

A NEW COLOR FORM OF VERNONIA FROM NEW JERSEY

Fred W. Oswald

VERNONIA NOVEBORACENSIS f. LILACINA Oswald, f. nov.

Haec forma a forma typica speciei floribus lilacinis recedit. This form differs from the typical form of the species in having lilac instead of deep purple flowers.

The type of the form was collected by myself at Paramus, Bergen County, New Jersey, on August 31, 1956, and is deposited in the H. N. Moldenke herbarium at Yonkers, New York.

MATERIALS TOWARD A MONOGRAPH OF THE GENUS VITEX. VII

Harold N. Moldenke

VITEX Tourn.

Additional literature: Biol. Abstr. 28: 3534. 1954.

Additional excluded species: Vitex involucratus Presl = Sphenodesme involucrata (Presl) B. L. Robinson.

VITEX AGNUS-CASTUS L.

Additional literature: Thorne, Am. Midl. Nat. 52: 313. 1954.

VITEX AGNUS-CASTUS f. LATIFOLIA (Mill.) Rehd.

Additional citations: CULTIVATED: New York: H. N. Moldenke 21251 (Hk).

VITEX ALTISSIMA L. f.

Additional literature: Santapau, Journ. Bombay Nat. Hist. Soc. 53: 15, 16, 19, & 24. 1955.

Santapau reports in the reference cited above that the tree attains a height of 100 feet or more and is found in the middle and top layers of forest, often loaded with epiphytic orchids.

Additional citations: CULTIVATED: Florida: Menninger s.n. [February 8, 1956] (Z).

VITEX AMBONIENSIS Gürke

Additional literature: Bruce, Bothalia 6: 237. 1951.

Codd reports this plant to be a spreading-topped tree, 12 feet tall, with oval black fruit, found in the bush on low rocky ridges at an altitude of 1500 feet. His specimen, cited below, was cited by Bruce, in the reference given above, as V. patula E. A. Bruce.

Additional citations: UNION OF SOUTH AFRICA: Transvaal: Codd 4227 (Z).

VITEX CAPITATA Vahl

Lasser describes the tree as having a spreading crown and violet-blue corollas.

Additional citations: VENEZUELA: Zamora: Lasser 225 (N).

VITEX GAUMERI Greerm.

Steyermark describes this tree as 60 to 80 feet tall.

Additional citations: GUATEMALA: Alta Verapaz: Steyermark 44840 (N).

VITEX KUYLENII Standl.

Matuda describes the species as a tree 10 meters tall, and found it in sandy woods. His specimen, cited below, was misidentified as *Hirtella triandra* Sw. *Vitex kuylenii* is certainly very closely related to *V. hemsleyi* Briq., but may be distinguished by its conspicuously reflexed calyx-lobes. It may not be worthy of specific rank.

Additional citations: MEXICO: Chiapas: Matuda 17627 (N).

VITEX MEGAPOTAMICA (Spreng.) Moldenke

Trunk to 1 m. in diameter; bark irregularly scaly; branchlets slender, gray or whitish, medullose, densely cinereous-puberulent on the younger parts, soon becoming glabrate, obtusely tetragonal, corky; twigs slender, short, tetragonal or compressed, densely puberulent with cinereous or sordid-gray puberulence; nodes not annulate or only very obscurely so; principal internodes 0.5-3 cm. long or even more abbreviated, sometimes to 11.5 cm. long on vigorous shoots; leaf-scars large and corky, prominent; leaves decussate-opposite, 3--7-foliolate, mostly 5-foliolate; petioles slender, 1--8 cm. long, densely cinereous- or sordid-puberulent, slightly ampliate at the base; leaflets subequal or unequal with the 2 lowermost much smaller, all petiolulate or the lowermost subsessile; petiolules slender, 1--12 mm. long, puberulent, deeply canaliculate and margined, the central one longest, the lowermost often obsolete; leaflet-blades thin-chartaceous or submembranous, the mature ones very firm, dark-green above, lighter beneath, the central one narrowly elliptic or elliptic-lanceolate, varying to oboval or oblanceolate, 3--14 cm. long, 1.3--6 cm. wide, varying from abruptly short-acuminate to acute or even rounded or emarginate at the apex, entire (or rarely subserrate above the middle), varying from acute to acuminate or subcuneate at the base, glabrous above (or slightly puberulent along the midrib and larger venation when very immature), very minutely puberulent beneath, especially along the midrib and larger venation, sometimes barbellate in the axils beneath, becoming glabrous; midrib slender, impressed above, prominent beneath; secondaries slender, 6--22 per side, mostly close together, flat or subimpressed above, prominent beneath, ascending, not much arcuate except at the margins where they are arcuately joined; vein and veinlet reticulation sparse and obscure on immature leaves, fine and abundant on mature ones, obscurely subprominulous above and sometimes the larger portions also subprominulous beneath;

inflorescence axillary, cymose, 1.5--7 cm. long, 1--4.5 cm. wide, 1--4 times dichotomous or rarely subumbelloid, the branches widely spreading and loosely flowered, canescent- or sordid-puberulent throughout; peduncles slender, 0.9--3.5 cm. long, compressed-flattened, usually somewhat ampliate at the apex and annulate there with a band of denser puberulence; cyme-branches flattened, ampliate, annulate, and puberulent like the peduncles; pedicels slender, 1--2 mm. long or obsolete, densely canescent-puberulent or short-pubescent; bracts often present, foliaceous, oblong, to 2 cm. long, short-stipitate or subsessile; bractlets oblong-linear, 3--6 mm. long, 1--2 mm. wide, subsessile; prophylla linear or setaceous, minute, about 1 mm. long, short-pubescent; flowers fragrant; calyx green, campanulate, 3--4 mm. long, 2.5--4 mm. wide, densely short-pubescent with appressed antrorse hairs, its rim 5-toothed, the teeth ovate, 1 mm. long or less, often reflexed; corolla hypocrateriform, varying from pink to rose, lilac, blue, light-blue, violet, or purple, usually with its tube white with a slight lilac tinge, infundibular, 8--10 mm. long, broadly ampliate at the apex, densely short-pubescent on the outside above the calyx, glabrous inside except for the pubescent throat, the limb 5-lobed, the 4 subequal upper and lateral lobes usually white, ovate-elliptic, 4--8 mm. long, 3--7 mm. wide, acute, the lower lobe transformed into a flabelliform lip to 13 mm. long and 10 mm. wide, rounded-emarginate at the apex, crisped along the margins, pubescent at its narrowed claw-like base; stamens 4, didynamous, two longer than the other two; filaments filiform, about 9 and 10 mm. long, pubescent at the base; anthers divergent, about 0.4 mm. long; pistil glabrous, exserted; style about 1 cm. long; stigma bifid; ovary globose, about 3.5 mm. long and wide, glabrous; fruiting-pedicels (central ones) to 13 mm. long; fruiting-calyx campanulate, incrassate, 3--5 mm. long, about 6 mm. wide, minutely puberulent with appressed antrorse hairs, its rim deeply 5-lobed; fruit drupaceous, black or purple-black, spherical or elliptic-obovate, to 2.5 cm. long and 1.7 cm. wide when mature, much smaller when dried, glabrous, edible.

This common and well-known species was based by Sprengel on a collection made by Friedrich Sellow in Rio Grande do Sul, Brazil. V. montevidensis was based by Chamisso on several collections of Sellow, one, at least, from Rio Pardo in Rio Grande do Sul, and -- judging by the specific name chosen -- one, at least, from Montevideo, Uruguay. Other cotypes of V. montevidensis are Sellow 2353, 2355, s.n. [Brasil. merid.; Macbride photos 17561], and s. n. [Brasilia]. The species grows from Minas Gerais and Rio de Janeiro, Brazil, south to Uruguay, Paraguay, and Misiones, Argentina. It has been collected in anthesis from September to December, and in fruit from November to March. It inhabits primeval forests and woods, the borders of woods, thickets and hedgerows, swampy woods, arroyos, streamsides, river banks, lakesides, mountains, meadows, and plains, and ascends to 1000 meters altitude. It has been confused by various collectors with V. cymosa Bert. and V. vauthieri P. DC. The Kreutzpointner specimen cited below

consists of drug material.

Briquet, in the reference cited in *Phytologia* 5: 464 (1956), says that the species is a tall shade-producing tree and points out that the common name "taruma" is applied not only to this species, but also to *V. cymosa*, a very different species. He might have added that this vernacular name is practically a generic one for all *Vitex* species in Brazil. Hoehne, Kuhlmann, & Handro record the species as cultivated in the beautiful São Paulo botanical garden, where it is woody plant no. 515 and where it blooms in November and fruits in March. It is listed by Irmão Augusto in his "Flora do Rio Grando do Sul" and called "tarumã". Hoehne, in his 1946 publication, states that it was first cultivated as a shade tree on the streets of São Luiz de Cáceres in Mattogrosso and that its black fruits are the size and color of ripe olives (*Olea europaea*). This and other species of the genus *Vitex* deserve to be cultivated and selectively bred to produce larger and sweeter fruit. In his 1937 publication he records "copiuba" and "taruma" as common names. Ragonese & Martinez Crovette also say that the drupes are edible and cite "Löfgren, p. 102 (1894)". Other vernacular names recorded for the species are "bracui", "bracuy", "echter Tarumán", "guabiroba brava", "tapinhoão", "taramã", "tarumã", "tarumá", "tarumá blanco", "tarumá dure", "taruma guazu", "taruma mirim", "taruman", "tárumán", "tarumá de ley", "tarumão", and "tatuman".

The form with the secondaries of the leaflets numerous and close together, as exemplified by *Regnell* 1.38b, *Burchell* 4250, *Mosén* 4324, and *Herb. Inst. Bot. S. Paulo* 869, 1188, 15600, and 19446, often identified as *V. multinervis* or *V. viticifolia*, is apparently not constantly distinct. Similar leaflets can be found on many specimens with otherwise few-veined leaflets. The type collection of *V. multinervis* is *Sellow* s.n. [Brasilia; Macbride photos 17563]. Subserrate leaflets are seen on *Malme* 352 at Stockholm. The branches of this species are often heavily laden with mosses and lichens, as may be seen on *Sellow* 2355 at Kew. Bark specimens are preserved on *Fiebrig* 5382, from Paraguay, in the United States National Herbarium at Washington. The gynoecium anatomy is discussed by Junell. He states that "Bei.....*V. multinervis* verwachsen die beiden Plazenten in der Höhe der Samenanlagenbefestigungen oder unmittelbar oberhalb. Die Fruchtblattränder sind miteinander vollständig verwachsen, abgesehen vom obersten Teil des Fruchtknotens, wo seichte Furchen zwischen ihnen eindringen. Es kommen keine 'falschen' Scheidewände vor. Die Fruchtblattmitten können insbesondere bei *V. multinervis* etwas verdickt sein."

Stellfeld says "o popular 'tarumã o taruman', também conhecido pelos nomes: taruman pardo e taruman vermelho. Excelente para dormentes e esteios, resistindo bem nos lugares úmidos. É a azeitona brasileira e gozam entre o povo, de propriedades depurativas as folhas (5 folhas), existindo mesmo algumas especialidades farmacêuticas à base desta droga." Montes reports the flowers as "cremosos-morados".

Osten says "Vitex sp. nov. a Vit. montevidensi differt: fol. glabr. pedunc. $\bar{4}$ poll. long. Drupa 4 lin. longa" for Herter 18498, which happens to have its petiolules extra long and the leaflets often 7 in number. The Berro s.n. [Facuarembó, Diciembre] collection cited below also represents this long-petiolate form.

New York Bot. Gard. Econom. Mus. 7066 is supposed to represent this species, too, but is labeled Eugenia cauliflora Berg., probably as the result of a mixup in labels.

Morton in Contrib. U. S. Nat. Herb. 26: 474 excluded Besleria pentaphylla Vell. from the Gesneriaceae, but did not indicate its true disposition. In a letter to me dated April 17, 1950, he says "Doubtless you are right that it represents a Vitex." Sandwith, in a letter to me dated April 20, 1950, says "All I know, in literature, of Bignonia megapotamica Spreng., subsequent to its descr., is the exclusion from Bignoniaceae by Bureau and K. Schumann in Mart., Fl. Bras. viii. pars 2, 289 (1897). As you will see, they write '=Vitex spec.', confirming your evidence. When I read the description of Sprengel, this seems to me obvious, and I should imagine that there is little doubt that the Sellow type collection was the same as that of the later Vitex montevidensis Cham., also based on Sellow material. Sprengel's descr. agrees pretty well with our Sellow sheets of V. montevidensis." He says further, however, "I must admit, I have not myself seen Sprengel's type specimen. His name is legitimate within the genus Bignonia." Actually, I have seen Sprengel's type in the herbarium of the Botanisches Museum at Berlin, but this is now probably destroyed.

Citations: BRAZIL: Mattogrosso: Endlich 203 (B). Minas Gerais: Collector undesignated 627 (Br); F. C. Hoehne s.n. [Herb. Inst. Biol. S. Paulo 19446] (N, Sp); Lindberg 221 (Br, N--photo, S, Us, Z--photo); Mosén 642 (S, S, W--1323355), 643 (Cp, Cp, Lu, N, N--photo, Ol, S, Z--photo), 4324 (N--photo, S, Z--photo); Pohl 3599 (N, V, V, V, V, V); Regnell I.38b (B, Br, F--998446, G, K, Mu--1520, P, P, S, S, Ut, V, Vu, W--274928), I.383 (Ol, P, S, W--274927); Widgren 1321 (Br), s.n. [Caldas, 1345] (B, B, Br, Cp, K, Lu, Mu--1521, N, Ol, S, S, Vu). Paraná: Ceccatto 50 [Herb. Jard. Bot. Rio Jan. 57818; Herb. Mus. Parana. 2237] (It, N); Dusén 3408 (S, Us), 7262 (Cb, E--1036552, F--668445, G, I, K, N, S, W--1481791), 7426 (B, E--1036551, G, Mi, S), 10520 (Ca--501687, S), 14506 (B, S), 15956 (Cb, E--908138, F--668444, G, K, Lu, N, S), 16165 (B, Cb, It, N, N--photo, N--photo, S, W--1481850, Z--photo, Z--photo), s.n. [February 1904; Herb. Jard. Bot. Rio Jan. 5994] (N, S); Hatschbach 559 (It, N), 1703 (N); Hertel s.n. [Estrada Graciosa; Herb. Mus. Parana. 1589] (N); F. C. Hoehne s.n. [Herb. Inst. Bot. S. Paulo 23423] (It, N, Sp); Jönsson 1302a (S), 1382a (B, S, W--1481934); Reiss 115 (F--849668, I, N); Stellfeld 1217 [Herb. Mus. Parana. 2326] (N); Tessmann s.n. [Dec. 10, 1947; Herb. Mus. Parana. 2717] (N). Rio de Janeiro: Glaziou 4159a (P);

Riedel & Luschnath 1456 (N). Rio Grande do Sul: Bormüller 756 (A, G); Friedrichs 32908 (S); Gaudichaud 1450 (P), 3170 [Herb. Imp. Brésil 501] (P); Henz 32667 (S), s.n. [Nov. 6, 1946; Rambo 35421] (N); Herb. Martius s.n. (Mu--1349); Ihering 41 (B, Ja--5992); Leite 248 (N); Lindman 1111 1/2 (N--photo, S, Z--photo), A.397 (Lu, S, S, Us); Malme 232 (B, N, S, S, Us), 352 (Lu, S); Moldenke & Moldenke 19683 (N); Rambo 27080 (S), 29358 (N), 37965 (N); Reineck & Czermak 493 (B); Sellow 1142 (B, N--photo, V, V, Z--photo), 2355 [Macbride photos 17561] (B, B, K, Kr--photo, N--photo), 3170 (B, N), s.n. [Rio Pardo] (K), s.n. [Brasilia] (Cb, F--999007, K, K, K, Le, Le, Le, N--photo, N--photo, S, V, V, V, W--1323353, Z--photo, Z--photo), s.n. [Brasilia; Macbride photos 17563] (B, B, B, B, B, Br, Dc, F--663092, Kr--photo, N--photo, N--photo, P, Us, X, Z--photo), s.n. [Brasil. merid.; Macbride photos 17561] (Em, F--663090--photo, K, Vt, Vu, W--617649), s.n. [Herb. Sprengel] (B--type); Theissen s.n. [Herb. Inst. Bot. S. Paulo 50980; Herb. Rambo 7342] (N, Sp); Tweedy 6 (K). Santa Catharina: Gaudichaud 131 (B, Dc, N, P, P), 131 bis (P), s.n. (P); Gevieski 54 [H. B. R. 3332] (N, Z); Herb. Inst. Malariologia 106 (N), 151 (N); Herter 20132 (B); F. C. Hoehne s.n. [Herb. Inst. Bot. S. Paulo 24458] (N, Sp); G. Müller s.n. [Blumenau, 1384] (B); Reitz 2842 (N); Reitz & Klein 131 (Le), 1237 (Cb); J. A. Rohr 543 (N); Schwacke s.n. (Ja--5991); Ule 1065 (B, P, W--1323354). São Paulo: Gaudichaud 277 (P); A. Gehrt s.n. [Herb. Inst. Bot. S. Paulo 28363] (It, N, Sp); F. C. Hoehne s.n. [Herb. Inst. Bot. S. Paulo 869] (A, Em, N, Sp, W--1543126); W. Hoehne 659 (Mg, N, No); Moldenke & Moldenke 19534 (Es, Lg, Lg, N); Navarro de Andrade 109 (Ja--32263); Pickel 353 (N, Sf, Si); L. Roth 840 [Herb. Inst. Bot. S. Paulo 50353] (N, Sp); Sellow 355 (B, B); Usteri 1 (Mu--4051), s.n. [Herb. Inst. Bot. S. Paulo 15600] (It, N, Sp); Vecchi s.n. [Herv. Serv. Fl. Comp. Paul. Estr. Ferro 109; Herb. Inst. Bot. S. Paulo 1188; Herb. Jard. Bot. Rio Jan. 16298] (It, N, Sp); Warming 815 (Cp), 816 (Cp). State undetermined: Burchell 4250 (K); Herb. Martius s.n. (Br); Herb. Mus. Paris. s.n. (P); Kreuzpointner s.n. [Jan. 1897] (Mu--3744, Mu--3745); Sellow 335 (B, B), 1450 (B), 2148 (B), 2353 (P), s.n. (B, B); Widgren s.n. [Brasilia] (Lu, Lu). PARAGUAY: Balansa 1021 (Cb, K); Bettfreund 236 (B); Fiebrig 5382 (B, Bm, Cb, Ed, G, K, Le, Mu--4254, W--1173004), 5807 (B, W--1159385), 6015 (B), 6373 (Bm, Le); Hassler 9640 (B, Bm), 11417 (A, B, Bm, Cb, K, N, P, S, V, W--2055484), 12307a (A, B, Em, Cb, Cp, E--843244, Ed, G, K, Le, W--1057262); Jørgensen 3786 [Herb. Osten 22228] (Cp, Du--193064, E--971673, F--696335, F--766460, N, N, S, Ug, W--1433909), s.n. [Herb. Mus. Argent. Cienc. Nat. 23/2076] (N). URUGUAY: Berro 1970 (N, X), 5735 (N), s.n. [Facuarengo, Diciembre 1909] (Ug), s.n. [Facuarengo, Diciembre] (Ug); Castellanos s.n. [Herb. Inst. Miguel Lillo 15047] (N); Herter 1392 [Herb. Herter 88856] (Ca--505188, Cb, E--

1039723, F--364988, Ut), 1392b [Herb. Herter 94042] (Ca--770931, Cb, E--1068042, F--364989, G, Ut); Schröter s.n. [Herb. Osten 16073] (Ug), s.n. [Herb. Osten 19409] (Ug). ARGENTINA: Misiones: Bertoni 3006 (N); Denis s.n. [9.IX.1917] (N); Ekman 1976 (S), 1977 (S); Gruner 413 [15.IX.1930; Herb. Osten 23183] (N, Ug), 413 [15.I.1931; Herb. Osten 23183] (Ug); Lillo 10566 [Herb. Inst. Miguel Lillo 32546] (N); T. Meyer 11477 (N); Montes 1548 (N), 7115 (N); Niederlein 1810 (B); D. Rodriguez 53 [8.XII.1909; Herb. Inst. Miguel Lillo 9999] (N), 53 [3.XII.1913] (N), s.n. [Herb. Inst. Miguel Lillo 10566] (N); T. Rojas 4364 [Herb. Osten 19351; Herb. Lab. Bot. Buenos Aires 40325] (Ug); A. G. Schulz 6510 (Sz), 7161 (Sz); Vattuone & Bianchi 170 (W--1043575). CULTIVATED: Argentina: Curran 34 (Y). LOCALITY OF COLLECTION UNDETERMINED: Collector undesignated s.n. (V); New York Bot. Gard. Econom. Mus. 5302 (N); Puiggari 3319 (P).

VITEX MEGAPOTAMICA f. ALBIFLORA Moldenke, Phytologia 4: 183. 1953.

This form differs from the typical form of the species in having entirely white corollas.

The type of the form was collected by my good friend, Raulino Reitz (no. 3226), in capoeirão at Brusque, at an altitude of 50 meters, Santa Catharina, Brazil, on December 4, 1949, and is deposited in the Britton Herbarium at the New York Botanical Garden. It is said to be a tree 8 meters tall, called "torumã".

Citations: BRAZIL: Santa Catharina: Reitz 3226 (N--type, S--isotype).

VITEX MEXIAE Moldenke, Rev. Sudam. Bot. 5: 2. 1937.

Synonymy: Vitex sellowiana var. parviflora Schau. in A. DC., Prodr. 11: 690. 1847 [not V. parviflora A. L. Juss., 1806]. Vitex brasiliensis Mart. ex Schau. in A. DC., Prodr. 11: 690, in syn. [not V. brasiliensis Steud., 1821].

Literature: A. L. Juss., Ann. Mus. Nat. Hist. Paris 7: 76. 1806; Steud., Nom. Bot., ed. 1, 888. 1821; Schau. in A. DC., Prodr. 11: 690. 1847; Glaz., Bull. Soc. Bot. France Mém. 3: 547. 1911; Moldenke, Rev. Sudam. Bot. 5: 2. 1937; Moldenke, Alph. List Common Names 16, 20, & 21. 1939; Moldenke, Known Geogr. Distrib. Avicenn. 27. 1939; Moldenke, Prelim. Alph. List Invalid Names 50 & 52. 1940; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 39, 75, & 103. 1942; Moldenke, Alph. List Invalid Names 52 & 55. 1942; Moldenke, Phytologia 2: 120. 1944; H. N. & A. L. Moldenke, Pl. Life 2: 78. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 95, 165, & 201. 1949.

Shrub or tree, to 8 m. tall; bark shreddy; branchlets rather slender, gray-brown, obtusely tetragonal or subterete, puberulent, becoming subglabrate in age; twigs slender, obtusely tetragonal, mostly compressed, brown, rather densely short-pubescent, somewhat ampliate at the nodes; nodes not noticeably annulate; principal internodes 0.7--5.5 cm. long; leaves decussate-opposite, 5--7-foliolate; petioles slender, 2.5--8 cm. long, convex be-

neath, flattened above, rather densely short-pubescent or puberulent with brownish hairs, slightly ampliate at the base, somewhat irregularly disciform at the apex; leaflets usually quite unequal in size, the lateral ones smaller than the central one, the lowermost quite reduced, all petiolulate; petiolules puberulent or short-pubescent, deeply canaliculate, margined, 2--10 mm. long, the lowermost usually considerably shorter than the central ones; leaflet-blades chartaceous, rather firm, dark-green and shiny above, rather densely short-pubescent with cinereous or more usually sordid-brownish hairs beneath, very obscurely strigillose with very minute hairs or glabrate above, the central ones oblong-elliptic or subobovate, 6--12.5 cm. long, 1.3--4.5 cm. wide, acuminate at the apex (rarely acute on the smallest leaflets), entire, rather narrowly acute or subacuminate at the base; midrib slender, rather deeply impressed above, prominent beneath; secondaries slender, 9--16 per side, often rather close together, arcuate-ascending, arcuately joined at the margins, usually somewhat impressed above, prominent beneath; vein and veinlet reticulation very abundant and fine, rather obscurely subprominent above, the larger portions prominent beneath; inflorescence axillary, cymose, 3.5--11 cm. long, 1.5--4.8 cm. wide, 1--4 times dichotomous with a central terminal flower plain in each dichotomy, the branches rather divaricate, densely short-pubescent or puberulent throughout; peduncles slender, elongate, 2.5--7.5 cm. long, flattened, occasionally somewhat ampliate at the apex; cyme-branches short, flattened, ampliate and annulate with a band of denser pubescence at each node; bracts none; bractlets numerous, linear, 2--5 mm. long, pubescent or puberulent; prophylla linear, 1--2 mm. long, pubescent; calyx campanulate, 2.5--3 mm. long and wide, rather densely strigillose-puberulent with antorse hairs, its rim minutely 5-dentate; corolla hypocrateriform, light-purple or blue (or white), densely puberulent or short-pubescent on the outside, its tube broadly cylindrical, about 5 mm. long, pubescent at the mouth within, its limb 5-lobed, the lobes 2--2.5 mm. long, the inferior central one obovate, broader than the rest; stamens and style short-exserted, projecting 2--3 mm. from the corolla-mouth; fruiting-calyx incrassate, very shallowly cupuliform or almost patelliform, about 8 mm. wide, minutely puberulent on the outside, its rim irregularly dentate; fruit drupaceous, green, subglobose, 7--8 mm. long and wide, nigrescent in drying, glabrous.

This endemic species is based on several collections of Carl Friedrich Philipp von Martius from Sebastianopolis and from Minas Gerais, Brazil. Mexia 5251 was originally regarded by me as the type collection, but this is not correct, since I did not publish the presently accepted binomial as a new taxonomic entity, but merely as a new status and name for Schauer's variety, which was based on the Martius collections.

V. mexiae inhabits cut-over woods, mountain woods, and overgrown slopes, ascending to 720 meters altitude. It has been collected in anthesis in September and November, and in fruit in January and March. It has been confused in the past with V. cymo-

sa Bert., V. sellowiana Cham., V. vauthieri P. DC., and the genus Tecoma. Glaziou reports the common names "ipé branco", "maminha", and "maminha de cadella" for his no. 5957 from Santo Antonio near Petropolis, Rio de Janeiro, which he erroneously identified as V. sellowiana. Miss Mexia reports the name "Maria preta" and says that the species grows scattered but is still common in Minas Gerais.

Citations: BRAZIL: Minas Gerais: Martius s.n. [Villa de Campanha] (Mu--676--cotype, N--photo of cotype, Z--photo of cotype); Mexia 5251 (A, B, Bm, Cb, E--1069164, G, Gg--33613, I, N, P, S), 5474 (A, B, Bm, Cb, E--1069163, F--877047, G, Gg--336144, I, N, P, S); Riedel & Lund 2790 (N); Saint-Hilaire B².2208 bis, in part (P). Rio de Janeiro: Glaziou 5957 (B, Cp, Cp, K, P, S); Martius 405 (Mu--677--cotype, N--photo of cotype, Z--photo of cotype), s.n. [Sebastianopolis] (Mu--678--cotype, S--photo of cotype); Miers 4585 (K), 4587 (K), s.n. [Organ Mts., Dec. 1837] (Bm), s.n. [Organ Mts., March 1838] (Bm); Santos Lima 325 [Herb. Jard. Bot. Rio Jan. 27073] (N). São Paulo: Löfgren 100 (N, N--photo, S, S, Z--photo), 479 (S), s.n. [Herb. Jard. Bot. Rio Jan. 4078] (B, N--photo, S, Ut, Z--photo). State undetermined: Schüch s.n. (N--photo, V, Z--photo). CULTIVATED: Brazil: Handro arb. viv. 515 [Herb. Inst. Bot. S. Paulo 39803] (Sp).

VITEX MICRANTHA Gürke in Engl., Bot. Jahrb. 18: 170. 1893.

Synonymy: Vitex longe-acuminata A. Chev., Expl. Bot. Afr. Occ. Franç. 1: 506, hyponym. 1920. Vitex longeacuminata A. Chev. ex Moldenke, Alph. List Invalid Names 54, in syn. 1942.

Literature: Gürke in Engl., Bot. Jahrb. 18: 170. 1893; Cummins, Kew Bull. 1898: 76--77. 1898; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 324. 1900; A. Chev., Vég. Util. Afr. Trop. Franç. 266. 1909; A. Chev., Expl. Bot. Afr. Occ. Franç. 1: 506--507. 1920; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 43, 56, 80, & 83. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 46, 47, & 103. 1942; Moldenke, Alph. List Invalid Names 54. 1942; Moldenke, Phytologia 2: 120. 1944; Moldenke, Alph. List Invalid Names Suppl. 1: 29. 1947; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 112 & 201. 1949.

A shrub or small tree, to 5 m. tall; branchlets glabrous; leaves 5-foliolate; petioles slender, 4--5 cm. long, glabrous; leaflets subsessile, their blades moderately firm, green and glabrous on both surfaces, obovate-cuneate, entire, conspicuously cuspidate at the apex, the central ones about 5 cm. long and 2 cm. wide; cymes axillary, distinctly pedunculate, few-flowered, long, their branches glabrous; calyx campanulate, about 1 mm. long, thinly pubescent, its rim with very small teeth; corolla small, white, with the lip somewhat violet, silky on the outside; fruiting-calyx about 2 mm. in diameter.

The species is based on Mann 860 from Sierra Leone. Gürke's name was published in December of 1893 [not "1894" as usually cited] according to a note by Rolfe on a sheet of Clerodendrum

triplinerve Rolfe in the Kew herbarium and a note by N. E. Brown on a sheet identified as Vitex flavescens Rolfe in the same herbarium.

Pieper cites an Azelius s.n. from west tropical Africa in the Uppsala herbarium, in addition to the Cummins 74 cited by Baker. Chevalier cites his nos. 1907, 15409, 16229, 17371, and 17803 from Ivory Coast, calling the species V. longe-acuminata on page 506 and V. micrantha on page 507 of his work. Common names are "an 'dofiti", "andofiti", "djin-akwa", "feve", "fevei", and "sah-sah."

Citations: LIBERIA: G. P. Cooper 70 [Mus. Yale School Forest. 13720] (N). IVORY COAST: Banco 386 (N, S). CAMEROONS: Zenker s.n. [Bipindi] (N).

VITEX MICROPHYLLA Moldenke, Phytologia 3: 442--443. 1951.

Shrub about 2 m. tall, much-branched; branches and branchlets very slender, grayish, acutely or obtusely tetragonal, more or less cinereous-puberulent, glabrescent in age, the angles sometimes slightly margined; twigs numerous, short, very slender, very densely cinereous- or sordid-pubescent with short rather spreading hairs; nodes not annulate; principal internodes 0.3--3.5 cm. long, mostly much abbreviated; leaf-scars conspicuously elevated, corky; leaves decussate-opposite, 3-foliolate, numerous; petioles filiform, 4--21 mm. long, very densely cinereous- or sordid-pubescent; petiolules filiform, 1--6 mm. long, densely cinereous-pubescent, or obsolete on the lateral leaflets; leaflet-blades thin-chartaceous or membranous, rather uniformly bright-green on both surfaces or somewhat lighter beneath, varying from broadly elliptic or obovate to subrotund, often somewhat asymmetric, subappressed-puberulent above, very densely tomentellous-pubescent beneath, not punctate, the central ones 4--21 mm. long, 4--14 mm. wide, varying from acute to obtuse or rounded at the apex, entire, varying from subcuneate-acute to rounded at the base; midrib filiform, flat above, very slightly subprominulous beneath; secondaries filiform, 3--5 per side, flat or obscure above, mostly obscured by the pubescence beneath, ascending, hardly arcuate; veinlet reticulation rather abundant, mostly indiscernible above, mostly obscure beneath; inflorescence terminating in the very short axillary twigs, in very small panicles 1--3 cm. long and 1--2 cm. wide, few-flowered, equaling or shorter than the subtending leaves; peduncles filiform, 1--5 mm. long, densely short-pubescent with cinereous or sordid hairs, sometimes with a pair of very small 3-foliolate leaf-like bracts at the apex; pedicels and inflorescence-branches filiform, densely sordid-pubescent, the former 0.5--1.5 mm. long, the latter to 4 mm. long; bractlets linear, to 2 mm. long, densely cinereous-pubescent; calyx campanulate, herbaceous, about 2 mm. long and wide, densely short-pubescent or puberulent and resinous-punctate, its rim shortly 5-dentate; corolla yellowish or the lobes brownish and the tube greenish-white, 2-lipped, puberulent and resinous-punctate on the outside, the tube about 3 mm. long, the lower lip a-

bout 2 mm. long, wide-spreading, the upper lobes about 1 mm. long, rounded at the apex; stamens and pistil equaling the corolla-tube; fruiting-calyx incrassate, cupuliform, about 3.5 mm. long and wide, puberulent and somewhat resinous-punctate, the rim conspicuously triangular-dentate, the teeth attenuate-acute at the apex; fruit drupaceous, elliptic, about 8 mm. long and 5 mm. wide, glabrous, shiny, much wrinkled in drying.

The type of this species was collected by André Seyrig (no. 250) among gneiss rocks, at an altitude of between 750 and 1000 meters, in the neighborhood of Ampandrandava, between Bekily and Tsivory, Madagascar, in October of 1942, and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris. The type specimen is in flower, while the Humbert collection, cited below, is in fruit.

Citations: MADAGASCAR: Humbert 14148 (P); A. Seyrig 250 [Herb. Jard. Bot. Tananarive 6095] (N--isotype, N--photo of type, P--type, P--isotype, Z--photo of type).

VITEX MILNEI Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 71 & 83. 1928.

Synonymy: Vitex divaricata J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 327. 1900 [not V. divaricata Sw., 1788, nor Griseb., 1912]. Vitex citrifolia Isert ex Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 71, in syn. 1928.

Literature: Sw., Prod. Veg. Ind. Occ. 93. 1788; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 327. 1900; Mildbr. in Von Mecklenb., Ergebn. Deutsch. Zentral-Afrik. Exped. 2: 190. 1910-1911; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 51, 71, 82, & 83. 1928; Moldenke, Prelim. Alph. List Invalid Names 50. 1940; Moldenke, Alph. List Invalid Names 53. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 47, 48, & 103. 1942; H. N. & A. L. Moldenke, Pl. Life 2: 72. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 112, 114, & 201. 1949.

A shrub or small tree; branchlets glabrous; leaves 5-foliolate; petioles about 5 cm. long; leaflets all distinctly petiolulate, their blades obovate-cuneate, entire, obtuse at the apex, the central one about 7.5 cm. long and 3.7 cm. wide; cymes axillary, long-pedunculate, with long divaricate main branches, the branches finely pubescent; calyx campanulate, about 1 mm. long, pubescent outside, its rim with very small teeth; corolla small, silky outside; fruit not known.

The type of this species was collected by William Grant Milne on Fernando Po. Pieper cites in addition Warnecke 156a from Togoland and an Isert specimen collected between 1784 and 1786 and deposited in the Copenhagen herbarium, but without a record of the place of collection. It is the type of the cheironym V. citrifolia. The V. divaricata of Grisebach is V. divaricata var. cubensis Urb. In my 1940 publication, cited above, I erroneously regarded V. divaricata Baker as a synonym of V. doniana Sweet. This error I corrected in my 1942 publication on invalid names in this and related groups.

VITEX MOLLIS H.B.K., Nov. Gen. & Sp. Pl. 2: 245. 1818.

Synonymy: Vitex lasiophylla Benth., Bot. Voy. Sulphur 155. 1844. Vitex mollis Hook. & Arn. apud Benth., Bot. Voy. Sulphur 155, in syn. 1844. Vitex mollis Kunth apud Schau. in A. DC., Prodr. 11: 691. 1847. Cornutia ternata Sessé & Moc., La Natureza, ser. 2, 1: app. 133. 1889. Vitex hawaiiensis H. J. Lam, Bull. Jard. Bot. Buitenz., sér. 3, 3: 59--60. 1921. Vitex lanata Sessé & Moc. ex Moldenke, Prelim. Alph. List Invalid Names 51, in syn. 1940. Vitex tomentosa Pav. ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940 [not V. tomentosa Rich., 1941]. Vitex tomentosa Sessé & Moc. ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940 [not V. tomentosa Rich., 1941]. Vitex trifolia Sessé & Moc. ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940 [not V. trifolia L., 1781, nor Moon, 1895, nor Vahl, 1941]. Vitex hians Née ex Moldenke, Alph. List Invalid Names Suppl. 1: 28, in syn. 1947. Vitex pendula Née ex Moldenke, Alph. List Invalid Names Suppl. 1: 29, in syn. 1947. Vitex mollis (H.B.K.) Standl., in herb.

Literature: H.B.K., Nov. Gen. & Sp. Pl. 2: 245. 1818; Hook. & Arn., Bot. Beech. Voy. 1: 305. 1838; Benth., Bot. Voy. Sulphur 155. 1844; Schau. in A. DC., Prodr. 11: 691. 1847; Seem., Bot. Voy. Herald 8: pl. 71. 1856; Sessé & Moc., La Natureza, ser. 2, 1: app. 133. 1889; H. J. Lam, Bull. Jard. Bot. Buitenz., sér. 3, 3: 59--60. 1921; H. J. Lam, Bull. Jard. Bot. Buitenz., sér. 3, 5: 175. 1922; D. Bois, Plant. Aliment. 2: 440. 1928; Moldenke, Alph. List Common Names 2, 3, 10, 12, 22, 23, 30, 31, & 33. 1939; Moldenke, Geogr. Distrib. Avicenn. 14 & 40. 1939; Moldenke, Suppl. List Common Names 14. 1940; Moldenke, Prelim. Alph. List Invalid Names 24, 51, & 52. 1942; A. Gray, Proc. Am. Acad. 21: 407. 1886; Gentry, Carnegie Inst. Wash. Publ. 527: 33, 37, 42, 45, 66, 223, 224, & 306. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 19, 75, & 103. 1942; Moldenke, Alph. List Invalid Names 22, 53, 54, & 55. 1942; F. Miranda, Anal. Inst. Biol. Mex. 13: 450. 1942; Moldenke, Phytologia 2: 120. 1944; Moreno Bello, Medic. Homeopat. Mex. 1: 14--25. 1944; W. C. Leavenworth, Am. Midl. Nat. 36: 146, 147, & 187. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 11, 28, & 29. 1947; Neal, Pacific Sci. 1: 244. 1947; Reko, Bull. Soc. Bot. Mex. 6: 24. 1948; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 34, 165, & 201. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 15. 1949; Langman, Select. Guide Mex. Flow. Pl. 453 (mss.). 1950; Shreve & Wiggins, Carnegie Inst. Wash. Publ. 591: 89 & 94. 1951.

Illustration: Seem., Bot. Voy. Herald 8: pl. 71. 1856.

Shrub or small spreading or medium-sized tree, to 18 m. tall; trunk often corpulent, to 1.2 m. in diameter, the bark brown; branchlets medium-slender, obtusely tetragonal or subterete, gray-brown or buff in color, short-pubescent or puberulent, becoming subglabrate in age; twigs more slender, obtusely tetragonal, densely villose-tomentose when young, becoming merely densely pubescent in age, the pubescence cinereous, albidous, or flavescent, sordid-gray or brownish in age; nodes obscurely or not at

all annulate; principal internodes 1--6 cm. long, mostly abbreviated; leaves decussate-opposite, 1--3-foliolate, rarely 5-foliolate; petioles slender, 0.3--5 cm. long, convex beneath, flattened and canaliculate above, densely villosulous-tomentose when young, becoming merely sparsely pubescent in age (the pubescence colored like that of the adjacent twigs), not noticeably ampliate at the base nor disciform at the apex; leaflets usually unequal in size, the 2 lateral ones (if present) much reduced, or occasionally subequal, all short-petiolate on densely pubescent canaliculate and margined petiolules 1--9 mm. long, the lateral petiolules usually much shorter or obsolete; leaflet-blades rather firmly chartaceous, rather uniformly dark-green or light-green on both surfaces, the central ones oblong, elliptic, or obovate, 2--14.5 cm. long, 1.3--5.8 cm. wide, obtuse or rounded at the apex, often emarginate, rarely subacute, entire (or rarely serrate above the middle on shoots), obtuse or acute (sometimes cuneate) at the base, sometimes slightly inequilateral, densely velutinous villous or tomentulose on both surfaces but especially beneath before and during anthesis, becoming merely sparsely short-pubescent beneath and minutely puberulent or pulverulent above in age, the lateral ones similar in all respects but usually much reduced in size, the pubescence before and during anthesis sordid-yellow or flavescent, after anthesis cinereous or brownish; midrib slender, subimpressed above, prominulous beneath; secondaries slender, 8--15 per side, ascending, usually slightly arcuate, flat or subimpressed above, slightly prominulous beneath, rather indistinctly joined at the margins; vein and veinlet reticulation fine, often sparse, usually obscure or indiscernible on both surfaces before and during anthesis, the larger portions subimpressed above on fully matured leaves and subprominulous beneath or distinctly prominulous throughout; inflorescence axillary, cymose, 1.5--6.5 cm. long, 2--5 cm. wide, 1--3 times dichotomous, 3--13-flowered, the branches usually widely divaricate, densely villosulous-tomentose throughout with flavescent hairs before and during anthesis, more sparsely sordid-pubescent at time of fruiting; peduncles slender, 1--3.5 cm. long, flattened; pedicels obsolete or to 2 mm. long and slender, at time of fruiting to 4 mm. long; bracts none; bractlets linear, 2--5 mm. long, densely tomentose or pubescent; prophylla minute, linear, usually hidden in the dense pubescence; flowers fragrant, attractive to Diptera and Hymenoptera; corolla varying from purple, faint-purple, or blue to lavender or white with a violet lip, usually the upper lip pale-lilac and the lower lip deeper lilac, streaked purple in the throat; fruit small, about the size of a filbert (Corylus avellana) or cherry (Prunus avium), edible, with a pleasant acid taste, black when ripe.

The type of this common species was collected by Aimé Jacques Alexandre Bonpland at Chilpancingo, Guerrero, Mexico, and is deposited in the herbarium of the Muséum National d'Histoire Naturelle at Paris. The species has been described by collectors as inhabiting chaparral, canyons, short-tree forests, granitic hillsides, the lower slopes of mountains, partly wooded hillslopes,

valley lands, arid slopes with low scattered trees, dry hills, lakesides, dry spots in low sandy matorral, roadsides, and arroyos, and often to be found near water on creek or other stream banks, at altitudes of from 33 to 1665 meters. It has been collected in flower from December to June, and in fruit in March and from May to November. Gentry asserts that the fruit is eaten by natives, and this statement is repeated by Bois. Miss Mexia states that the bark is used as a remedy for fevers and that the wood is employed for firewood. She also states that the plant is used to make a medicine to combat diarrhoea in infants. Hinton reports that a decoction is made from it to treat stomach aches. Common names include "agualamo", "aguamalarío", "aguamalia", "agüfílate", "ahuilote", "atuto", "coyotamate", "coyotomate", "flor de tila", "huhuwali", "huhw wali", "mate", "nanche de perro", "negro coyote", "obalamo", "oovalama", "poroté", "tescalama", "torote", "ualama", "ualamo", "ubalamo", "uvalama", "uvatano", "uvulama", "valama", and "walamo".

Leavenworth & Hoogstraal state on one of their labels that the juice is milky and the fruit yellow when ripe, but this is probably an error and probably applies to some palmately-leaved euphorbiaceous plant which they also collected. Hinton states that the flowers of his no. 3384 were completely white. If so, this may be worthy of a color-form designation. Bark specimens may be seen on Mexia 1856 at Arnold Arboretum, Missouri Botanical Garden, University of Michigan, University of California at Los Angeles, and in the Britton Herbarium, on Mexia 540 at the Arnold Arboretum, Missouri Botanical Garden, University of Michigan, and the Britton and United States National herbaria, and on Palmer 668 in the United States National Herbarium. Palmer 336 at Edinburgh has leaflets serrate at the apex. Pringle 5499 in the University of Vermont herbarium has some of its leaves 1-foliolate, others 3-foliolate with the 2 lateral leaflets very tiny. It is obviously taken from a watersprout. Matuda 23008 shows leaves that are very hairy, while in his 28005 they are almost glabrous.

The species has been confused with *V. pyramidata* B. L. Robinson, *V. vestita* Wall., *Casimiroa tetrameria* Millsp., and *Eugenia brasiliensis* Lam. Langlassé labeled it "Bignoniaceae". The Sessé, Mocino, Castillo, & Maldonado 2187 at Chicago is mixed with no. 2187 bis, *Vitex divaricata* Sw. The M. E. Jones 23032 distributed as *Vitex mollis* is actually *Tabebuia chrysantha* (Jacq.) Nichols. in the Bignoniaceae. The *Vitex tomentosa* of Richard is *V. rufescens* A. L. Juss., while *V. trifolia* Vahl is *V. triflora* Vahl and *V. trifolia* Moon is *V. altissima* L. f. The type of the genus *Lagasca* Née is Née 38. Cotypes of *V. pendula* are Née 39, 40, 49, and 50; the type of *V. hians* is Née 41, of *V. tomentosa* Pavon is Pavon s.n. from Peru, of *V. lanata* Sessé & Moc. is Sessé, Mocino, Castillo, & Maldonado 2184, of *V. tomentosa* Sessé & Moc. is these same collectors' no. 2183, of *V. trifolia* Sessé & Moc. is their no. 2187, and of *Cornutia ternata* is their no. 644. The type of *V. hawaiiensis* is Curran 127, probably cultivated in the Foster

garden in Hawaii and deposited in the Herbarium Bogoriense at Buitenzorg.

Gentry reports that this species is riparian in canyon bottoms in the short-tree forest and the low margin of oak forests, at altitudes of 800 to 3000 feet. He says that in the warm moist canyons it forms a spreading tree with heavy foliage. "It bears a small drupeaceous fruit eaten by the natives. Burros are also fond of the fruits and will pick them off the ground. They ripen in late summer, and are jet black and bitter. Flowers early summer." In another place he says it is a tree of the canyons and foothills; the fruit eaten raw or mashed and mixed with sugar. He also says it is a characteristic tree of the mesas in pine forests. The fruit is said by Hartman to be eaten by the Tarahumares.

Miranda records the species from Puebla, but I have not yet seen any specimens from that state. He says it is called "coyotomate" there. Mature leaflets of V. mollis resemble those of V. pyramidata B. L. Robinson, but in the latter species they always have those characteristics, even during anthesis, and are even more deeply impressed-reticulate above and prominent-reticulate beneath, and the leaflets are mostly 5 in number. The dense villous pubescence of V. mollis during anthesis is never seen in V. pyramidata. The Rose s.n. specimen in the United States National Herbarium, however, does show two 5-foliolate leaves. Serrate 1-foliolate and 3-foliolate leaves are seen on Ortega 6764 at the Chicago Natural History Museum. Hinton definitely states that the flowers are either white or else blue or pink, and that all types are called by the same vernacular name. The fruit is often sold in markets on the west Mexican coast at the close of the dry season; it is slightly bitter but not unpleasant to the taste. Rose reports that the fruit is black or bluish-black, nearly spherical, 15--20 mm. in diameter, and that it is eaten raw. Collins & Kempton say it is eaten raw or cooked, and that the leaves are used in the treatment of afflictions of the chest.

The label on the Kew sheet of T. Coulter 545 says "perhaps from Sierra Alta" and that of no. 1168 says "Sa. Blas to Guadaluaxare", so these collections may be from Nayarit or Jalisco. The label on Hartman 566 is inscribed both "Morelos" and "Chihuahua". Ortega 73 may be from Nayarit or Sinaloa, as its label says "San Ignacio, El Limon". The same is true of his no. 12, inscribed simply "San Blas". Langlassé 21 is said to be from "Potrero de Guayabo" -- there is a Guayabo in each of the states of Chihuahua, Michoacán, Sinaloa, and Veracruz, but one of the labels of this collection says "Michoacan et Guerrero", so I am citing it as from Michoacán. The Hahn collection from "San Martín" may be from Chiapas, Chihuahua, Coahuila, Durango, Guerrero, Hidalgo, Jalisco, México, Michoacán, Nuevo Leon, San Luis Potosí, Veracruz, or Zacatecas, as there is a locality by this name in each of these states.

It is worthy of note here that pages 1 to 192 of H.B.K., Nov. Gen. Sp. Pl., vol. 2, were issued in the year 1817, while pages 193 to 406 were issued in 1818.

Citations: MEXICO: Baja California: T. Coulter 545 (Ch, G, K); Edw. Palmer 3 (Bm, C, Cp, G, K, Os, Pa, Ut, Ut, W--58265). Chihuahua: C. V. Hartman 1034 (Gg--311394, N); LeSueur 1251 (Au, F--911037); Edw. Palmer "U" (C, D, G, Io, K, Pa, Ut, W--58245), s.n. [Aug.-Sept. 1885] (Me); Zingg A.2 (F--703437). Colima: Barclay s.n. [Manzanilla Bay] (K, K); Kerber 305 (B); Edw. Palmer 66 (Cp, S, W--398335). Durango: Seemann 2117 (Em, K, N). Guerrero: Beechey s.n. [Acapulco] (K); O. M. Clark 7070 (N), 7163 (N); G. F. Ferris 4 (Du--192719); Herb. Humboldt & Bonpland s.n. [Chilpancingo; Macbride photos 39498] (F--1033378--photo of type, Kr--photo of type, N--photo of type, P--type, Z--photo of type); Hinton 9970 (F--933033, K, N, N), 9971 (F--938037, K, Ld, Me, N), 14121 (N, N); Née 38 (Q), 39 (Q), 40 (Q), 41 (Q), 49 (Q), 50 (Q); E. W. Nelson 2276 (G, W--238409); Edw. Palmer 336 (A, C, E--116177, Ed, G, K, Mi, W--258766); B. P. Reko 5138 (F--685880); Rose, Painter, & Rose 9402 (N, W--452890). Jalisco: Bárcena 511 (Me); Brandege 2 (Ca--168824); Diquet s.n. (N, N); M. E. Jones 355 (F--689006, W--238007); Mexia 1856 (A, Bm, Ca--350719, Cb, Cb, Du--195328, E--957617, F--689773, Gg--156044, La, Mi, N, W--1317911); E. W. Nelson 4132 (W--203176); Edw. Palmer 129, in part (C, C, D, D, G, K, Me, Os, P, Pa, Ut, Vu, W--58246, X); Pringle 5499 (G, Vt); Seler & Seler 3435 (B, B, Du--283965, G, Gg--245869, W--1205629). México: Hinton 450 (K, N), 3215 (K, Ld), 3384 (K, N, N), 3752 (K, N), 5704 (K, N); Matuda 28005 (Cb), 28008 (Z); Matuda & al. 30695 (Z), 30389 (Z). Michoacán: Emrick 61 (F--95521); Endlich 1342 (B); Hahn s.n. [Cutzaro] (P); Langlassé 21 (B, Cb, Cb, G, K, P); Leavenworth & Hoogstraal 1591 (Gg--310337, Ur), 1707 (N), 1726 (N, Ur), 1766 (Ur); E. W. Nelson 6944 (G, W--399313); K. Reiche 161 (Mu). Morelos: Bilimek 80 (Bm, G, G, K, N, P, W--53257), 81 (Br, Cp, P), 32 (Bm, G, G, K, N, P, P); Hahn s.n. [Xochicala] (P); Hartman 566 (G); E. Lyonnet 2170 (W--1748229); Moldenke & Moldenke 19332 (Es, Lg, N); Pringle 6993 (A, B, Bm, Br, Ca--139755, Cb, Cm, Cp, D, E--116172, Ed, Ed, F--77026, G, Io--38765, It, Me, Me, Me, Mi, Mu--3821, N, P, Po--64771, S, V, Vu, W--354499, X), 7130 (E--116175, Vt); Rose, Painter, & Rose 8577 (W--452071). Nayarit: Barclay 1166 (Bm); Collector undesignated s.n. [Tepic, March 1893] (F--354714, W--1082138); Collins & Kempton 37 (W--1168226); T. Coulter 1168 (K); R. J. Ferris 6010 (Du--195937); J. Gonzalez Ortega 12 (W--1165154), 6191 (G, W--1267120), 6664 (Gg--202740, N, W--1407007); M. E. Jones 22898 (Ca--400648, F--689269, G, I, N, Po--162379), 22908 (Po--162380); Lamb 558 (B, Du--9525, E--116176, G, N, W--275198, W--454920, X); C. D. Mell 538 (N, W--1034345), s.n. [Estapa, April 13, 1930] (F--689286); Mexia 540 (A, Bm, Ca--349644, Cb, E--957575, F--689291, Gg--155894, Mi, N, W--1317816); Reko 4459 (W--1268963); J. N. Rose 1500 (G, W--300339), s.n. [near Acaponeta, July 31, 1897] (W--842981); Rose, Standley, & Russell 14306 (N, W--637172); Sheldon 57 (G). Oaxaca: Conzatti & Caninu

2485 (F--246986); Ghiesbreght s.n. [1842] (P); Hahn 64 (P); Jurgensen 52 (Cb, K); E. W. Nelson 2625 (F--660604, W--566313). Sinaloa: Gentry 5924 (N), 6143 (Ge); Goldman 272 (G, N, W--335770), 360 (G, Gg--228595, W--360281); J. Gonzalez Ortega 12 (Me, Me), 73 (Me, Me), 144 (F--598099), 4613 (W--1034185), 6698 (F--689323, Gg--202794, W--1407040), 6764 (F--709200), 7416 (F--744430); Nervaez Montes & Salazar 144 (W--1035118); J. N. Rose s.n. [near Colomas, July 16, 1997] (W--866792); Rose, Standley, & Russell 13200 (N, W--636027), 13603 (W--636433), 13818 (N, W--636650). Sonora: T. S. Brandegee s.n. [May 13, 1892] (Du--9524); Drouet & Richards 4002 (Du--274725, F--1013772, N); Gallegos 555 (Me), 556 (Me), 557 (W--1205299), s.n. [Mayo 1922] (Me, Me); Gentry 1455 (Ca--576787, E--1103225, F--809965, Fs, Ge, I, Me, S); Hartman 1034 (G); Edw. Palmer 668 (W--58243); J. N. Rose 1268 (G, W--30087); Rose, Standley, & Russell 12419 (W--635225), 12711 (G, N, W--635522); Shreve 6089, in part (Fs); Wiggins 6297 (Du--252294), 6298 (Du--252295), 7365 (Du--263014, Fs, Mi); Wiggins & Rollins 452 (Du--295786, Ld, N). Veracruz: Galeotti 795k (B, Br, Br, Br, G, N, V, W--572882, X, X); Hahn s.n. [San Martin, 4 avril 1965] (P). State undetermined: Haenke 1591 (N); Herb. Pavon s.n. [Nueva Espafia] (X); Edw. Palmer s.n. [Muleji, 1887] (Vu); Sessé, Mociffo, Castillo, & Maldonado 644 (F--845741, N--photo, Q, Z--photo), 2183 (F--847076, Q), 2184 (F--847139, Q), 2187 (F--847004, F--847134, Q). CULTIVATED: Hawaiian Islands: Curran 127 (Bz--24444); Kelly 101 (Gg--31502). Peru: Pavon s.n. (Cb, E--photo, N--photo, P, Z--photo). MOUNTED ILLUSTRATIONS: Sessé & Mocino plate of Cornutia ternata [Macbride photos 30832] (F--929250--photo, N--photo, Z--photo).

VITEX MOMBASSAE Vatke, Linnaea 43: 533. 1882.

Synonymy: Vitex flavescens Rolfe, Bolet. Soc. Brot. 11: 87. May 1893. Vitex mechowii Gürke in Engl., Bot. Jahrb. 18: 167. Dec. 1893. Vitex shirensis J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 326, in part. 1900. Vitex goetzei Gürke in Engl., Bot. Jahrb. 28: 464. 1900. Vitex mufutu DeWild. in Fedde, Repert. 13: 142. 1914.

Literature: Vatke, Linnaea 43: 533. 1882; Rolfe, Bolet. Soc. Brot. 11: 87. May 1893; Gürke in Engl., Bot. Jahrb. 18: 167. Dec. 1893; Gürke in Engl., Pflanzenw. Ost-Afr. C: 339. 1895; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 321, 326, & 521. 1900; Gürke in Engl., Bot. Jahrb. 28: 464. 1900; Hiern, Cat. Afr. Fl. Welw. 1 (4): 834. 1900; Henriques, Bolet. Soc. Brot. 16: 69. 1900; DeWild., Etud. Fl. Katanga 121. 1903; Gürke in Baum, Kunene-Sambesi Exped. 350. 1903; Durand, Syllog. Fl. Congol. 437. 1909; R. E. Fries, Ergebn. Schwed. Rhodesia-Kongo-Exped. 1: 273. 1911-1912; DeWild. in Fedde, Repert. 13: 142. 1914; DeWild., Contrib. Etud. Fl. Katanga 67. 1921; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 50, 66--68, & 82--84, pl. 11. 1928; DeWild., Contrib. E-

tud. Fl. Katanga Suppl. 2: 105. 1929; Worsdell, Ind. Lond. Suppl. 2: 500. 1941; Moldenke, Alph. List Invalid Names 53--55. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 49--51 & 103. 1942; H. N. & A. L. Moldenke, Pl. Life 2: 61 & 72. 1943; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 115, 117--120, & 201. 1949; Wild, South. Rhodes. Bot. Dict. 137. 1954.

Illustration: Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: pl. 11. 1928.

A shrub about 1 m. tall or a small tree to 4 m. tall; timber medium-soft, grayish; branchlets densely pubescent; leaves 3--5-foliolate; petioles green, rounded, 2.5--10 cm. long, densely pubescent; leaflets sessile; leaflet-blades coriaceous, green and thinly pubescent or glabrous above when mature, always densely pubescent throughout beneath, typically ovate or elliptic to somewhat obovate or elliptic-obovate, rounded or obtuse and emarginate at the apex, rarely short-acuminate or short-cuspidate, symmetrically cuneate at the base, entire, ciliate, the central ones 5--10 cm. long and 2.5--5 cm. wide; venation impressed above, the secondaries arising at an angle of about 70° with the midrib; inflorescence axillary, varying from cymose to corymbose or thyrsoid, short- or long-pedunculate, the cymes few-flowered but dense, their branches densely pubescent; bractlets oblong, minute; calyx actinomorphic, campanulate, 2--6 mm. long, densely pubescent, its rim distinctly dentate, the teeth ovate or deltoid, 1.5--3 mm. long, acute; corolla pale-violet or yellowish, twice or more than twice as long as the calyx, very hairy outside, its lobes small, orbicular; stamens much longer than the corolla-lobes; ovary very hairy; fruiting-calyx 2 cm. in diameter; fruit 2--3 cm. wide, about the size of a small plum (Prunus domestica), blue, edible.

The species inhabits light woods, lightly forested hills, and ant hills, from 200 to 1500 meters altitude, and has been collected in anthesis in May and from September to November. Common names for it are "mchonge" (meaning "blue flower"), "mubonya", "mufutu", "mutalali", "samba", "umchunkule", "umtshonge", and "venduca". It has been confused by herbarium workers with V. isotjensis Gibbs and with Rhus sp. According to Pieper V. isotjensis has a subglabrate ovary and a 2-lipped calyx, while V. mombassae has a very hairy ovary and an actinomorphic calyx. The Baum 298 cited by Gürke in the 1903 reference given above is actually V. angolensis Gürke. Meeuse, in a letter to me dated December 9, 1953, states that in his opinion V. mombassae is conspecific with V. harveyana H. H. W. Pearson.

The type of V. flavescens is Welwitsch 5731 from Pungo Andongo, Angola. Vitex shirensis is based on Kirk 3 from Impembe Hill, alt. 3000 feet, Nyasaland, Buchanan 20 from the Shire Highlands, Whyte s.n. from Zomba and vicinity, altitude 2500--3500 feet, and Buchanan s.n. from somewhere in Nyasaland. Pieper regards some of these collections as V. payos (Lour.) Merr. and therefore gives the binomial V. shirensis in the synonymy of both V. mombassae and V. payos "in part".

Rolfe's name for this species was published in May of 1893 and Gürke's name in December of 1893 [not "1894" as usually cited], according to a note by Rolfe on a sheet of Clerodendrum triplinerve in the Kew herbarium and a note by N. E. Brown on a sheet identified as Vitex flavescens in the same herbarium.

DeWildeman cites Delevey 255 and 438 and Homblé 1224 from the Belgian Congo. Baker cites Holst 2196 as from Bombuera, Usambara, while Pieper cites the same collection as from Gombolo. Pieper also cites the following additional collections: from Tanganyika Territory: Busse 2784 and 3134, Conrads 105 and 109, Fischer 232 and 475, Goetze 35 and 564, Holtz 1103 and 1561, Johnston s.n., Merker 311, Stolz 1737, Stuhlmann 732, 779, and 7008, Trotha 16 and 123, and Uhlig V.13; from Kenya: Hildebrandt 1972; from Nyasaland: Buchanan 231; from Portuguese East Africa: Braga 154 and Carvalho s.n.; from Belgian Congo: Hock s.n. and Verdick s.n.; from Angola: Gossweiler 1052, 1053, 1063, and 1064, Marques 4 and 8, Mechow 247, and Welwitsch 5697 and 5731; and from Northern Rhodesia: Fries 832 and Kassner 2120.

Pieper makes the following comments: "Das seit Aufstellung der Arten V. Mombassae, V. Goetzei und V. Mechowii (flavescens) stark vermehrte Material lässt erkennen, dass die Zahl und Form der Blättchen zur Artunterscheidung nicht benutzt werden kann. In der Qualität der Behaarung bestehen allerdings Unterschiede zwischen den hier zu Mombassae zusammengefassten Exemplaren, doch lässt sich infolge der zahlreichen Abstufung dieses Merkmal systematisch nicht verwerten. V. Mufutu wurde offenbar ohne Beachtung der vorliegenden Art aufgestellt; als nächste Verwandte werden nämlich V. Schweinfurthii Baker and V. zambesiaca Baker angegeben. V. Mufutu stimmt indes mit dem Typus zu V. Mechowii vollkommen überein und bildet somit auch pflanzengeographisch eine Brücke zwischen den bisher als V. Mombassae und V. Mechowii bezeichneten Arten." He says that the distinguishing characters of the typical form of V. mombassae are (1) the calyx-teeth 1.5--3 mm. long, (2) the fruit 2--3 cm. in diameter, blue, (3) the leaflets ovate, elliptic, or subobovate, rounded or obtuse at the apex, seldom short-cuspidate, and (4) the venation impressed above.

Citations: BELGIAN CONGO: Quarré 4660 (N). TANGANYIKA TERRITORY: Conradt 109 (Bz--24259); Carnochan 69 (S); Schlieben 1477 (S), 5353 (S); Tanner 447 (S). ANGOLA: Loanda: Marques 4 [Herb. Hort. Thenensis III.257] (Br). SOUTHERN RHODESIA: C. E. F. Allen 314 (Rh); Brain 6463 (N); Edmonds 25/47 (Rh--21393); Govt. Herb. Salisbury 3844 (Rh); Hopkins s.n. (Rh--8267); A. A. Pardy s.n. (Rh--4732); H. Wild 2756 [Govt. Herb. Salisbury 22605] (N, N). BRITISH NYASALAND PROTECTORATE: Stolz 1737 (S). PORTUGUESE EAST AFRICA: Lourenço Marques: Junod 4141 (Z); F. R. R. Schlechter 11315 (Af, N--photo, Z--photo). Mozambique: Gomesetanso 3885 (S).

VITEX MOMBASSAE var. ACUMINATA Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 68. 1928.

Literature: Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 63 & 83. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 50 & 103 (1942) and [ed. 2], 113 & 202. 1949.

This variety differs from the typical form of the species in having its older leaflets with longer cusps or acuminations at the apex.

The variety is based on Battiscombe 2 from Kenya, and is known only from the type collection.

VITEX MOMBASSAE var. ERYTHROCARPA (Gürke) Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 68. 1928.

Synonymy: Vitex erythrocarpa Gürke ex Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 68, in syn. 1928 [not V. erythrocarpa Salzm., 1937].

Literature: Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 62, 82, & 83. 1928; Moldenke, Phytologia 1: 232. 1937; Moldenke, Prelim. Alph. List Invalid Names 50. 1940; Moldenke, Alph. List Invalid Names 53. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 51 & 103 (1942) and [ed. 2], 119 & 202. 1949.

This variety differs from the typical form of the species in having often up to 6 teeth on the calyx-rim and the fruit being 1.5 cm. in diameter and red in color.

The variety is based on Seiner 115 from Livingston, Northern Rhodesia, and is known only from the type collection. Vitex erythrocarpa Salzm. is a synonym of Aegiphila lhotzkiana Cham.

VITEX MOMBASSAE var. PARVIFLORA (Gibbs) Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 63. 1928.

Synonymy: Vitex flavescens var. parviflora Gibbs, Journ. Linn. Soc. Lond. Bot. 37: 463. 1906. Vitex mechowii var. parviflora Gibbs, Journ. Linn. Soc. Lond. Bot. 37: 575. 1906. Vitex mombassae var. parviflora Gibbs ex Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 68 & 81. 1928.

Literature: Gibbs, Journ. Linn. Soc. Lond. Bot. 37: 463 & 575. 1906; Eyles, Trans. Royal Soc. South Afr. 5: 459. 1916; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 68 & 83. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 51 & 103 (1942) and [ed. 2], 120 & 202. 1949; H. Wild, Vict. Falls Handb. 153. 1953.

This variety differs from the typical form of the species in its smaller flowers and milk-white corollas.

The variety is based on a collection from Victoria Falls in Southern Rhodesia and is known only from the original collection, Gibbs 135, collected in September.

VITEX MONROVIANA Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 44, 53, & 83. 1928; Fedde, Repert. 26: 163. 1929.

Literature: Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 44, 58, & 83. 1928; Pieper in Fedde, Repert. 26: 163. 1929; Hill, Ind. Kew. Suppl. 8: 249. 1933; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 46 & 103 (1942) and [ed. 2], 112 & 202. 1949. Medium-sized tree, the young parts all ferruginous-villous;

leaves 5-foliolate; petioles 6--11 cm. long; leaflet-blades sessile, obovate-lanceolate, 8--15 cm. long, 3--5 cm. wide, acuminate at the apex, cuneate at the base, many-nerved, hirsute above, ferruginous-villous beneath; inflorescence axillary; peduncles about 10 cm. long; cymes loosely few-flowered, few-branched, with long internodes; bracts large and foliaceous, to 1.5 cm. long; bractlets small, linear, to 5 mm. long; calyx conspicuously pilose, sparsely glandulose, its rim distinctly dentate; corolla not seen.

The type of this species was collected by Max Julius Dinklage (no. 2194) at White Plains, Monrovia, Liberia. The species is known only from the original collection and is placed by Pieper in his Subgroup Rubiginosae of Group Eutriches.

VITEX MOSSAMBICENSIS Gürke in Engl., Pflanzenw. Ost-Afr. C: 340. 1895.

Literature: Gürke in Engl., Pflanzenw. Ost-Afr. C: 340. 1895; J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 329. 1900; Sim, For. Fl. & Res. Port. East Afr. 94. 1909; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 44, 57, & 83. 1928; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 51 & 103 (1942) and [ed. 2], 120 & 202. 1949.

A shrub or tree to 10 m. tall; leaves long-petiolate, 5-foliolate; leaflets short-petiolulate, the blades membranous, ovate, 3.3--6.5 cm. long, acuminate at the apex, entire, rounded at the base, glabrous above, barbellate in the axils of the veins beneath; cymes long-pedunculate, axillary, lax; calyx tubular-campanulate, pubescent upwards, its rim minutely toothed; corolla tube short, steel-blue, the upper lip bearded.

The species is based on an unnumbered collection made by Rodriguez de Carvalho in Mozambique, Portuguese East Africa. The species has been collected by Schlieben at an altitude of 280 meters in bush-woods, blooming in December.

Citations: TANGANYIKA TERRITORY: Schlieben 5792 (N, N--photo, S, Z--photo).

VITEX MOSSAMBICENSIS var. *OLIGANTHA* (J. G. Baker) Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 57. 1928.

Synonymy: Vitex oligantha J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 327. 1900.

Literature: J. G. Baker in Thiselt.-Dyer, Fl. Trop. Afr. 5: 327. 1900; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 57, 83, & 84. 1928; Moldenke, Alph. List Invalid Names 54. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 50 & 103 (1942) and [ed. 2], 117 & 202. 1949.

This variety differs from the typical form of the species in having the pubescence on the lower leaf-surfaces more sparse.

Baker described this plant as a shrub, the branchlets slender, pale, glabrous; leaves 5-foliolate; petioles slender, 4--5 cm. long, glabrous; leaflets all distinctly petiolulate, the blades membranous, green on both surfaces, glabrous above, oblong, acute at the apex, entire, the central ones 5--7.5 cm. long; cymes ax-

illary, pedunculate, very lax, few-flowered, the branches very slender, glabrous; calyx campanulate, about 2 mm. long, glabrous, its rim short-toothed, the teeth broad; corolla-tube twice as long as the calyx, its limb nearly as long as the tube; fruit not known.

The variety is based on Kirk 108 and s.n. from Quiloa (Kilwa), on the coast of Tanganyika Territory, and is known only from the original collections. Pieper points out that Baker's statement to the effect that the leaves are glabrous beneath is not true. The leaves are barbellate beneath, but the hairs are sparser and therefore the tufts do not stand out as prominently as they do in the typical form of the species. The character is not of sufficient importance to merit specific rank for the plant.

VITEX NEGUNDO L., Sp. Pl., ed. 1, 638. 1753.

Synonymy: Negundo foemina, acostae Delechamps, Hist. Gen. Pl. 1367. 1586. Negundo mas, Acostae Delechamps, Hist. Gen. Pl. 1866. 1586. Negundo masle de Acosta Orta, Hist. Drogues, ed. 2, 115. 1619. Negundo femelle de Acosta Orta, Hist. Drogues, ed. 2, 116. 1619. Negundo arbor mas et foemina J. Bauhin, Hist. Pl. Univers. 2: 139. 1651. Bem-nosi Rheede, Hort. Ind. Malab. 2: 15, pl. 12. 1679. Negundo foemina Acosta ex Rheede, Hort. Ind. Malab. 2: 15. 1679. Vitex orientalis angustis foliis, semper tripartito divis is Plukenet, Alm. Bot. 390. 1696. Vitex trifolia minor indica serrata Breyn. ex Plukenet, Alm. Bot. 390. 1696. Lagondium littoreum Rumph., Herb. Amboin. 4: 50, pl. 18 & 19. 1743. Negundo arbor mas Bauh. ex L., Sp. Pl., ed. 1, 638, in syn. 1753. Vitex trifolia minor indica serrata Pluk. ex L., Sp. Pl., ed. 1, 638, in syn. 1753. Bemnosi Rheede ex L., Sp. Pl., ed. 1, 638, in syn. 1753. Vitex paniculata Lam., Encycl. Méth. Bot. 2: 612. 1788. Vitex trifolia foliolis obtuse crenatis Lam., Encycl. Méth. Bot. 2: 613. 1788. Vitex spicata Lour., Fl. Cochinch. 2: 390--391. 1790. Vitex gracilis Salisb., Prodr. Stirp. Hort. Al-lert. 107. 1796. Vitex arborea Fischer ex Desf., Cat. Hort. Paris, ed. 3, 391. 1829. Vitex negunda Willd. ex Roxb., Fl. Ind., ed. Carey, 3: 70. 1832 [not V. negunda Mill., 1763]. Vitex negundo L. apud Bojer, Hort. Maurit. 258, sphalm. 1837. Vitex leucoxydon Blanco, Fl. Filip., ed. 1, 516. 1837 [not V. leucoxydon L. f., 1781]. Vitex arborea Desf. ex Schau. in A. DC., Prodr. 11: 635, in syn. 1847. Agnus castus negundo Carr., Rev. Hort. 1370: 416. 1371. Agnus castus robusta paniculata Carr., Rev. Hort. 1374: 422. 1374. Vitex agnus-castus var. negundo (L.) Kuntze, Rev. Gen. Pl. 2: 510--511. 1391. Vitex leucoxydon Blanco apud Jacks., Ind. Kew. 2: 1214, in syn. 1895 [not V. leucoxydon L. f., 1781]. Vitex leucoxydon Naves apud H. Hallier; Meded. Rijksherb. Leid. 37: 44, in syn. 1913 [not V. leucoxydon L. f., 1781]. Vitex negundo Willd. ex Gandoger, Bull. Soc. Bot. France 65: 64. 1913. Vitex quinata Schumacher ex Moldenke, Prelim. Alph. List Invalid Names 52, in syn. 1940 [not V. quinata

(Lour.) F. N. Will., 1905].

Literature: Delechamps, Hist. Gen. Pl. 1366--1367. 1536; Orta, Hist. Drogues, ed. 2, 115--116. 1619; J. Bauhin, Hist. Pl. Univers. 2: 139. 1651; Rheede, Hort. Ind. Malab. 2: 15, pl. 12. 1679; Ray, Hist. Pl. 3: 1575. 1688; Plukenet, Alm. Bot. 390. 1696; Plukenet, Alm. Bot. Phyt. 5: pl. 321, fig. 2. 1700; Rumph., Herb. Amboin. 4: 50, pl. 18 & 19. 1743; L., Fl. Zeyl. 194--195 [genus 414]. 1747; L., Sp. Pl., ed. 1, 2: 638. 1753; L., Sp. Pl., ed. 2, 890. 1763; Houttuyn, Hand. Pl. & Kruidk. 5: pl. 27, fig. 1. 1776; Lam., Encycl. Méth. Bot. 2: 612--613. 1788; Lour., Fl. Cochinch. 2: 390--391. 1790; Salisb., Prodr. Stirp. Hort. Allert. 107. 1796; Curtis, Bot. Mag. 11: pl. 364. 1797; A. Rich. in Marthe, Cat. Pl. Jard. Méd. Paris 67. 1801; McDonald, Pract. Gard. 2: pl. 60. 1807; S. Edwards, New Bot. Gard. 2: pl. 60. 1812; W. Ainslie, Mat. Med. Hind. 95. 1813; Roxb., Fl. Ind., ed. 1, 481. 1820; W. Ainslie, Mat. Med. Ind. 2: 252. 1826; Desf., Cat. Hort. Paris., ed. 3, 391. 1829; Cham., Linnaea 7: 400. 1832; Roxb., Fl. Ind., ed. Carey, 3: 70. 1832; Hook., Comp. Bot. Mag. 1: 349. 1836; Blanco, Fl. Filip., ed. 1, 516. 1837; Bojer, Hort. Maurit. 258. 1837; J. Taylor, Sketch Topog. & Stat. Dacca 55. 1840; Wight, Icon. Pl. Ind. Or. 2: pl. 519. 1843; Spanoghe, Linnaea 15: 329. 1841; O'Shaughnessy, Beng. Dispens. 485. 1841; Blanco, Fl. Filip., ed. 2, 359--360. 1845; Zoll. & Moritz, Syst. Verz. 53. 1845--1846; Schau. in A. DC., Prodr. 11: 634--685. 1847; Irvine, Short Acct. Mat. Med. Patna 77. 1843; Lindl., Med. & Oeconom. Bot. 223. 1849; Miq., Fl. Ind. Bat. 2: 860. 1853; Drury, Useful Pl. Ind. 442. 1858; W. Elliot, Fl. Andrh. 128. 1859; Miq., Fl. Ind. Bat. Suppl. 1: 242. 1860; Dalz. & Gibs., Bombay Fl. 201. 1861; Carr., Rev. Hort. 42: 416. 1871; Carr., Rev. Hort. 1874: 499. 1874; Brandis, For. Fl. NW. & Cent. India 3: 369. 1874; Gribble, Cuddapah Dist. Man. 65. 1875; Kurz, For. Fl. Brit. Burma 2: 269. 1877; Gazetteer Bombay 6: 15. 1877; J. G. Baker, Fl. Maurit. & Seychelles 256. 1877; Dutt, Mat. Med. Hind. 216, 311, & 318. 1877; Blanco, Fl. Filip., ed. 3, 2: 300, pl. 223. 1878; [Dera Ismail Khan], Dist. Gazetteer 19. 1878; Gazetteer Bombay 7: 42. 1878; [Kohat] Dist. Gazetteer 30. 1879; Rajputana Gazetteer 26. 1879--1880; Gamble, Man. Ind. Timb. 297. 1881; Vatke, Linnaea 43: 533. 1882; Rep. For. Admin. Chutia Nagpur 33. 1885; Dymock, Veg. Mat. Med. West. Ind., ed. 2, 600. 1885; Hemsl., Rep. Scient. Res. Voy. Challenger Bot. 1: 110 & 177. 1885; C. B. Clarke in Hook. f., Fl. Brit. Ind. 4: 583--584. 1885; Gazetteer Bombay 15: 78. 1886; J. C. Lisboa, Useful Pl. Bombay 109. 1886; Maxim., Bull. Acad. Imp. Sci. Pét. 31: 82. 1886; Gazetteer Bombay 17: 25. 1888; Forbes & Hemsl., Fl. Sin. 2: 258. 1890; Douie, [Karnal] Dist. Gazetteer 16. 1890; Kuntze, Rev. Gen. Pl. 2: 510--511. 1891; Gazetteer Karnal Dist. 16. 1892; G. Watt, Dict. Econom. Prod. Ind. 6 (4): 243. 1893; Gürke in Engl., Pflanzenw. Ost-Afr. C: 339. 1895; Bull. Coll. Agric. Tokyo 2: pl. 14, fig. 17. 1895; Lorimer, [Peshawar] Dist. Gazetteer 27: 1397--1398; J. L. Stewart, Punjab Pl. 166--167. 1899; Koord. & Val., Bijdr. Booms. Java 7: 201. 1900; J. G. Baker in Thiselt.-Dyer, Fl.

Trop. Afr. 5: 318--319. 1900; F. N. Williams, Bull. Herb. Boiss., sér. 2, 5: 431. 1905; DeWild., Ic. Sel. Hort. Thén. 5: pl. 199. 1906; King & Gamble, Journ. As. Soc. Beng. 74: 843. 1909; Sim, For. Fl. & Res. Port. East Afr. 94. 1909; Wehmer, Die Pflanzenst., ed. 1, 647. 1911; Miyabe, Festschrift pl. 26, fig. 25. 1911; Matsum., Ind. 2 (2): 534. 1912; E. H. Wilson, Arn. Arb. Exped. China 1910-11, pl. 0202. 1912; Koord., Exkursionsfl. Java 3: 136. 1912; E. D. Merr., Philip. Journ. Sci. Bot. 9: 136. 1914; Koord. & Val., Atlas Baumarten Java 2: 6, pl. 293. 1914; E. D. Merr., Interpret. Rumph. Herb. Amboin. 453. 1917; Lévl., Cat. Pl. Yunnan 278. 1917; Heyne, Nutt. Plant. Nederl. Ind., ed. 1, 4: 114. 1917; Basu, Ind. Med. Pl. 3: 3, pl. 740a. 1918; H. Hallier, Meded. Rijksherb. Leid. 37: 43--44. 1918; E. D. Merr., Sp. Blanc. 332. 1918; H. J. Lam, Verbenac. Malay. Arch. 184, 189--194, & 370. 1919; Bose, Man. Ind. Bot. 131. 1920; Bakh. & Lam, Bull. Jard. Bot. Buitenz., sér. 3, 4 (2): 285. 1922; E. D. Merr., Enum. Philip. Flow. Pl. 3: 394. 1923; L. H. Bailey, Man. Cult. Pl., ed. 1, 632 & 849. 1924; Olmstead, Coville, & Kelsey, Stand. Pl. Names, ed. 1, 525. 1924; Heyne, Nutt. Plant. Nederl. Ind., ed. 2, 1317. 1925; Pieper in Engl., Bot. Jahrb. 62, Beibl. 141 ["142"]: 41, 53, 77--78, & 83. 1928; Wehmer, Die Pflanzenst., ed. 2, 1023. 1931; Vrevost & Pételot, Bull. Econom. Indo-chine 37: 1292--1293. 1934; L. H. & E. Z. Bailey, Hortus, rev. ed., 639. 1935; H. C. Sampson, Bull. Misc. Inf. Kew, addit. ser., 12: 175. 1936; Arthur & Cummins, Philip. Journ. Sci. Bot. 61: 479. 1936; Moldenke, Alph. List Common Names 8, 12, 13, 20, 23, 24, & 30. 1939; Moldenke, Geogr. Distrib. Avicenn. 11, 27, & 40. 1939; Moldenke, Suppl. List Common Names 1--4, 7, 9, 11--17, & 19--24. 1940; Moldenke, Prelim. Alph. List Invalid Names 6, 29, 33, & 50--52. 1940; Rehd., Man. Cult. Trees, ed. 2, 805 & 994. 1940; Biswas, Indian Forest. Rec. Bot., new ser., 3: 42. 1941; Van Melle, Journ. N. Y. Bot. Gard. 43: 37 & 43. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 29, 39, 50, 51, 53, 55--59, 61, 63, 65, 75, & 103. 1942; Moldenke, Alph. List Invalid Names 6, 27, 33, & 52--55. 1942; Wisler, Swarthmore Pl. Notes 1: 217. 1942--1943; H. F. MacMillan, Trop. Plant. & Gard., ed. 5, 366. 1943; Van Melle, Shrubs & Trees Small Place 54, 55, & 177. 1943; Moldenke, Phytologia 2: 120--121. 1944; E. D. Merr., Pl. Life Pacific World 227, 228, 274, & 282. 1945; Darlington & Janaki Ammal, Chromosome Atlas 271. 1945; E. D. Merr., Chron. Bot. 10: 311. 1946; A. P. Benthall, Trees Calcutta 355--356. 1946; Razi, Journ. Mysore Univ. 7 (4): 64. 1946; Moldenke, Alph. List Invalid Names Suppl. 1: 29. 1947; P'ei, Bot. Bull. Acad. Sin. 1: 4--5. 1947; Gorrie, Geogr. Review 38: 36, fig. 18. 1948; Maunsell van Rensselaer, Trees Santa Barbara, rev. ed., 154. 1948; Hara, Enum. Sperm. Jap. 1: 190. 1948; Rehd., Bibl. Cult. Trees & Shrubs 534--585. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 10, 55, 95, 117, 121, 123, 125, 128, 130, 132--135, 137, 140, 142, 146, 165, & 202. 1949; H. N. & A. L. Moldenke, Anal. Inst. Biol. Mex. 20: 15. 1949; McEacharn, List Seeds Villa Taranta Gard. 8: 30. 1950; Razi, Journ. Mysore Univ. 11 (2): 54. 1950; Gundersen, Fam. Dicot. 202. 1950; Menninger,

Winter 1950 Seed List n.p. 1950; N. Pal, Journ. Indian Bot. Soc. 30: 59--74. 1951; N. Y. Bot. Gard. Exchange List 1952: 4. 1951; Razi, Poona Univ. Journ. 1 (2): 47. 1952; Razi & Govindu, Journ. Mysore Univ. 12 (9): 104. 1952; A. C. Joshi, Biol. Abstr. 26: 2293. 1952; Biol. Abstr. 26: 3851. 1952; Santapau, Anal. Bot. Cavanilles 11: 30. 1952; Santapau, Pl. Saurashtra 31. 1953; de Laszlo & Henshaw, Science 119: 630. 1954; Santapau, Journ. Guj-
erat Research Soc. 17: 39. 1955.

Illustrations: Delechamps, Hist. Gen. Pl. 1866. 1586; Orta, Hist. Drogues, ed. 2, 115. 1619. Rheede, Hort. Ind. Malab. 2: pl. 12. 1679; Plukenet, Alm. Bot. Phyt. 5: pl. 321, fig. 2. 1700; Rumph., Herb. Amboin. 4: pl. 18 & 19. 1743; Houttuyn, Handb. Pl. & Kruidd. 5: pl. 27, fig. 1 (colored). 1776; McDonald, Dict. Pract. Gard. 2: pl. 60 (colored). 1807; S. Edwards, New Bot. Gard. 2: pl. 60 (colored). 1812; Wight, Ic. Pl. Ind. Or. 2: pl. 519. 1840--1843; Blanco, Fl. Filip. pl. 228 (colored). 1878; Bull. Coll. Agric. Tokyo 2: pl. 14, fig. 17. 1895; DeWild., Ic. Sel. Hort. Then. 5: pl. 199. 1906; Miyabe, Festschrift pl. 26, fig. 25. 1911; E. H. Wilson, Arn. Arb. Exped. China 1910-11, pl. 0202. 1912; Koord. & Val., Atlas Baumarten Java pl. 293. 1914; Basu, Ind. Med. Pl. 3: pl. 740a. 1918; Bose, Man. Ind. Bot. 131. 1920; A. P. Benthall, Trees Calcutta 355. 1946; Gorrie, Geogr. Review 38: 36, fig. 18. 1948; Gundersen, Fam. Dicot. 202. 1950.

Shrub or tree, to 8 m. tall; wood grayish-white, hard, weighing 42 pounds per cubic foot; branchlets and twigs slender, brownish or buff, rather acutely tetragonal, medullose, not lenticellate, rather densely short-pubescent or puberulent; nodes annulate; principal internodes 1.5--8.5 cm. long; leaves decusate-opposite, 3--5-foliolate (rarely 1-foliolate); petioles slender, 4.5--6 cm. long, convex beneath, flattened and canaliculate above, rather densely short-pubescent or puberulent, slightly ampliate at the base, not noticeably disciform at the apex; leaflets subequal in size or the two lowermost somewhat smaller, all conspicuously petiolulate with petiolules 2--15 mm. long, margined, densely short-pubescent or puberulent like the petioles; leaf-blades thin-membranous or subchartaceous, dark-green above (often nigrescent in drying), much lighter or sordid gray beneath, the central ones oblong, elliptic, or lanceolate, 6--11 cm. long, 1.5--4.1 cm. wide, acutely attenuate or subacuminate at the apex, entire or with a very few scattered and irregular teeth above the middle, acute or short-acuminate at the base, minutely puberulous or glabrous above, densely appressed-puberulous beneath (occasionally very sparsely and obscurely so on the lower lamina in old leaves), the lateral ones similar in all respects but usually smaller; midrib very slender, flat or subimpressed above, prominent beneath; secondaries very slender, 8--15 per side, arcuate-ascending, flat or subprominent above, prominulous beneath, not plainly joined at the margins; vein and veinlet reticulation rather sparse and delicate, usually obscure or indiscernible on both surfaces, rarely plain beneath on older glabrescent leaves; inflorescence terminal, paniculate, simple or widely branched and thyrsoid, 17--42 cm. wide, each

panicle (or branch) composed of numerous pairs of opposite distinctly stipitate cymes, the cymes mostly conspicuously brachiate with ascending and spreading very slender branches, few- or many-flowered, canescent or sordid throughout; bracts often 1 pair subtending each pair of lateral panicles in the terminal thyrse, simple and entire or 3-lobed or 3-foliolate with one large central and 2 much reduced lateral leaflets, stipitate, to 3 cm. long, often absent; bractlets linear, numerous, 2--8 mm. long; prophylla minute, linear or setaceous, 1 mm. long or less, canescent; peduncle (4.5--7 cm. long) and rachis slender, acutely tetragonal or flattened, brown, densely short-pubescent or puberulent with canescent or sordid hairs, the sympodia often elongate (especially the basal ones); pedicels obsolete or to 1 mm. long and densely canescent-puberulent; flowers fragrant; calyx obconic-cyathiform, 1.5--2 mm. long and wide, densely canescent-puberulent, 5-nerved, its rim sinuate or very shortly 5-dentate with patulous acute teeth, occasionally subcuspidate, the upper ones ovate, the lower ones lanceolate; corolla varying from blue, purplish-blue, or purple to purplish-white, pink, lilac, lavender, blue-purple, or whitish-blue, hypocrateriform, the tube infundibular, 3--4 mm. long, pulverulent-puberulent on the outer surface, the lower lobe obovate, undulate-margined, sublanuginous at the base inside, the remaining lobes shorter, subequal, obtuse; stamens and pistil shortly exerted, the pistil longer than the stamens, about 5 mm. long; fruiting-calyx campanulate, about 3 mm. long, 4--5 mm. wide, densely puberulent, its rim shallowly sinuate-5-dentate; fruit subglobose, about 4 mm. long and wide, glabrous, purple when fresh, finally nigrescent.

The type of this widespread species is sheet number 8 under genus 811 [790] in the Linnean Herbarium at London and is inscribed "Negundo" in Linnaeus' own handwriting. The inflorescence is paniculate, its branches very slender. The leaflets, however, are distinctly toothed, much as in what is now passing as V. negundo var. intermedia (P'ei) Moldenke. Many of the earliest illustrations of this species also show definitely toothed leaflets, so it is possible that the binomial actually belongs to the more dentate-leafleted form.

The species is widely cultivated in Europe, Asia, North America, and the West Indies, and has escaped from cultivation in Florida and Martinique. It is native from Zanzibar, Portuguese East Africa, and Madagascar, through Pakistan, India, Ceylon, Indochina, and Penang, north into China, Formosa, Japan, Hainan Island, and Hongkong, and east to the Philippine Islands, Guam, and Sarawak. It has been collected in anthesis in practically every month of the year, and in fruit from August to April. Benthall says that in Calcutta it blooms "chiefly in May or April, but also at other times of the year". It is cultivated extensively in temple gardens in Thailand, and grows from sea level to 2000 meters altitude. The Clemenses say that it is occasionally planted in native gardens in Annam. It has been found by collectors in dry sandy soil on level land, in groves, waste

places, on grassy or wooded hillsides, along roadsides or riversides, in village commons, on open slopes or rocky grassy slopes, in dry places, and at the edges of fields, often in loamy soil. Meyer states that it is "a shrub much found in waste places" near Hangchow; Lau says it is abundant in sandy soil on dry level land on Hainan Island; and Tsang reports it "abundant in sandy soil along roadsides". The Florida specimen cited below was actually from an escaped plant, according to a letter received by me on this subject from Dr. Buswell.

This species has been widely confused in herbaria and in literature with V. agnus-castus L. and V. trifolia L., and many specimens have been distributed into herbaria under the names of V. bicolor Willd., V. cannabifolia Sieb. & Zucc., V. negundo var. "cannalifolia" Sieb. & Zucc., V. negundo var. macrophylla Moldenke, V. negundo var. typica H. J. Lam, and V. trifolia var. bicolor (Willd.) Moldenke. Many authors list the name Vitex trifolia minor indica Pluk. in the synonymy of this species, but this name actually applies to V. trifolia L. Similarly, the Vitex chinensis Mill., Vitex incisa Lam., and Vitex laciniata Hort., included by some writers in the synonymy of this species, are all actually V. negundo var. heterophylla (Franch.) Rehd. The Vitex bicolor Willd. and V. negundo var. bicolor H. J. Lam, reduced to this species by some writers, are actually V. trifolia var. bicolor (Willd.) Moldenke, a very different plant. Vitex negundo Curtis is V. negundo var. heterophylla (Franch.) Rehd., Vitex negundo Lour. is V. quinata (Lour.) F. N. Will., and Vitex negundo Noronha is V. pinnata L. Vitex negunda Mill. is V. negundo var. intermedia (P'ei) Moldenke.

In this connection I must also point out that the illustrations given for "Negundo foemina" and "Negundo mas" in pre-Linnean works are very different and it seems hardly probable to me that they refer to the same plant, although most authors so cite them. The Icon. Select. Hort. Then. pl. 199, labeled as V. negundo L., is actually V. quinata and the Curtis, Bot. Mag. 11: pl. 364 (1797) -- not "2: pl. 364" as cited by some authors -- cited by Stapf as V. negundo is not the typical form of the species. It is cited by P'ei as "var. incisa" and although it looks much like var. intermedia to me, I am citing it below under var. heterophylla. The V. negundo var. typica of H. J. Lam, often cited in the synonymy of V. negundo, where one would naturally expect it to belong, is actually in part var. cannabifolia and in part var. heterophylla.

Vitex negundo is a microphanerophyte in Raunkiaer's classification of life forms. It is often described by Chinese collectors as "woody" or "semi-woody" and erect, and is attacked by the fungus Pucciniastrum clemensiae. Horticulturists regard it as a coarse-rooted shrub of similar value as V. agnus-castus L., but rather less handsome in flower. It is best planted in the spring, since it cannot well be dug with a ball of earth. They

say "beware of dirty-white or pale dull-bluish-flowered forms." Menninger describes it as an "evergreen Chinese shrub common in the United States", with the leaves dark-green above and whitish beneath. Van Rensselaer records it as cultivated at Santa Barbara, California. Wisler lists it as cultivated in Delaware County, Pennsylvania, and says it has been cultivated since 1697, introduced by the Dutchess of Beaufort. Benthall says that a specimen might be seen in 1943 on the west side of Camac Street in Calcutta. He says it "is common throughout most of the hotter parts of India and Ceylon. It is not common in the neighborhood of Calcutta, but may be found fairly often in thickets and shrubberies near villages, and is occasionally cultivated in gardens." P'ei records it from Szechuan and Sikang, China. The New York Bot. Gard. Econom. Mus. 5748 specimen is from the Philippines. Lei says that on Hainan Island it is "rare" in loam on the dry level land of village commons and "fairly common" as scattered shrubs in sandy soil. Santapau says it is often cultivated in hedges in India.

Van Melle reports that at least the young foliage is highly aromatic. He describes the plant as a die-back shrub in the New York City area or one that is best treated as such. It is tender-wooded and highly decorative. It should be pruned close to the base every spring and then permitted to grow to 3 or 5 feet in height. At the top of this annual growth, in July or August, he says, will be produced the loose showy terminal panicles of small fragrant flowers which, in the better forms, are a good lavender-blue. This is in contrast to V. agnus-castus, where the flowers are more showy, in paniced spikes, blooming from July to September. Both are effective, but rather exotic-looking and erect shrubs, not easily blended in the border and therefore better used as garden accent plants or cut back as garden hedges. They flower when not much else is in bloom among the shrubs and contribute a worthwhile decorative note to the small landscapes. They thrive well in light sandy soils in full sunlight. "Being coarse-rooted and difficult to dig with a ball of earth", he says, "they are best transplanted bare-rooted, in the spring. When they are treated as die-backs, the tenderness of the top growth need not worry one. The roots are hardy enough, and should an occasional plant be lost in severe winters, these shrubs are worth planting again."

The original valid publication of the binomial, Vitex negundo, is occasionally given as page "390", but was actually on page 638 of the first edition of Linnaeus' work. Similarly, the reference to Kuntze's work is sometimes incorrectly cited as "l: 513". Merrill states that Blanco's Vitex leucoxylon is only in part referable here -- his "arbolillos" from Mandalayon and Pangasinan, called "lagundi", apply here, while the tree growing in forests, called "molavin", is actually V. parviflora A. L. Juss. Sieber Fl. Mixta 152 may actually be var. cannabifolia (Sieb. & Zucc.) Hand.-Mazz. The Pennock specimen cited below has the leaves 1-foliolate, and Hohenacker 160 has some of its

leaves 1-foliolate. Chatterjee s.n. in the Pomona College herbarium has the leaflets 3 in number. The Herb. Ames s.n. [15 Aug.] has its leaflets conspicuously serrate; Fan & Li 165 and 269 also have them serrate, while Fan & Li 21 has them merely repand and Herb. Hort. Bogor. XVK.A.XLVI.11 has them all entire. Hohenacker comments "pulvis radice cum oryza coctus leprosus porrigitur". The embryology of the species is discussed by Pal in Journ. Indian Bot. Soc. 30: 59--74 (1951).

L. H. Bailey in his unpublished Catalogue of Florists Handling Verbenaceae (1935) says that V. negundo is offered by the Jungle, Sanford, and Hugh Evans nurseries. The Née 25 cited below may actually have been collected either in the Philippines or in the Mariannas. Pieper cites Hildebrandt 1254 from Tanganyika Territory, Stuhlmann 1088 from Zanzibar, and Sim 5424 from Inhambane, Portuguese East Africa. Schauer lists the species as native to Mauritius, but J. G. Baker (1877) says it is common in cultivation there, but is not native nor even naturalized. He distinguishes it from V. trifolia by stating that it (V. negundo) has the leaflets 5 in number, on long petiolules, and merely puberulent, not canescent, beneath. Both species, he says, have "copious small paniced tomentose flowers". In view of his statement, it is perhaps questionable whether V. negundo is native at all in Africa or Madagascar. Possibly all specimens from there were from cultivated or escaped plants, but not so indicated by the collectors.

Watt's discussion of the economic importance of the species is worth repeating here: "Dutt informs us that, according to Sanskrit writers, there are two forms of nirgundi,-- that with pale blue flowers, sindhuvára (V. trifolia), and that with blue flowers, nirgundi. The properties of both are said to be identical, but the latter is generally used in medicine. The root of Vitex Negundo is considered tonic, febrifuge, and expectorant, and the leaves aromatic, tonic, and vermifuge. The juice of the leaves is largely employed for soaking various metallic powders, before making the latter into pills. A decoction of the leaves is given, with the addition of long pepper, in catarrhal fever with heaviness of the head and dullness of hearing (Bhavaprakasha). A pillow stuffed with the leaves is said to remove foetid discharges and worms from ulcers. An oil prepared with the juice of the leaves is applied to sinuses and scrofulous sores (Chakradatta). Dymock states that Muhammadans consider athlak or panjangusht (which as sold in Bombay appears to be the fruit, not of V. Negundo or of V. trifolia, but of V. Agnus-castus of Europeans) as astringent, resolvent, and attenuant. The Indian medicinal species of Vitex early attracted the notice of Europeans. V. trifolia is highly extolled by Bontius, under its Malayan name; he speaks of it as anodyne, diuretic, and emmenagogue, and testifies to the value of fomentations and baths prepared with 'this noble herb', as he terms it, in the treatment of beri-beri, and in the obscene affection of "burning of the feet" in natives. Of V. Negundo, Fleming remarks

that its leaves have a better claim to the title of discutient than any other vegetable remedy with which he is acquainted, and he adds that their efficacy in dispelling inflammatory swellings of the joints from acute rheumatism, and of the testes from suppressed gonorrhoea, has often excited his surprise. The mode of application followed by natives, and adopted, according to Dr. Fleming, by some European practitioners in India, is simple — the fresh leaves, put into an earthen pot, are heated over a fire till they are as hot as can be borne without pain; they are then applied to the affected part, and kept in situ by a bandage, the application is repeated three or four times daily until the swelling subsides (Pharm. Ind.). Roxburgh describes both species as medicinal, and mentions that the leaves of V. Negundo are employed to form a warm-bath for women after delivery. Rumphius and Rheede both particularly notice V. trifolia, the first recommending it externally in swellings and diseases of the skin, while the latter asserts that the powdered leaves taken with water cure intermittent fevers. Ainslie writes that the fruit of the same species is supposed by the Vytians to be a nervine, cephalic, and emmenagogue, and is prescribed in powder, electuary, and decoction. The medicinal qualities of V. Negundo he considered to be similar to but weaker than those of V. trifolia. He adds, however, that the root of the former is a pleasant bitter and useful in fever, and that the Muhammadans smoke the dried leaves in cases of headache and catarrh. Irvine states that a decoction of the leaves is used in Patna as an internal remedy for fever. Taylor writes that in Dacca the leaves are given with garlic, rice, gúr, etc., as a remedy for rheumatism. Both species are given a place in the Pharmacopoeia of India, where, in addition to part of the above information, it is stated that Dr. W. Nigledew has described a very interesting method of treating febrile, catarrhal, and rheumatic affections in Mysore, by means of a rude vapour bath prepared with the plant. The dried fruit is considered vermifuge.....

"Nothing is known of the chemistry of these plants, but the seed of V. Agnus-castus is said to contain a peculiar bitter principle called castine, a volatile acrid substance, a large quantity of free acid and fat oil. In Greece the fresh and rather unripe berries are said to be added to the merit of the grape to render the wine more intoxicating, and prevent it from turning sour (Dymock)... 'The leaves [of Vitex negundo], 'baked and applied to the head while warm or used as a pillow, relieve headache' (Surgeon-Major Lionel Beech, Coconada). 'Given also in frontal head aches' (Surgeon W. F. Thomas, 33rd M. N. I., Mangalore). 'The leaves (fresh) are credited with the power of destroying the smell of high or tainted meat or fish when boiled with it. The leaves, bruised and formed into cakes, may be applied to the temples to relieve headaches' (Civil Surgeon Banku Behary Gupta, Poori). 'I have often used a bath medicated with the leaves in cases of rheumatism and swelling of joints with excellent results' (Honorary Surgeon E. A. Morris, Tranquibar). 'Leaves and root diuretic, diaphoretic and tonic. Tin-

cture, -- root bark 2 oz., Proof spirit 10 oz. Dose 1 to 2 drams three times a day is found useful in irritable bladder and rheumatism' (Apothecary Thomas Ward, Madadapalla, Allahabad)."

In India, according to Deane, an excellent poultice for ulcers is made by boiling a mixture of barley flour and Vitex negundo seeds. It is also given to water-buffaloes as a remedy for coughs. Macmillan reports that the leaves, bark, and roots are used for toothache and eye diseases and as a carminative. The dried fruit is used as a vermifuge in Ceylon. The leaves are mixed with tobacco and smoked as a remedy for flatulence. The smoke of the burning seeds is used as a remedy for ulcers. Various Chinese botanists speak of the plant's medicinal uses there. Watt reports that the ashes of this plant are used as an alkali in dyeing. As a hedge it is often used to check erosion, the land between being stabilized by grass planting. The wood is used for building purposes and as a fuel, and the branches in wattle-work. Lindley repeats the statement that in India a decoction of the aromatic leaves helps to form a warm bath for women after delivery, and that bruised leaves are applied to the temples to treat headaches; pillows stuffed with these leaves are put beneath the head to remove catarrh and attending headaches. C. S. Ford and B. Blackwood are reported by de Laszlo & Henshaw in Science 119: 630 (1954) as stating that the "paparau" of Buka, Solomon Islands, contains the root scrapings of this plant and is chewed with betel mixture and then swallowed to produce sterility. Santapau says "Muy abundante todo a lo largo de la carretera de Fitzgerald Ghat. Las hojas se usan contra la fiebre y, en general, como un buen tónico." Van Wijk says "the dried fruit thought to be a vermifuge". A. Richard lists the species as among the plants in the medicinal garden at Paris in 1801.

As is to be expected in a species with so many uses and such a wide geographic distribution, Vitex negundo has many vernacular names, especially in the Sanskrit, Telegu, Hindu, Chinese, and Malay tongues. Included are "ai toeban", "amalu", "aslag", "baimat", "banj-angasht", "bankahú", "banna", "barí", "bári", "beguniyá", "beygúna", "binna", "biuna", "cannellier à feuilles de niekegas", "cây ngu trao", "chinesche kuischboom", "ch-i-ye-huang-ching", "ehúri", "fanjangasht", "faux poivrier", "faux-poivrier", "filfil", "five-leaved chaste tree", "five-leaved chaste-tree", "gattilier paniculé", "gattilie de Chine", "gattilier", "gattilier de Chine", "gattilier négundo", "hobaro", "Indian privet", "Indian serrate-leaved Vitex", "kanti", "kátrí", "kiyow-bhán-bin", "kiyubán-bin", "ko ling ngio", "lagoendi laoet laki-laki", "lagoendi laut", "lagundi", "lakki", "lakki-gidá", "lakkle", "lèban", "lènggundi", "lingúr", "man king shue", "marwa", "marwan", "marwandaí", "máu kinh", "máura", "mawá", "mehrwán", "mewri", "monk's pepper tree", "mora", "morann", "moráun", "mŭen kim", "nagoda", "nalla várili", "nalla vavili", "nara", "nargunda", "negundo", "negundo chaste-tree", "neki", "nengar", "ng chi fung", "ngu tráo", "nika", "nikka", "nirgandi", "nirgandí", "nirgari",

"nirgiri", "nirguda", "nirgudi", "nirgunda", "nirgundi", "nirgúndi", "nirgúndí", "nirgur", "nirgúr", "nir-nochchi", "nishinda", "nishindá", "nisinda", "nisindá", "noch-chi", "pak po leung shue", "pání-ki-sambhálú", "panj-angusht", "pasatia", "samalu", "sámálú", "sambhal", "sambhálu", "sanáke", "sanbhalu", "sanbhálú", "sandbhulu", "semálu", "shamálu", "shambálf", "shenbálf", "shawáli", "shimalu", "shimálu", "shiwáli", "shiwari", "shvétá-surasa", "shwárf", "simáli", "sindhuca", "sindhuka", "sindhuvára", "sinduari", "sindwar", "sindwor", "sisbán", "strand lagindie-boom", "súdí-nikka", "swanján", "tella-vávili", "three-leaved chaste-tree", "thuóc ón rúng", "torban", "tóranna", "trásék", "ù chu kim", "vavali-padú", "vávili", "vellai-noch-chi", "vella-noch-chi", "vel-noch chi", "veyala", "vitex de madera blanca"; "vrikshaha", "wana", "warmande", "zúkhamasate-asábea", "zúkhamatilouráq", and "zúkhamatilouráq".

Citations: FLORIDA: Orange Co.: M. F. Baker s.n. [Aug. 19, 1935] (Bu). WINDWARD ISLANDS: Martinique: Bélangier 298 (P), 560 (P), 933 (P). BRAZIL: Rio de Janeiro: Wallis 170 (B). MADAGASCAR: Richard 261 (P), 618 (P). BALUCHISTAN: Blatter 23408 (Xa). PAKISTAN: Northwest Provinces: Cleghorn 2638 (Bz--24431); Koelz 4137 (N); R. R. Stewart 17067 (N); G. Watt s.n. (Pa, Pa). West Punjab: Koelz 1626 (N); Nasir s.n. [Stewart 14743b] (N); Ram 1734 (N); R. R. Stewart 950 (N), s.n. [24-3-1940] (N). INDIA: Assam: A. C. Chatterjee s.n. [Gauhati, April 1902] (Po--63439), s.n. (Bz--24475, Na--19600); Collector undesignated 318 (S); Jenkins s.n. [Assam] (T); G. Watt 12241 (Bz--24320). Bombay: Acland 966 (Xa); Almeida 1614 (Xa); Blatter 23412 (Xa); Blatter & Hallberg 23913 (Xa); Blatter, Hallberg, & McCann 27105 (Xa); Collector undesignated s.n. [Canara] (N); J. Fernandez 15 (Xa), 1581 (Xa); Herb. Blatter 10373 (Xa), 15000 (Xa), 23366 (Xa), 23410 (Xa), s.n. [Bandra, March 1920] (Xa); Patel s.n. (Xa); Randeria 26 (Xa), 268 (Xa), 285 (Xa), 295 (Xa), 312 (Xa), 379 (Xa), 424 (Xa); Razi 5010 (Xa); Roux 1835 (Du--166537); Santapau 142.25/104 (Xa), 142.26/104 (Xa), 142.27/104 (Xa), 3636 (Xa); Shah 1173 (Xa, Xa); Vakil 35347 (Xa), 35354 (Xa), 35356 (Xa). Central Provinces: A. Campbell 8497 (Pa); Duthie 9689 (M); Kenoyer & Dudgeon 250 (Io--108668). East Punjab: Koelz 8278 (N); R. R. Stewart 879 (S), 1739 (S), s.n. [March 3, 1917] (Ba); T. Thomson s.n. [Panjab, 1-4000 ped.] (Er, S). Kashmir: H. Singh 1635 (S). Khasi States: Herb. Tea Deputation s.n. (Bz-24478). Madras: Babu s.n. (Gg--213787). Mysore: G. Thomson s.n. [Maison & Carnatic] (Br, N). United Provinces: Chopra 19 [August 1924] (S), 19 [January] (S); Dutt 75 (N); Gammie s.n. [Dehra Dun, 10-1891] (Gg--127013); Hohenacker 160 (Du--166536, S); A. M. Khan s.n. [Lachiwala, Aug. 1929] (S), s.n. [Harawala, Dec. 1929] (S); Koelz 20526 (Bv, N); Lakhera s.n. (N); Minchandani s.n. [July 1920] (N); Raj s.n. [7-1-30] (N), s.n. [19-7-31]

(N); Rajkapur s.n. [Dehra Dun, 21 July] (Mi), s.n. [Dehra Dun, 29 Dec.] (Mi); B. N. Singh s.n. [13th July 1930] (N), s.n. [28th Nov. 1930] (N); U. Singh 216 (La, N); Strachey & Winterbottom s.n. [Kumaon] (K); Tych s.n. [Mohand, 14-12-29] (H--36738, in part), s.n. [Mohand, 5-7-30] (H--36738, in part). Wrst Bengal: Thomson & Hooker s.n. [Plan. Ganget. Inf.] (S). State undetermined: Duthie s.n. [Western Himalaya] (Gg--127013); Edalji s.n. [India] (Mi); Herb. Mus. Bot. Stockholm s.n. (S); Herb. Swartz 59 [Niehe] (S); Pennock s.n. [India] (Pa); Sieber Fl. Mixta 152 (Le); Wight 2324 (S), s.n. [Peninsula Ind. orientalis] (N). CHINA: Anhwei: Fan & Li 269 (Oa); Herb. Univ. Nanking 1726 (Or--18684), 17262 (Io--113975). Chekiang: Cheo & Wilson 227 [Herb. Univ. Nanking 12873] (N); F. N. Meyer 1498 (Ar--19766); Steward 516 [2387] (Ph). Fukien: T. C. Chang 4163 (La), 4519 (Du--250170); H. H. Chung 3452 (Bz--24332); Fong 31 (Du--250158); Ging 5375 (Mi). Hunan: Dahlström 42 (S); Fan & Li 21, in part (Oa). Kiangsi: H. C. Cheo 165 (Oa). Kwangtung: N. K. Chun 40781 (I); Düben s.n. [Whampoa] (S); Hance 951 (Bz--24481); Lau 20133 (Bz--24325); Tak 140 [Herb. Canton Chr. Coll. 16629] (Du--250154); W. T. Tsang 21004 (S), s.n. [Herb. Lingnan Univ. 16629] (I); Tso 20940 (Bz--24323); Tsui 617, in part (Bz--24322). Yunnan: E. E. Maire 3663 (La). FORMOSA: Hayashi s.n. [Herb. Govt. Formosa 21212] (La); Oldham 383 (S), s.n. (W--771904); T. Tanaka 97 (S); Tanaka & Shimada 17878 (Go, La, S). JAPAN: Island undetermined: Herb. Ames s.n. [15 Aug.] (Oa); Masamune s.n. [1922] (N). HONGKONG: Yink 712 (Du--200916). LANTAU ISLAND: Tsang 16629 (S). HAINAN ISLAND: Chun & Tso 43701 (N); Gressitt 751 (N); How 73179 (Bz--24327); Lau 293 (Mi), 3051 (S); Lei 202 (Ba), 700 (Ba, Bz--24323); H. Y. Liang 64661 (S); C. Wang 36474 (Go, N). INDOCHINA: Annam: Poilane 1474 (Bz--72849). Cambodia: Eéjaud 814 (N). Tonkin: Eberhardt 3322 (S). MALAYA: Malacca: W. Griffith s.n. [Malacca, 1845] (Br). Penang: Haniff 239 (La). PHILIPPINE ISLANDS: Luzon: N. J. Andersson s.n. [Jan. 1853] (S, S); Eartolomé s.n. [April 1910] (Mi); A. D. E. Elmer 5611 (Bz--24469), 18119 (Bz--24470, S, Ut--71531); Foxworthy s.n. [Herb. Philip. Bur. Sci. 12240] (Bz--24412); Hobman 99 (Gg--31495); Holman 7186 (Du--66950); Labrador s.n. [F. C. Gates 8380] (Mi); Mangubat 1343 [Herb. Philip. Bur. Sci. 1343] (Bz--24414, Bz--24415); E. D. Merrill 147 (Bz--24471), Sp. Blanc. 440 (Gg--31493); M. L. Merritt 7625 (Bz--24467); Merritt & Darling s.n. [Herb. Philip. Bur. Sci. 14063] (Br); D. P. Miranda s.n. [May 1910] (Mi); Navera s.n. [F. C. Gates 7147] (Ka--62315); Quisumbing s.n. [F. C. Gates 7911] (Mi); Quisumbing & Gates 7911 (Mi); M. Ramos s.n. [Herb. Philip. Bur. Sci. 7215] (Br), s.n. [Herb. Philip. Bur. Sci. 3292] (Bz--24468), s.n. [Herb. Philip. Bur. Sci. 12223] (Bz--24411), s.n. [Herb. Philip. Bur. Sci. 27425] (Bz--24466);

F. L. Stevens 1725 (Ur). Masbate: W. W. Clark s.n. [Philip. Forest. Bur. 2527] (Po--64776). Island undetermined: Née 25 (Q), 29 (Q), 31 [Ginobatan] (Q), 43 (Q). JAVA: Backer 2086 (Bz--24456), 21274 (Bz--24442, Bz--24443), s.n. [Batavia, 1902] (Bz--24447), s.n. [April, 1904] (Bz--24445), s.n. [Sept. 1904] (Bz--24449); Bakhuizen van den Brink 5764 (Bz--24438, Ut--67823); Edeling s.n. [Batavia] (Bz--24238); Hoogerwerf 10 (Bz--24268); Slooten 642 (Bz--24339). SARAWAK: Native collector 1374 (Ph). LESSER SUNDA ISLANDS: Billiton: Teijsmann 16728 (Bz--24474, N). Soemba: Voogd 2242 (Bz--24465). CULTIVATED: Belgium: Bossche s.n. [Hort. Thensis II.911] (Br, N--photo, Z--photo); Homblé 7 (Br). California: Gedling s.n. [Nov. 21, 1950] (N). China: L. H. Bailey s.n. [Hankow, July 2 1917] (Ba). England: Nicholson s.n. [August, 1885] (K). Florida: H. H. Hume s.n. [Glen St. Mary, 20 Aug. 1935] (Fl--21144). Germany: Sprengel s.n. (Br). India: Gaudichaud 784 (B); Herb. Hort. Bot. Calcutt. s.n. (Bz--24477, Mu--1131, in part); Shah 1973 (Ka); Voigt s.n. [H. B. Seramp.] (Cp); Wallich 844 (Cp, S), 1744 (K, N), s.n. [Bengal] (Cp). Indochina: Clemens & Clemens 3804 (B, Gg--156603, Mi, N, Ut--295a, V). Jamaica: Bertero s.n. [1921] (B). Java: Docters van Leeuwen 5 (Bz--24461); Herb. Hort. Bogor. XV.J.A.XXXIV.6 (Bz--26411, Bz--26412, Bz, Bz, Bz, Bz, N), XV.J.A.XXXIV.6a (Bz--26413), XVK.A.XLVI.11, in part (Bz--26462), s.n. (Bz--24434, Bz--24435); Koorders 42133b (Bz--24462, Bz--25663, N); Vorderman s.n. [Batavia] (Bz--24457, Bz--24458, Bz--24459). Louisiana: T. Drummond s.n. [New Orleans] (Ed). Martinique: Duss 94, in part (B), 422, in part (B). Mauritius: N. J. Andersson 59 (S); Baron s.n. [Maurice, 1838] (P); Herb. Hooker s.n. (K); Herb. Torrey s.n. [Maurit. K. Gard.] (T); Sieber Fl. Maurit. 161 (Br, P). Mesopotamia: R. J. D. Graham s.n. (K). Missouri: O. E. Thomas s.n. [July 28, 1941] (Je--5536, in part). New York: Coit s.n. [9-5-04] (It); Horsey s.n. [Highland Park, Oct. 2, 1917] (Ba, N--photo, Z--photo). Pennsylvania: H. N. Moldenke 16590 (Ba). Philippine Islands: Garcia s.n. [Manila J. Bot.] (V). Réunion: Richard s.n. (P). Saint Croix: Schow s.n. (Br). Scotland: Herb. Univ. Edinb. s.n. (Ed, Ed); D. Weber 74 (Ed). Switzerland: Herb. Jard. Bot. Génév. s.n. [25 Sept. 1935] (Cb, Cb, Cb, N--photo, S--photo, Z--photo). Thailand: Marcant 263 (K). LOCALITY OF COLLECTION UNDETERMINED: Herb. Linnaeus G.311, S.8 (Ls--type, N--photo of type, Z--photo of type).

VITEX NEGUNDO f. ALBA P'ei, Mem. Sci. Soc. China 1 (3): 104--105. 1932.

Literature: P'ei, Mem. Sci. Soc. China 1 (3): 104--105. 1932; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 57 & 103 (1942) and [ed. 2], 132 & 202. 1949.

This form differs from the typical form of the species in

having the leaflets broadly lanceolate to ovate, usually 3 (rarely 4 or 5) in number, entire, densely white-mealy on both surfaces, and the 10 pairs of secondaries very prominent beneath.

The form was based by P'ei on the following collections from Yunnan, China: Schneider 467 from Yang Tze, collected in 1914; Schneider 1324 from Yungpeh; Schneider 3242 from Tali, collected in October, 1914; Forrest 10123, 10337, 10961, and 10521 from undesignated localities in Yunnan; Rock 3830 from the Yangtze watershed, prefectural district of Likiang, eastern slopes of the Likiang Snow Range, collected between May and October, 1922; Rock 5505 from between Likiang, Youngning, and Youngpei on the road to Mili in southwestern Szechuan, collected in May or June, 1922; and Rock 9044 from the eastern slope of the Likiang Snow Range in the Yangtze watershed, collected in 1923 or 1924.

Maire states that the corollas are blue, and that the plant blossoms in June, at an altitude of 2400 meters in Yunnan.

Citations: CHINA: Yunnan: Maire 3663 (N).

VITEX NEGUNDO var. CANNABIFOLIA (Sieb. & Zucc.) Hand.-Mazz., Act. Hort. Gothenb. 9: 67--68. 1934.

Synonymy: Vitex cannabifolia Sieb. & Zucc., Abh. Akad. Münch. 3 (4): 152. 1846. Vitex cannalifolia Sieb. & Zucc. ex Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 172, sphalm. 1895. Vitex negundo var. typica H. J. Lam in Lam & Bakh., Bull. Jard. Bot. Buitenz., sér. 3, 3: 56, in part. 1921. Vitex cannabifolia var. latifolia Miq. ex Moldenke, Prelim. Alph. List Invalid Names 50, in syn. 1940. Vitex lindleyana O'Neill ex Moldenke, Prelim. Alph. List Invalid Names 51, in syn. 1940. Vitex negundo var. cannabifolia (Sieb. & Zucc.) Moldenke, Alph. List Invalid Names Suppl. 1: 29, in syn. 1947. Vitex camobefolia Harrison, in herb. Vitex cannabifolia var. latifolia Hort., in herb. Vitex negundo var. cannalifolia Sieb. & Zucc., in herb.

Literature: Sieb. & Zucc., Abh. Akad. Münch. 3 (4): 152. 1846; Maxim., Bull. Acad. Imp. St. Pétersb. 31: 82. 1886; Briq. in Engl. & Prantl, Nat. Pflanzenfam. 4 (3a): 172. 1895; Matsum., Ind. 2 (2): 534. 1912; H. J. Lam in Lam & Bakh., Bull. Jard. Bot. Buitenz., sér. 3, 3: 56. 1921; Mak., Ill. Fl. Jap. [895]. 1924; P'ei, Contrib. Biol. Lab. Sci. Soc. China 7: 208. 1932; Terasaki, Nippon Shokubutsu Zufu [Jap. Bot. Illustr. Album] 1225. 1933; Hand.-Mazz., Act. Hort. Gothenb. 9: 67--68. 1934; Moldenke, Alph. List Common Names 8. 1939; Moldenke, Geogr. Distrib. Avicenn. 22 & 40. 1939; Moldenke, Prelim. Alph. List Invalid Names 50 & 51. 1940; Worsdell, Ind. Lond. Suppl. 2: 500. 1941; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 32, 57, 58, 75, & 104. 1942; Moldenke in Lundell, Fl. Texas 3 (1): 83. 1942; Moldenke, Alph. List Invalid Names 52--54. 1942; Moldenke, Phytologia 2: 121. 1944; P'ei, Bot. Bull. Acad. Sin. 1: 5. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 29. 1947; H. N. & A. L. Moldenke, Pl. Life 2: 69. 1948; Hara, Enum. Sperm. Jap. 1: 190. 1948; Moldenke, Known

Geogr. Distrib. Verbenac., [ed. 2], 69, 132, 134, 135, 165, & 202. 1949; Rehd., Bibl. Cult. Trees 584--585. 1949.

Illustrations: Mak., Ill. Fl. Jap. [895]. 1924; Terasaki, Nippon Shokubutsu Zufu [Jap. Bot. Illustr. Album] 1225. 1933.

This variety differs from the typical form of the species in having its leaflets deeply serrate or incised except at the apex and base with uniform rather blunt or rounded teeth and in general green beneath with only very sparse canescent puberulence even during anthesis and when young often densely puberulent only on the midrib and secondaries beneath. The leaflet-blades are often rounded at the base.

The plant is said by collectors to be a woody erect or diffuse shrub or bush, 1--4 m. tall, with 3--5-foliolate leaves and thyrsoid inflorescences, the individual cymes distinctly stipitate and mostly conspicuously brachiate with ascending and spreading branches, the corolla varying from lilac or light-blue to light-purplish or with the lips whitish and the inner parts bluish. The fruit is said to be gray-tomentose, green (when immature).

It has been collected in anthesis from June through December and in fruit in December. It inhabits grassy, dry, or wooded hillsides, forests, open slopes, roadsides, dry land, and rocky wild places, from 200 to 420 meters altitude. The only common names recorded are "chaste-tree" and "monk's pepper tree". Specimens have been identified in herbaria as *Vitex loureiri* Hook. & Arn., *V. negundo* L., *V. negundo* var. *incisa* (Lam.) C. B. Clarke, and *V. negundo* var. *intermedia* (P'ei) Moldenke. P'ei regarded Biltmore Herb. 7517 as his *V. negundo* f. *intermedia*, and Handel-Mazzetti reduces this trinomial to *V. negundo* var. *cannabifolia*. Personally, I feel that they are distinct taxa -- the very uniform toothing of var. *cannabifolia* distinguishing it in general from var. *intermedia*. Hara states that the "*Vitex negundo* L." of Maximowicz and of Matsumura (references cited above) are var. *cannabifolia* in part.

The Hultphers s.n. at Stockholm may be regarded as very typical of var. *cannabifolia*; Kellogg s.n. in the St. Louis herbarium represents the simple-panicled form and E. H. Wilson 790 at the Arnold Arboretum is the compound-panicled form. In Herb. Hort. Kew. 790 W.S., which may well have been raised from the same seed collection as E. H. Wilson 790, the leaflets are subentire and therefore anomalous. The Worthley specimen cited below is from a plant obtained originally from the Brooklyn Botanic Garden. The Herb. Lugd.-Bat. s.n. cited below from Japan is inscribed "e China introduit" and so may have come from cultivated or from naturalized material. The L. H. Bailey collections from Chikungshan and Sin Tien are said by him to have come from along the border between Hupeh and Honan. The Beumée A.307 and Bakhuizen van den Brink 1376 cited from Java may actually have come from cultivated material, although the labels do not indicate this. H. T. Chang says that this plant is "used sometimes as a medium for sauce mold."

Citations: FRENCH GUIANA: Martin s.n. (K). UNION OF SOCIALIST SOVIET REPUBLICS: Maritime Provinces: Enander s.n. [13/8/1926] (S). INDIA: Mysore: G. Thomson s.n. [Maison & Carnatic] (S). State undetermined: Osbeck s.n. (S). CHINA: Chekiang: Chiao 44054 (Go); R. C. Ching 2429 (Ba, I), 3535 (La). Fukien: T. C. Chang 4059 (Du--250153), 4072 (La), 4450 (Du--250171), 4679 (Du--250169); Chang & Metcalf 276 (Du--250163); Chang & Po 3847 (Du--250165), 3962 (Du--250164); DeGrijs 951 (S); C. P. En 2756 (Du--250156); Fong 65 (Du--250157); Ging 5307 (Mi), 5461 (Mi), 5563 (Mi), 5652 (Mi), 6602 (Mi); Pi 6064 (Du--250161), 6211 (Du--250167); L. Y. Tai 11419 (Ur). Honan: L. H. Bailey s.n. [Sin Tien, July 1, 1917] (Ba, Ba). Hunan: Fan & Li 21, in part (Bz--24326). Hupeh: L. H. Bailey s.n. [Chikungshan, June 15, 1917] (Ba), s.n. [Chikungshan, June 19, 1917] (Ba). Kiangsi: L. H. Bailey s.n. [near Kiukiang, July 9, 1917] (Ba); Herb. Philip. Bur. Sci. 680 (Ph); Tsiang 10119 (N), 10139 (N). Kiangsu: H. T. Chang 223 (Du--250162), 244 (Du--200920), 330 (Du--250160). Kwangtung: Dahlström 390 (S); Tsui 617, in part (Ba); Ying 1059 (Du--250155). Shantung: Chiao 2704 (S); Zimmermann 442 (Bz--24430, S). Szechuan: Hao 191 (S). Province undetermined: Fortune 30 (K); Henry s.n. (K); Osbeck s.n. (S); Schoch 427 (S). JAPAN: Honshiu: Y. Matsumura 1664 (N); Maximowicz s.n. [Yokohama, 1862] (Br, Bz--24479, C, K). Kiushiu: Maximowicz s.n. [Nagasaki, 1863] (S). Island undetermined: Herb. Lugd.-Bat. s.n. [1865] (M); Herb. Mus. Bot. Stockholm s.n. [Japonia] (S); H. L. Jones s.n. [Japan, Aug. 15] (Ob--14373). HONGKONG: C. Wright s.n. [Hong Kong] (T). HAINAN ISLAND: Chun & Tso 44514 (N). THAILAND: Zimmermann 2 (Bz--24476). JAVA: Bakhuizen van den Brink 1876 (Bz--24282, Bz--24283, Bz--24284, Ut--24871a, Ut--80702), 5763 (Bz--24281); Beumée A.307 (Bz--24279, Bz--24230). CULTIVATED: District of Columbia: C. Harrison s.n. [Washington, Oct. 14, 1897] (Ar--19756); O'Neill s.n. [Capitol grounds, Oct. 2, 1931] (I); Tidestrom 609 (Ar--19755), 1850 (Ca--171697); W. Trelease s.n. [Botanical Gardens, Oct. 1917] (Ur). England: Herb. Hort. Kew. 790 W.S. (K). France: Herb. J. Gay s.n. [Jard. des Pl., Sept. 1822] (K); Herb. Hort. Paris s.n. (Br); Herb. Martius s.n. (Br); Herb. Persoon s.n. (Le). Germany: Mulphers s.n. [H. B. Berol. 1906] (E--photo, N--photo, S, Z--photo). Hawaiian Islands: Fosberg 10910 (Bi, La). India: Herb. Hort. Bot. Calcutt. s.n. (Ed, K, Le, Mu--646, Mu--1131 in part); Voigt s.n. [H. B. Seramp.] (Cp, Cp); Wallich 914 (Cp), 1746/3 (E, B, Dc), 1819 (Dc, Dc). Indiana: Welch 901 (Dp). Japan: Collector undesignated s.n. (S); Herb. Lugd.-Bat. s.n. (K); K. Saida s.n. [Tokio, Aug. 1886] (B); Yasuda s.n. [June 2, 1918] (Ew). Massachusetts: E. H. Wilson 790 (A, A, Mi--photo, Z--photo, Z--photo). Mauritius: Bojer II. 46 (V). Missouri: J. H. Kellogg s.n. [St. Louis, Sept. 18/06]

(E--879117, Gg--130797, N--photo, Z--photo); O. E. Thomas s.n. [July 28, 1941] (Je--5536 in part). New York: H. N. Moldenke 21559 (Z, Z); Worthley s.n. [New York Bot. Gard. Cult. Pl. 5881] (N). North Carolina: Biltmore Herb. 7517 (E--116127, E--116128, G, N, W--335591). LOCALITY OF COLLECTION UNDETERMINED: T. Anderson s.n. [Myna Tal, 5/57] (Br); Herb. Gaström 14 (S); Herb. Martius s.n. (Br); Herb. Vilmorin s.n. (Ar--19754).

VITEX NEGUNDO var. HETEROPHYLLA (Franch.) Rehd., Journ. Arnold Arb. 28: 258. 1947.

Synonymy: Vitex chinensis Mill., Gard. Dict., ed. 8, no. 5. 1768. Vitex chinensis var. coerulea West., Univ. Bot. 1: 312. 1770. Vitex chinensis var. alba West., Univ. Bot. 1: 312. 1770. Vitex sinuata Medic., Hist. Comm. Acad. Elect. Theod.-Palat. 4 (Phys.): 202, pl. 8 [Bot. Beobacht.]. 1780. Vitex incisa Lam., Encycl. Méth. Bot. 2: 612. 1788 [not V. incisa Thunb., 1947, nor Wall., 1895]. Vitex laciniata Hort. ex Schau. in A. DC., Prodr. 11: 684, in syn. 1847. Agnus castus incisa Carr., Rev. Hort. 1871: 415. 1871. Vitex incisa var. heterophylla Franch., Nouv. Arch. Mus. Paris, sér. 2, 6: 112 [Pl. David. 1: 232]. 1883. Vitex negundo var. incisa (Lam.) C. B. Clarke in Hook. f., Fl. Brit. Ind. 4: 584. 1885. Vitex negundo Curtis apud Rehd. in Sarg., Pl. Wils. 3: 33, in syn. 1916. Vitex laciniatus Hort. apud Rehd. in Sarg., Pl. Wils. 3: 33, in syn. 1916. Vitex negundo var. typica H. J. Lam in Lam & Bakh., Bull. Jard. Bot. Buitenz., sér. 3, 3: 56 (in part). 1921. Vitex incisa Bunge apud Rehd., Man. Cult. Trees, ed. 1, 777, in syn. 1927. Vitex negundo incisa Clarke apud Schaffner, Ohio Journ. Sci. 36: 202. 1936. Vitex negundo var. laciniata Hort. ex Moldenke, Prelim. Alph. List Invalid Names 51, in syn. 1940. Vitex alba Hort. ex Moldenke, Prelim. Alph. List Invalid Names 49, in syn. 1940. Vitex incisa var. alba Hort. ex Moldenke, Prelim. Alph. List Invalid Names 51, in syn. 1940. Vitex laciniata Host ex Moldenke, Alph. List Invalid Names Suppl. 1: 29, in syn. 1947. Vitex negundo var. incisa (Lam.) Garcke ex Moldenke, Alph. List Invalid Names Suppl. 1: 29, in syn. 1947. Lagunus castus Schreb., in herb. Vitex alba Lam., in herb. Vitex alba var. incisa Hort., in herb. Vitex negundo alba Hort., in herb.

Literature: Mill., Fig. Pl. 2: 133, pl. 275. 1760; Mill., Gard. Dict., ed. 8, no. 5. 1768; West., Univ. Bot. 1: 311--312. 1770; Medic., Act. Hist. Comm. Acad. Elect. Theod.-Palat. 4 (Phys.): 202, pl. 8 [Bot. Beobacht.]. 1780; Lam., Encycl. Méth. Bot. 2: 612. 1788; Poir. in Lam., Tabl. Encycl. pl. 541, fig. 2. 1794; Curtis, Bot. Mag. 11: pl. 364. 1797; Mirbel, Hist. Nat. Pl., ed. 3, 15: pl. 103. 1805; Duham., Traité Arbres & Arbust., ed. 2, 6: 116. 1812; Poir. in Lam., Tabl. Encycl. 3: 92, pl. 541, fig. 2. 1823; Bunge, Mém. Sav. Etr. Acad. Sci. St. Pétersb. 2: 126 [Enum. Pl. Chin. Ber. 52]. 1833; Turcz., Bull. Imp. Soc.

Mosc. [Enum. China no. 164] 7: 156. 1837; Schau. in A. DC., Prodr. 11: 684. 1847; Baill., Adansonia 2: pl. 6. 1861--1862; Bocq., Rev. Groupe Verbenac. pl. 4. 1861--1863; Carr., Rev. Hort. 42: 415. 1871; Debeaux, Act. Soc. Linn. Bordeaux 31: 346 [Fl. Tché-fou 113]. 1876; Debeaux, Act. Soc. Linn. Bordeaux 33: 59 [Fl. Tien-tsin]. 1879; Franch., Mém. Soc. Nat. Cherbourg 24: 241 [Cat. Fl. Tché-fou]. 1882; Franch., Nouv. Arch. Mus. Paris, sér. 2, 6: 112 [Pl. David. 1: 232]. 1883; C. B. Clarke in Hook. f., Fl. Brit. Ind. 4: 584. 1885; Maxim., Bull. Acad. Imp. Sci. St. Pétersb. 31: 82. 1886; Maxim., Mém. Biol. 12: 516. 1886; Hemsl., Journ. Linn. Soc. Lond. Bot. 26: 257. 1890; Koehne, Dendrol. 526. 1893; Bois, Dict. Hort. 1208. 1893--1899; Diels in Engl., Bot. Jahrb. 29: 549. 1900; Rehd. in L. H. Bailey, Cycl. Amer. Hort. 4: 1948. 1902; Gilg & Loes. in Engl., Bot. Jahrb. 34, Beibl. 75: 62. 1904; Pavolini, Nuov. Giorn. Bot. Ital., n. ser., 15: 432. 1908; Apgar, Ornament. Shrubs. U. S. 290, fig. 507. 1910; C. K. Schneid., Illustr. Handb. Laubholzk. 2: 592--594, fig. 384 m-n & 385 r-t. 1911; Yabe, Ic. Fl. Manchur. 1 (1): pl. 10. 1914; Rehd. in Sarg., Pl. Wils. 3: 33. 1916; Rehd. in L. H. Bailey, Stand. Cycl. Hort. 6: 3431. 1917; H. J. Lam, Verbenac. Malay. Arch. 190--191. 1919; H. J. Lam in Lam & Bakh., Bull. Jard. Bot. Buitenz., sér. 3, 3: 56. 1921; Nakai, Fl. Sylv. Korean. 14: pl. 12. 1923; Olmsted, Coville, & Kelsey, Stand. Pl. Names, ed. 1, 525. 1924; L. H. Bailey, Man. Cult. Pl. 632 & 849. 1924 [also repr. of 1925, 1938, 1941, & 1944]; Rehd., Man. Cult. Trees, [ed. 1], 777. 1927; Stapf, Ind. Lond. 6: 478--479. 1931; P'ei, Mem. Sci. Soc. China 1 (3): 106--107 [Verbenac. China]. 1932; Brooklyn Bot. Gard. Record 22: 7. 1933; Crevost & Pételot, Bull. Econom. Indo-chine 37: 1292--1293. 1934; Junell, Symb. Bot. Upsal. 4: 93--94. 1934; Teuscher, Journ. N. Y. Bot. Gard. 35: 157. 1934; J. A. Harris, Physico-chem. Prop. Plant Saps 50. 1934; Hand.-Mazz., Act. Hort. Gothenb. 9: 67--68. 1934; Schaffner, Ohio Journ. Sci. 36: 202. 1936; Nakai, Honda, Satake, & Kitagawa, Ind. Fl. Jehol. 4 (4): 41. 1936; Moldenke, Annot. List 109. 1939; Moldenke, Geogr. Distrib. Avicenn. 40. 1939; Moldenke, Prelim. Alph. List Invalid Names 4 & 49--52. 1940; Gates, Fl. Kans. 191. 1940; Rehd., Man. Cult. Trees, ed. 2, 805 & 994. 1940; Worsdell, Ind. Lond. Suppl. 2: 500. 1941; Hottes, Book of Shrubs 403--405. 1942; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 1], 14, 56, 57, 63, 75, & 104. 1942; Moldenke in Lundell, Fl. Texas 3 (2): 83. 1942; Moldenke, Alph. List Invalid Names 4 & 52--55. 1942; Wisler, Swarthmore Pl. Notes 1: 217. 1943; Van Melle, Shrubs & Trees for Small Place 47, 48, 54, & 55. 1943; Rehd., Journ. Arnold Arb. 28: 258. 1947; Moldenke, Alph. List Invalid Names Suppl. 1: 28--29. 1947; P'ei, Bot. Bull. Acad. Sin. 1: 5. 1947; Beltrán, Cat. Sem. Hort. Bot. Univ. Valentin. 1948: 26. 1948; Rehd., Bibl. Cult. Trees 585. 1949; Moldenke, Known Geogr. Distrib. Verbenac., [ed. 2], 12, 21, 25, 65, 132, 142, 165, & 202. 1949; Gleason, New Britton & Br. Ill. Fl. 3: 138 (fig.) & 139. 1952; Roig, Dicc. Bot. 2: 695--696 & 1115. 1953.

Illustrations: Mill., Fig. Pl. 2: 133, pl. 275. 1760; Medic.,

Act. Hist. Comm. Acad. Elect. Theod.-Palat. 4 (Phys.): 202, pl. 8. 1730; Poir. in Lam., Tabl. Encycl. pl. 541, fig. 2. 1794; Curtis, Bot. Mag. 11: pl. 364 (colored). 1797; Mirbel, Hist. Nat. Pl. 15: pl. 103 (colored). 1805; Poir. in Lam., Tabl. Encycl. 3: 92, pl. 541, fig. 2. 1823; Baill., Adansonia 2: pl. 6. 1861--1862; Bocq., Rev. Groupe Verbenac. pl. 4. 1861--1863; Koehne, Dendrol. 526. 1893; Bois, Dict. Hort. 1208 (colored). 1893--1899; Rehd. in L. H. Bailey, Cycl. Amer. Hort. 4: 1948. 1902; Apgar, Ornament. Shrubs U. S. 290, fig. 507. 1910; Schneid., Illustr. Handb. Laubholz. 2: 592--594, fig. 385 r-t. 1911; Yabe, Ic. Fl. Manchur. 1 (1): pl. 10. 1914; Rehd. in L. H. Bailey, Stand. Cycl. Hort. 6: 3481. 1917; Nakai, Fl. Sylv. Koreana 14: pl. 12. 1923; Gleason, New Britton & Br. Ill. Fl. 3: 138. 1952.

This variety differs from the typical form of the species in its much smaller leaflets, which are only 2--7 cm. long (rarely to 11.5 cm. long) and are deeply and very irregularly incised, pinnatifid, or pinnatisect, the sinuses extending half way or often quite to the midrib. It is a shrub or small tree, to 30 feet tall, but may begin blooming at a height of 3 feet. The flowers are described as blue, bluish, lavender with a cream-colored lip, white, or even red. The leaves have a strong aromatic sage-like odor.

The variety is native to and very common all over northern China, being found on rocky slopes, stony wasteland, and even on city walls, often in loam soil. It ascends from 900 to 4000 feet. It is widely cultivated in Europe, North America, Asia, and Mauritius. It has escaped from cultivation in various parts of the United States, Venezuela, and the Philippine Islands. According to Ernst, its wood is durable and is employed in construction in Venezuela. It has been collected in anthesis from June to November and in fruit from August to October.

Van Nelle lists this as a hardy deciduous plant for home grounds which is a die-back in the New York City area or should be treated as such. Bailey, in his unpublished list of florists handling Verbenaceae (1935) says it is offered by Floraire, Forest Nursery, Sanford, Bobbink & Atkins, and the Brooklyn Botanic Garden. Hottes states that it is hardier than V. agnus-castus, but is less showy because the racemes are not as long. It forms a good specimen plant in deep moist but well-drained soil, especially when this is a trifle acid (miniacid pH.4.0-5.0). The floral display is improved by cutting the plants back severely even to within 6 inches of the soil in early spring. They seed freely and should be sown in spring. They can be propagated by summer softwood cuttings, but must be wintered in a greenhouse when young. Hardwood cuttings also root, but should not be allowed to freeze. The plant can also be propagated by layering and by suckers. As sold by most nurseries, these plants are poor in appearance, but with care can be made very attractive. The physico-chemical properties of the species are described by Harris in relation to phytogeography. He reports the variety as cultivated on the grounds of the United States Field Station, in the yard of Mr. Peebles' home, at

Sacaton, Arizona, growing under the influence of irrigation in 1934. Schaffner reports it as escaped in Preble County, Ohio, where it was collected by L. E. Hicks. P'ei records it from Sikiang. Nakai, Honda, Satake, & Kitagawa record it from Jehol, Manchuria. Wisler reports it as cultivated in Delaware County, Pennsylvania, and says it was originally introduced by Incarville to Paris in 1750. Lauphit says it is very common in fields at Peiping. Roig reports that it is sometimes cultivated in Cuba, where it blossoms in September and "sus flores son muy visitadas por las abejas".

Recorded common names are "blue-flowering Chinese vitex", "chaste-tree", "cutleaf chaste tree", "cutleaf chaste-tree", "negundo", "red-flowering Chinese vitex", "shan king sao", and "white-flowering Chinese vitex". The plant number 3515 at Arnold Arboretum, from which various collectors have taken specimens, was originally secured from Paris. I have personally seen the living plants at Copenhagen from which the Herb. Hort. Bot. Haun. s.n. collection, cited below, was taken.

There is a sheet of this variety in the Linnean Herbarium at London. It is sheet no. 9 under genus 811 [790], and is inscribed "incisa Lamarck" in the handwriting of Smith. The laciniations of the leaflets are not very deep, but it is plainly this plant. The names Agnus-castus incisa var. multifida Carr., Vitex negundo var. incisa f. multifida (Carr.) Rehd., and Vitex negundo var. multifida (Carr.) Rehd., often included in the synonymy of this variety, are probably best kept separate as V. negundo var. heterophylla f. multifida (Carr.) Rehd.

Rehder comments that "This variety has been by most authors considered a distinct species, but it differs only in its more deeply and incisely serrate or even pinnatifid leaflets: it represents the northern form of the species and seems well separated geographically, ranging from northeastern Szech'uan through Shensi and northwestern Hupeh to northern Chili and eastern Shantung, while the typical form ranges southward to India and Malaya. The latter has also been recorded from the Philippine Islands, but the specimens I have seen differ considerably in the character of the inflorescence. The variety incisa shows a great range of variation in the shape of the leaflets; some specimens approach the type by their broad only deeply serrate leaflets, as Zimmermann's no. 442 from Tsingtau, others have serrate or sometimes entire and pinnatisect leaflets often on the same branch like Wilson's no. 4303a and this form has been distinguished by Franchet as V. incisa, var. heterophylla.. while the most extreme forms have deeply pinnatifid leaflets with comparatively narrow and often remote segments as in Wilson's no. 4308; this form has been named V. incisa, var. multifida Carr....."

The original description of Franchet's var. heterophylla reads: "folia oblonga, integerrima vel in eodem ramulo hinc inde sinuato vel profunde incisa, lobis integerrimis", and the type is David 522 from Peking, China. According to Weston, Univ. Eot.

312 (1770), Miller's name, V. chinensis, applies to the white-flowered form of this variety. The blue-flowered form Weston calls V. chinensis var. coerulea and the red (!)-flowered form he calls V. chinensis var. alba. The last-mentioned is an excellent example of the oft-repeated precept that the linguistic meaning or translation of a scientific plant name need not necessarily be accurately descriptive of the plant and may, in fact, sometimes be very misleading. Whatever prompted Weston to choose the epithet "alba" for the red-flowered form will probably never be known. It is possible that the blue, red, and white color forms of this variety should continue to be kept distinct nomenclaturally, but in that case the color of the flower of Franchet's original specimen, David 522, will have to be determined, and one of Weston's varietal names (unfortunately indicating a color, rather than the more important leaflet character) will have to become the accepted varietal name. It is also very possible that Franchet's name really applies to what we now call var. intermedia (P'ei) Moldenke. In which case it will become the correct epithet for that taxon, and a Weston name, probably var. coerulea, will become the correct one for this. It would seem that our knowledge of this plant is not complete enough yet to warrant any such re-sorting of epithets.

The original specimen on which the name Vitex alba is based seems to be Ferrottet s.n. from the Jardin des Plantes, Paris, collected in 1813. The Herb. Miller s.n. cited below is the type of V. chinensis, while the Herb. Schreber s.n. (sheet no. 642 in the Munich herbarium) is the specimen on which the name Lagunus castus Schreb. is based. The Herb. Richard s.n. specimen at Stockholm is a mixture with Clerodendrum heterophyllum (Poir.) R. Br. The Duss collections cited below have labels inscribed "introduced", which may actually mean naturalized or cultivated -- his no. 2396 also bears the notation that it is cultivated in Guadeloupe. The Treviranus specimen cited below is inscribed "Cult.?" The H. B. Parks collection cited below does not have the leaflets very deeply incised.

There are apparently many errors in literature citations in the bibliography of this plant. For instance, Schauer gives the original citation for Vitex incisa Lam. as page "605" instead of 612; plate 364 in Curtis, Bot. Mag., is often cited to volume "2" instead of "11"; and Maxim., Bull. Acad. Sci. St. Pétersburg 31: 82 (1886) is sometimes erroneously cited as "32: 82. 1887".

Junell says: "Auch bei V. incisa werden die medianen Scheidewände nach unten hin kleiner. Die Plazenten verwachsen in der Höhe der Samenanlagen befestigungen. Von den mittleren Partien der Fruchtblätter ragen geringfügige 'falsche' Scheidewände vor, welche auf die von den Fruchtblatträndern gebildeten Scheidewände stossen. Die Samenanlagen sind bei allen untersuchten Arten hoch inseriert."

Citations: OKLAHOMA: Payne Co.: D. G. Clarke 120 (St--17499);

