. C. Standley 19860 (G, S), 20222 (G, N). La Libertad: Stork & Horton 8646 (Ca—643478). La Unión: P. C. Standley 20803 (G, N). San Salvador: Herb. Lab. Químico 14 (N); P. C. Standley 22677 (G, S), 23262 (G, S). Sonsonate: C. V. Hartman 134 (S). Department undetermined: Kovar 1090 (N, Rf). NICARAGUA: Carazo: N. L. H. Krauss 381 (Z). Chinandega: C. F. Baker 13 [766] (Ca—199193, Du—76202, Gg—31150, Mi, N, Po—64698, W—862825). Grenada: C. F. Baker 206 [660] (G, N, Po—64697); Lévy 241 (Cb, N). Managua: Garnier 264 (Mi), 641 (I, N, N), 1004 (Mi); C. L. Smith 108 (Ca—975391, G, N, N, N, Tl, Vt). Ometepe Island [Rivas]: Shimek & Smith 8 (Ca—975390). COSTA RICA: Alajuela: Brenes 14 (N), 4756 (N), 6477 [332] (N), 13238 [255; 13358] (N, N), 14339 [20] (N, N), 17509 (N); A. Smith P.2346 (A, Ca—12709). Cartago: Brenes s.n. [San Mateo, 1903] (N); H. Pittier 2519 [Herb. Instit. Physico-geogr. Nat. Costaric. 13215] (C, G). Puntarenas: Holm & Iltis 313 (N). San José: Biolley & Tonduz 7218 (Br); Brade 2135 (Br); H. Pittier 602 (Br), 7218 (Br), 8452 (Br); Tonduz 1460 (Br, Br), 3159 (Br); Tonduz & Pittier 8452 (Br). Department undetermined: H. Pittier s.n. (Br).

LIPPIA CARVIODORA Meikle, Kew Bull. 1948: 467—468. 1949.

Bibliography: Meikle, Kew Bull. 1948: 467—468. 1949; Moldenke, Phytologia 3: 137. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 118 & 189. 1949; E. J. Salisb., Ind. Kew. Suppl. 11: 138. 1953; Moldenke, Résumé 146 & 461. 1959; Cuf., Bull. Jard. Bot. Brux. 32: Suppl. 790—791. 1962; Moldenke, Résumé Suppl. 11: 7. 1964.

Sweet-smelling subshrub, to 1.5 m. tall, many-branched; bark striate, at first pale, later gray or dark-brown; branches spreading-erect, very slender, purplish when young, subterete or

obtusely tetragonal, sparsely pubescent, finally glabrescent, densely covered with shiny glands; leaves decussate-opposite, spreading, short-petiolate; petioles slender, about 1 cm. long, pubescent, canaliculate above; leaf-blades ovate, to 2.5 cm. long and 1.7 cm. wide, gray green, obtuse at the apex, subtruncate at the base and gradually narrowed into the petiole, rarely shortly decurrent, crenate or obtusely serrate along the margins, rugose and venose above, appressed-pubescent and sparsely glandulose above, densely canescent-puberulent beneath and covered with shiny glands; inflorescence axillary, solitary, short-pedunculate, the spikes short, abbreviated, strobiliform, and about 12-flowered; peduncles slender, to 7 mm. long, densely white-tomentose; spikes to 5 mm. long and 7 mm. wide; bractlets during anthesis ovate-lanceolate, 4 mm. long and 2 mm. wide, acuminate at the apex, densely glandulose, sparsely white-pilose, after anthesis greatly enlarged, finally membranous, venose, hirtellous, erose along the margins, acute at the apex, cordate at the base, to 8 mm. long and 15 mm. wide, resembling the strobilus of Humulus lupulus; calyx minute, to 1 mm. long and wide, membranous, densely white-hirsute, divided into 2 obtuse or emarginate lobes, enlarged after anthesis and entirely covering the fruit; corolla equaling or slightly surpassing the bractlets, the tube to 4 mm. long, rather dark, striate, subglabrous at the base outside, sparsely pilose above, the lobes 4, rounded, whitish, incurved, undulate and crenulate along the margins, livid-annulate in the throat within; stamens 4, didynamous, two inserted in the upper part of the corolla-tube and slightly exserted, the other 2 inserted at the middle of the tube; filaments very short; anthers ovate, 2-celled; style to 2.3 mm. long; stigma obliquely declined, rather thick, truncate or subemarginate at the apex; ovary subglobose, 2-celled, about 1 mm. wide; fruit small, to 3 mm. wide, compressed-globose, dry, included by the tomentose fruiting-calyx and terminated by the shriveled corolla, splitting into 2 outlets; pericarp dark.

The type of this distinct species was collected by Gilbert Walker at Wamba, in the Northern Frontier District, Kenya, on January 4, 1948, and is deposited (dried and alcoholic material) in the herbarium of the Royal Botanic Gardens at Kew. Meikle (1949) says "sectioni Rhodolippiae ut videtur affinis, ab aliis speciebus africanis valde dissimilis.....This is a very distinct species, quite unlike any other African Lippia, but bearing a close superficial resemblance to Lantana petitiiana A. Rich. with which it has in the past been occasionally confused; the short peduncles, small flowers, large membranous, hop-like fruiting bracts and dry fruits distinguish it from this plant." The only vernacular name recorded for it is "ged-hamer".

Only 2 herbarium specimens, including type material, and 1 mounted photograph have been examined by me.

Citations: KENYA: Jeffrey S.N.2 (S); G. Walker s.n. [Wamba, 4. 1.1948] (N--isotype, N--photo of type).

LIPPIA CARVIODORA var. MINOR Meikle, Kew Bull. 1948: 468--469. 1949.

Synonymy: Lantana microphylla Hutch. & Bruce ex Meikle, Kew Bull. 1948: 468, in syn. 1949 [not L. microphylla Cham., 1947, nor Franchet, 1882, nor Mart., 1828, nor Peter, 1959]. Lantana petitiana Glover ex Meikle, Kew Bull. 1948: 468, in syn. 1949 [not L. petitiana A. Rich., 1851].

Bibliography: Meikle, Kew Bull. 1948: 468--469. 1949; Moldenke, Phytologia 3: 136 & 137. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 110, 118, & 189. 1949; Moldenke, Résumé 135, 146, & 461. 1959; Cuf., Bull. Jard. Bot. Brux. 32: Suppl. 791. 1962; Moldenke, Résumé Suppl. 11: 7. 1964.

This variety differs from the typical form of the species in having paler branches and smaller leaves and bractlets, the leaves mostly rounded, to 1.5 cm. long and 1 cm. wide, and the bractlets scarcely membranous, subobtuse at the apex, about 5 mm. long and 7 mm. wide, pubescent, entire and often recurved along the margins.

The type of this variety was collected by Major D. Thomson (no. 72) in Sheikh Pass and Maritime Plain, British Somaliland, and is deposited in the herbarium of the Royal Botanic Gardens at Kew, where it was received on January 26, 1904. Meikle (1949) notes that "The var. minor, with pale whitish bark, small leaves and fruiting bracts, looks distinct, but some specimens (e.g., Bally 3029 and Edwards 2984) approach typical L. carviadora, and it may be merely a starved or desiccated state of this species. The whole plant emits a powerful odour reminiscent of Caraway-seed (especially noticeable in the var. minor), and is said to be used by the Somalis as a substitute for tea." Vernacular names recorded are "ged hamar", "ged-hamar", "ged hamer", and "ged-hamer."

The Lantana microphylla of Chamisso, referred to in the synonymy above, is a synonym of Lippia microphylla Cham., that of Franchet is Lantana petitiana A. Rich., that of Martius is Verberna microphylla H.B.K., and that of Peter is Lantana rugosa var. tomentosa Moldenke.

Meikle cites also Gillet 4373, Bally 3029, and Glover & Gilliland 48 from British Somaliland, and D. C. Edwards 2984 from Kenya. Bally describes the plant as "very common.....in semi-desert scrub" at 400 meters altitude and describes the plant as a shrub about 12 dm. tall. It has been collected in flower in September, October, January, and March. Thus far I have seen only a single phototype.

Citations: BRITISH SOMALILAND: D. Thomson 72 (N--photo of type).

LIPPIA CENTAUREA A. Chev., Étud. Fl. Afr. Cent. Franç. 1: 242, hyponym. 1913.

Bibliography: A. Chev., Étud. Fl. Afr. Cent. Franç. 1: 242. 1913; Prain, Ind. Kew. Suppl. 5: 153. 1921; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 48 & 95 (1942) and [ed. 2], 114 & 189. 1949; Moldenke, Résumé 140 & 461. 1959.

All that is known about this mysterious plant is what is stated by Chevalier, who bases the name on his no. 10932, which was collected in clearings at Bangui, Middle Ubangi, Ubangichari, Central African Republic, on December 18, 1903. He describes its inflorescences as white, but gives no further description.

LIPPIA CHACENSIS Moldenke, *Phytologia* 2: 414--415. 1948.

Bibliography: Moldenke, *Phytologia* 2: 414--415. 1948; Moldenke, *Lilloa* 14: 41. 1948; Moldenke, *Castanea* 13: 117. 1948; Moldenke, *Alph. List Cit.* 4: 1293. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 97 & 189. 1949; E. J. Salisb., *Ind. Kew. Suppl.* 11: 138. 1953; Moldenke, *Résumé* 114 & 461. 1959.

Shrub, 6--7 dm. tall; stems slender, obtusely tetragonal, canescent-puberulent, strigillose on the older parts; nodes rather indistinctly annulate; branches apparently few and short; leaves decussate-opposite, abundant; petioles very slender, 2--6 mm. long, densely canescent-strigose; leaf-blades thin-chartaceous, lighter beneath, narrowly elliptic, 2--6 cm. long, 5--15 mm. wide, acute at the apex, uniformly serrulate along the margins to below the middle, attenuate or subacuminate at the base, densely appressed-strigillose above, very densely velutinous with very short flavescent hairs beneath; the slender midrib and 5 or 6 pairs of secondaries, and often the larger veinlets, slightly subimpressed above, prominulous beneath; inflorescence axillary, 1 or 2 per node, shorter than the subtending leaves; peduncles very slender, 1--1.5 cm. long, canescent-strigillose; heads hemispheric or oblong, to about 1 cm. long; bractlets broadly ovate, 4--4.5 mm. long, about 2 mm. wide at the base, acuminate at the apex, densely strigose or strigillose, canescent, glandulose; corolla-tube about 6 mm. long, very densely strigose on the outside, the limb about 4 mm. wide, glabrous or slightly pubescent at the base.

The type of this species was collected by Klas Robert Elias Fries (no. 1445) in an open grassy campo at Tatarenda, Gran Chaco, Santa Cruz, Bolivia, on March 22, 1902, and is deposited in the herbarium of the Naturhistoriska Riksmuseum at Stockholm. The collector describes the species as "rare" and the flowers as "lividis". It is known thus far only from the type collection and was originally misidentified as and distributed under the name *L. geminata* H.B.K.

In all, 2 herbarium specimens, including the type, and 4 mounted photographs have been examined by me.

Citations: BOLIVIA: Santa Cruz: R. E. Fries 1445 (F--photo of type, N--isotype, N--photo of type, S--type, Si--photo of type, Z--photo of type).

LIPPIA CHEVALIERII Moldenke, *Phytologia* 2: 313--314. 1947.

Bibliography: Moldenke, *Phytologia* 2: 313--314, 339, & 340 (1947) and 3: 136. 1949; Moldenke, *Known Geogr. Distrib. Verbenac.*, [ed. 2], 109, 111, & 189. 1949; Moldenke, *Alph. List Cit.* 4: 1197

& 1201. 1949; Moldenke, *Phytologia* 3: 291. 1950; E. J. Salisb., *Ind. Kew. Suppl.* 11: 138. 1953; Moldenke, *Résumé* 133, 135, 136, & 461. 1959.

Herbaceous (?); branches very slender, stramineous, subterete, striate, rather obscurely strigillose; nodes annulate; principal internodes elongate, 5--13 cm. long; leaves ternate or in 4's.

BOOK REVIEW

Alma L. Moldenke

"A Selected Guide to the Literature on the Flowering Plants of Mexico", by Ida Kaplan Langman, 1015 pp. University of Pennsylvania Press, Philadelphia, Pennsylvania. 1964. \$25.00

Back in 1948, when my husband and I were visiting Mexico's Instituto de Biología, we first met Mrs. Langman as she was industriously starting this useful bibliographic contribution to botanical literature. The idea for this work started its gestation in 1941 when Mrs. Langman first visited Mexico and turned to the libraries there for reference material about its plant life. She has been working diligently ever since in the leading libraries of Mexico and the United States, and so has been able to produce this magnificent compilation of the literature on Mexican flowering plants, their description, their taxonomy, their phytogeography, their economic importance, their mention in books of travel, their indigenous names in various local languages, and their role in the history of botany -- surveying a tremendous field of printed and manuscript information over a long period of time.

We have pointed out a few errors to the author, and she has directed our attention to a few more. They seem virtually impossible to avoid in a work encompassing so many details from so many different sources. Since the publisher has offered to print a list of errata soon for distribution with the book there is no point in listing them here. I use the word "author" advisedly because this book is much more than a mere compilation; there are thousands of succinct, valuable comments on the inclusions.

Both reading and hunting in this work are easy because the print is clear and of a suitable size and format. The index alone covers 157 pages of four columns each.

So many present and future botanists and other researchers referring to this book will be ever so much in the author's debt because of all the sources made so readily available here, all the new vistas opened, and all the time subsequently saved.

The University of Pennsylvania Press is to be congratulated upon choosing to make this work available to readers, and the author for her persevering dedication.



Moldenke, Harold N. 1965. "Materials toward a monograph of the genus *Lippia*. II." *Phytologia* 12, 73–120. <https://doi.org/10.5962/bhl.part.10343>.

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