

The variety is based on H. S. Irwin, R. M. Harley, and G. L. Smith 33117 from cerrado on outcrops with adjacent brejo (wet campo) about 50 km. north of Alto Paraíso, at about 1250 m. altitude, Chapada dos Veadeiros, Goiás, Brazil, collected on March 24, 1971, and deposited in the Britton Herbarium at the New York Botanical Garden. The collectors describe the plant as a subshrub about 75 cm. tall, the corollas orange to brown-orange.

STACHYTARPHETA SCHOTTIANA var. ANGUSTIFOLIA Mold., var. nov.

Haec varietas a forma typica speciei foliis valde angustioribus lineari-oblongis usque ad 5 mm. latis recedit.

This variety differs from the typical form of the species in having the leaves very much narrower, linear-oblong, and only to 5 mm. wide.

The variety is based on Araújo 4415 from an open restinga at Lagoa Comprida, in the municipality of Macaé, Rio de Janeiro, Brazil, collected on May 5, 1981, and deposited in the Britton Herbarium at the New York Botanical Garden.

NOTES ON THE GENUS CARYOPTERIS (VERBENACEAE)

Harold N. Moldenke

This is the 73th genus to be treated in the present series of notes in this and certain other journals since 1929. Because of a regrettable but unavoidable lack of time this late in life, the thorough and detailed monograph planned and previously announced is not now practical, but it still seems desirable to place on record the herbarium and bibliographic notes assembled by my wife, Alma L. Moldenke, and myself over the past 53 years. The herbarium acronyms herein employed are the same as have been used by me in all previous installments of these notes and have most recently been explained in full in *Phytologia* Memoirs 2: 463--469 (1980), with a supplement in *Phytologia* 50: 268 (1982).

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CARYOPTERIS Bunge, Nov. Gen. Sp. Chin. Mongh. 1: 27 [Uchen. Zapisk. Kazan. Univ. 4: 178]. 1835.

Synonymy: Barbula Lour., Fl. Cochinch., ed. 1, 2: 366--367. 1790 [not Barbula Hedw., 1782]. Callipeltis Bunge ex Lindl., Nat. Syst. Bot., ed. 2, 278. 1836 [not Callipeltis Stev., 1829]. Mastacanthus Endl., Gen. Pl. 638. 1838. Carypteris Bunge ex Reichenb., Deutsch. Bot. [Repert. Herb. Nom.] 108. 1841. Cariop-

teris Bunge apud Franch., *Nouv. Arch. Mus. Paris*, ser. 2, 6: 111. 1883. Caryopteris Baill., *Hist. Pl.* 11: 92. 1891. Caryopteris P'ei, *Mem. Sci. Soc. China* 1 (3): 171, sphalm. 1932. Caryopteris P'ei, *Mem. Sci. Soc. China* 1 (3): 174, sphalm. 1932. Caryopteris P'ei, *Mem. Sci. Soc. China* 1 (3): 175, sphalm. 1932. Caryopteris P'ei, *Mem. Sci. Soc. China* 1 (3): 179, sphalm. 1932; Mold., *Alph. List Inv. Names Suppl.* 1: 4, in syn. 1947. Caryopteris P'ei, *Mem. Sci. Soc. China* 1 (3): 180 & 189, sphalm. 1932. Caryopteris Farrington, *N. Y. Herald Trib.* July 25, 2: 14. 1937. Caryopteris Trelease, *Pl. Mat. Decorat. Gard. Woody Pl.*, ed. 5, imp. 1, 145, sphalm. 1940. Caryopteris Bunge apud Parsa, *Fl. Iran* 4 (1): 535, sphalm. 1949. Caryopteris Lawrence, *Tax. Vasc. Pl.*, ed. 1, 785, sphalm. 1951. Caryopteris Tamm, *Arch. Mikrobiol.* 20: 281, sphalm. 1954. Callipeltis "Bunge ex Lindl." apud Angely, *Cat. Estat. Gen. Bot. Fan.* 17: 3. 1956. Caryopteris "Bunge ex Franch." apud Angely, *Cat. Estat. Gen. Bot. Fan.* 17: 3. 1956. Pseudocaryopteris Briq. ex Iljin, *Acad. Sci. Bot. Inst. Dept. Repr. Mat. Hist. Fl. Veg. USSR.* 3: 216. 1958. Caryopteris Grindal, *Everyday Gard. India*, ed. 16, 183. 1960. Caryopteris Miq. ex Mold., *Résumé Suppl.* 3: 30, in syn. 1962. Nepta Thunb. apud Li, *Woody Fl. Taiwan* 824 & 960, sphalm. 1963.

Bibliography: Houtt., *Lin. Pfl. Syst.* 2 (7): 429, pl. 56, fig. 2. 1777; Houtt., *Natuur. Hist.* 2 (9): 307, pl. 56, fig. 2. 1778; Thunb., *Fl. Jap.* 244. 1784; Lour., *Fl. Cochinch.*, ed. 1, 2: 366—367 (1790) and ed. 2, 444. 1793; Willd. in L., *Sp. Pl.*, ed. 4, 3: 52. 1800; Roxb., *Hort. Beng.*, imp. 1, 46. 1814; Pers., *Sp. Pl.* 3: 338—339. 1819; D. Don, *Prodr. Fl. Nepal.* 102—103. 1825; Sweet, *Hort. Brit.*, ed. 1, 1: 322. 1826; Wall., *Numer. List* [48] & 49 [=50], nos. 1759, 1812, & 1813. 1829; G. Don in Loud., *Hort. Brit.*, ed. 1, 247. 1830; Sweet, *Hort. Brit.*, ed. 2, 416. 1830; Wall., *Numer. List* 87, no. 1812. 1831; G. Don in Loud., *Hort. Brit.* ed. 2, 247. 1832; Benth., *Lab. Gen.* 706. 1834; Bunge, *Uchen. Zapisk. Kazan. Univ.* 4: 178—179. 1835; Bunge, *Nov. Gen. Sp. Chin. Mongh.* [Pl. Monghol.—Chin. Dec.; Opis. Novy. Rod. Vid. Kitaisk. Mong.] 1: 27—28. 1835; Bunge, *Ann. Sci. Nat. Hist. Paris*, ser. 2, Bot. 6: 64. 1836; Hook. & Arn., *Bot. Beech. Voy.* 205. 1836; Lindl., *Nat. Syst. Bot.*, ed. 2, 278. 1836; Endl., *Gen. Pl.* 634 & 638. 1838; G. Don in Sweet, *Hort. Brit.*, ed. 3, 550. 1839; Meisn., *Pl. Vasc. Gen.* 2: [Comm.] 198 & 290. 1840; Spach, *Hist. Nat. Vég.* 9: 227 & 228. 1840; Steud., *Nom. Bot. Phan.*, ed. 2, 1: 302 & 383. 1840; Endl., *Enchirid. Bot.* 312. 1841; Reichenb., *Deutsch. Bot.* [Repert. Herb. Nom.] 108. 1841; Steud., *Nom. Bot.*, ed. 2, 2: 105. 1841; W. Griff., *Calc. Journ. Nat. Hist.* 3: 367 [Remarks Few Pl. Cent. India 6]. 1842; Brongn., *Enum. Gen. Pl.*, ed. 1, 119. 1843; D. Dietr., *Syn. Pl.* 3: 371, 372, 606, & 619. 1843; Jacques, *Ann. Fl. Pom.* [Journ. Jard.], ser. 2, 1: 318—319. 1843; Jacq., *Ann. Fl. Pom.* [Journ. Jard.], ser. 2, 3: 336—338, pl. 41. 1845; Voigt, *Hort. Suburb. Calc.* 466. 1845; Walp., *Repert. Bot. Syst.* 4: [3]. 1845; Lindl., *Edwards Bot. Reg.* 32 [ser. 2, 19]: pl. 2. 1846; Gerard, *Hortic. Univ.* 7: 40. 1846; Sieb. &

Zucc., Abhandl. Akad. Wiss. Muench. Math.-Phys. 4 (3) [Fl. Jap. Fam. Nat. 2]: 154 & 156--157. 1846; Lindl., Veg. Kingd., ed. 1, 664, pl. 2 (1846) and ed. 2, 664, pl. 2. 1847; Schau. in A. DC., Prodr. 11: 525, 624--625, 657, 674, 675, & 696. 1847; Walp., Repert. Bot. Syst. 6: 686. 1847; Benth. in A. DC., Prodr. 12: 580. 1848; W. Griff., Itin. Notes [Posthum. Papers 2:] 128. 1848; A. L. Juss. in D'Orbigny, Dict. Univ. Hist. Nat. 13: 185. 1849; Lemr. in D'Orbigny, Dict. Univ. Hist. Nat. 3: 201. 1849; Brongn., Enum. Gen. Pl., ed. 2, 119. 1850; Benth. in Hook. f., Journ. Bot. Kew Gard. Misc. 5: 135. 1853; Lindl., Veg. Kingd., ed. 3, 664. 1853; Jameson, Rep. Bot. Gov. Northw. Prov. 164. 1855; Schnitzl., Iconogr. Fam. Nat. 2: 137 Verbenac. [3]. 1856; Buek, Gen. Spec. Syn. Candoll. 3: 86, 106, 502, & 503. 1858; Benth., Fl. Hongk. 268. 1861; Miq., Journ. Bot. Néerl. 1: 144. 1861; Bocq. in Baill., Adansonia, ser. 1 [Rec. Obs. Bot.] 2: 86, 109--112, 118, 120, 128, 129, 143, 144, 148, & 153, pl. 19, fig. 1--9 (1862) and ser. 1, 3: 110, 178, 180, 182, 183, & 206--208. 1862; Bocq., Rév. Verbénac. 110--112, 120, 128, 129, 143, 144, 148, 153, 180, & 206--208, pl. 19, fig. 1--9. 1863; Miq., Ann. Mus. Bot. Lugd.-Bat. 2: 97. 1865; Miq., Prolus. Fl. Iap. 29--31. 1865; Maxim, Mém. Biol. Acad. Sci. St.-Petersb. 12: 522--524. 1866; J. F. Wats., Ind. Nat. Scient. Names 523. 1868; Miq., Cat. Mus. Bot. Lugd.-Bat. 70. 1870; Carr., Rév. Hort. 44: [450] & 451. 1872; Hance, Journ. Linn. Soc. Lond. Bot. 13: [Fl. Hongk. Suppl.] 116. 1873; Pfeiffer, Nom. Bot. 1 (1): 614 (1873), 2 (1): 13 & 132 (1874), and 2 (2): 1570 & 1593. 1874; Brandis, For. Fl. NW. Cent. India 324 & 370. 1874; Franch. & Savat., Enum. Pl. Jap. 1: 357--358 & 360. 1875; Iinuma, Somoku Dzusetsu, ed. 1, 11: pl. 11 [12] & 38 [40]. 1875; Benth. in Benth. & Hook. f., Gen. Pl. 2 (2): 1136 & 1157--1158. 1876; Hemsl., Journ. Bot. 14 [ser. 2, 5]: 208. 1876; Kurz, For. Fl. Brit. Burma 2: 252 & 268. 1877; Maxim., Bull. Acad. Imp. Sci. St.-Petersb. 23 [Diagn. Pl. Nov. Asiat. Dec. 1]: 389--390. 1877; Maxim., Mém. Biol. Acad. Sci. St.-Petersb. 9: 829--830. 1877; S. Moore, Journ. Bot. 16 [ser. 2, 7]: 138. 1878; Maxim., Bull. Sci. Nat. Mosc. 54: 40--41. 1879; Gamble, Man. Indian Timb., ed. 1, 281, 299, & 503. 1881; Maxim., Bull. Acad. Imp. Sci. St.-Petersb. 27: 525--526. 1882; Maxim., Mém. Biol. Acad. Sci. St.-Petersb. 11: 256 & 301. 1882; Franch., Nouv. Arch. Mus. Hist. Nat. Paris, ser. 2, 6: 111. 1883; W. Robinson, Garden 24: 523. 1883; Anon., Gard. Chron., ser. 2, 21: 148 & 149, fig. 30. 1884; Franch., Pl. David., imp. 1, 1: 231. 1884; C. B. Clarke in Hook. f., Fl. Brit. India 4: 517, 561, & 596--598. 1885; Hook. f., Curtis Bot. Mag. 111 [ser. 3, 41]: pl. 6799. 1885; Olivier, Handelsbl. Tuinb. Sempervirens 14: [117] & 220. 1885; Maxim., Mém. Biol. Acad. Sci. St.-Petersb. 12: 491 & 523--524. 1886; Maxim., Bull. Acad. Imp. Sci. St.-Petersb. 31: 87--88. 1886; Durand, Ind. Gen. Phan. 322. 1888; Dippel, Handb. Laubholz. 1: 59, fig. 24. 1889; Watt, Dict. Econ. Prod. India 2: 206. 1889; Collett & Hemsl., Journ. Linn. Soc. Lond. Bot. 28: 111. 1890; Forbes & Hemsl., Journ. Linn. Soc. Lond. Bot. 26 [Ind. Fl. Sin. 2]: 263--265. 1890; Verdier, Journ. Soc. Nat. Hort. Fr., ser. 3, 12: 574. 1890; Baill., Hist. Pl. 11: 87, 91, 92, & 115. 1891;

Hardy, Journ. Soc. Nat. Hort. Fr., ser. 3, 13: 598. 1891; André, Rév. Hort. 64: 324—325. 1892; Batalin, Act. Hort. Petrop. 13: 98. 1893; Bernard, Rév. Hort. Belg. 19: 273—274. 1893; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 272, 447, & 561 (1893) and imp. 1, 2: 175. 1894; Briq. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 4 (3a): 137, 138, 140—142, 144, & 176—178, fig. 66 E—G. 1895; Gourolot, Le Jardin 9: 161. 1895; L. Henry, Le Jardin 9: 74. 1895; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 1214 & 1219. 1895; Legras, Rév. Hort. 67: 331—332. 1895; Ville, Bull. Soc. Tosc.ortic. 21 [ser. 3, 1]: 220—221, fig. 12 & 13. 1896; Briq. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 4 (3a): [381]. 1897; Engl., Syllab. Pflanzenfam., ed. 2, 178. 1898; Linden, Semaine Hort. 2: 89, fig. 229. 1898; L. H. Bailey, Cycl. Amer. Hort. 255. 1900; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 1, 84—85. 1901; L. H. Bailey, Cycl. Amer. Hort. pl. 47. 1902; Collett, Fl. Siml., imp. 1, 378 & 381, fig. 121. 1902; Diels, Fl. Cent.—chin. 550. 1902; Gamble, Man. Indian Timb., ed. 2, imp. 1, 524 & 544. 1902; Engl., Syllab. Pflanzenfam., ed. 3, 188. 1903; Prain, Bengal Pl., imp. 1, 1: 66 (1903) and imp. 1, 2: 624, 824, & 836. 1903; Schelle in Beissner, Schelle, & Zabel, Laubholz-Benen. 426. 1903; C. K. Schneid., Dendrol. Winterst. 120, 201, & 267, fig. 122. 1903; Tillier, Rév. Hort. 75: 15—17, fig. 4. 1903; J. C. Willis, Dict. Flow. Pl., ed. 2, 292 & 604. 1903; Dalla Torre & Harms, Gen. Siphonog., imp. 1, 433. 1904; Post & Kuntze, Lexicon 688. 1904; Brandis, Indian Trees, imp. 1 & 2, 502 & 512—513 (1906) and imp. 2a, 502 & 512—513. 1907; Engl., Syllab. Pflanzenfam., ed. 5, 193. 1907; Spooner, Gard. Chron., ser. 3, 42: 408 & 409, fig. 171. 1907; D. H. Scott in Solered. [transl. Boodle & Fritsch], Syst. Anat. Dicot. 1: 634. 1908; J. C. Willis, Dict. Flow. Pl., ed. 3, 299 & 621. 1908; Engl., Syllab. Pflanzenfam., ed. 6, 198. 1909; Apgar, Orn. Shrubs U. S. 289, fig. 502. 1910; Gérôme, Jardin 24: 381, fig. 224. 1910; Kawakami, List Pl. Formos. 84. 1910; Brandis, Indian Trees, imp. 3, 502 & 512—513. 1911; Danguy, Bull. Mus. Nat. Hist. Nat. Paris 7: 344. 1911; Duthie, Fl. Upper Gang. Plain 2: 215, 228—229, & 263. 1911; Gerth van Wijk, Dict. Plantnames 259. 1911; Léveillé, Feddes Repert. Spec. Nov. 9: 223 & 449. 1911; Nakai, Fl. Korea 2: 137. 1911; C. K. Schneid., Illust. Handb. Laubholzsk. 2: 587, 590, & 595—597, fig. 386 K—R. 1911; Fedde, Repert. Spec. Nov. 9: 325, 455, & 456 (1911) and 10: 64. 1912; Diels, Notes Roy. Bot. Gard. Edinb. 5: 296. 1912; Dunn & Tutchet, Kew Bull. Misc. Inf. Addit. Ser. 10: 201 & 205. 1912; Gilg in Engl., Syllab. Pflanzenfam., ed. 7, 314 & 363. 1912; Makino, Somoku Dzusetsu [Iconogr. Pl. Nipp.], ed. 2, 11: pl. 38. 1912; Matsum., Icon. Pl. Koisikav. 1: pl. 50. 1912; "A. C." in F. W. Harv., Garden 76: 24. 1912; Matsum., Ind. Pl. Jap. 2 (2): 530—531. 1912; Diels, Notes Roy. Bot. Gard. Edinb. 7: 332 & 347. 1913; Fedde & Schust., Justs Bot. Jahresber. 39 (2): 319. 1913; Wangerin, Justs Bot. Jahresber. 39 (1): 493. 1913; L. H. Bailey, Stand. Cycl. Hort. 1: 679. 1914; Bean, Trees Shrubs Hardy Brit. Isls., ed. 1, 1: 301. 1914; Fedde, Repert. Spec. Nov. Gesamtverz. 58. 1914; Fedde & Schust., Justs Bot. Jahresber. 40 (2): 334. 1915; Léveillé, Fl. Kouy-Tchéou 440. 1915; Bean, Trees Shrubs

Hardy Brit. Isls., ed. 2, imp. 1, 1: 301. 1916; Fedde, Justs Bot. Jahresber. 39 (2): 1331 & 1335. 1916; Léveillé, Sert. Yunnan 3. 1916; O. G. Peterson, Traeer Buske 437. 1916; Rehd. in Sarg., Pl. Wils. 3: 378. 1916; B. L. Robinson, Proc. Amer. Acad. Sci. 51: 531. 1916; Cowley, Garden 81: [478]. 1917; Léveillé, Cat. Pl. Yun-nan 277 & 298. 1917; Makino, Somoku Dzusetsu [Iconogr. Pl. Nipp.], ed. 3, 11: pl. 38. 1917; W. W. Sm., Notes Roy. Bot. Gard. Edinb. 10: 18. 1917; Dreer, Gard. Book 80: 184. 1918; R. N. Parker, For. Fl. Punjab, ed. 1, 395 & 403—404. 1918; W. Trelease, Wint. Bot. 332. 1918; Bean, Trees Shrubs Hardy Brit. Isls., ed. 2, imp. 2, 1: 301. 1919; Dreer, Gard. Book 81: 174. 1919; Gilg in Engl., Syllab. Pflanzenfam., ed. 8, 319 & 370. 1919; Thellung, Vierteljahrschr. Nat. Ges. Zürich 64: 782. 1919; Collett, Fl. Simla, imp. 2, 378 & 381, fig. 121. 1920; Dreer, Gard. Book 82: 169. 1920; Bean, Trees Shrubs Hardy Brit. Isls., ed. 3, 1: 301. 1921; Brandis, Indian Trees, ed. 4, 502 & 512—513. 1921; Nakai, Bot. Mag. Tokyo 35: 205. 1921; Prain, Ind. Kew. Suppl. 3, imp. 1, 49. 1921; Bean, Kew Bull. Misc. Inf. 1922: 110—111. 1922; Gamble, Man. Indian Timb., ed. 2, imp. 2, 524 & 544. 1922; Haines, Bot. Bihar Orissa, ed. 1, 4: 704 & 723. 1922; Wangerin, Justs Bot. Jahresber. 51 (1): 555. 1923; L. H. Bailey, Man. Cult. Pl., ed. 1, imp. 1, 634, 802, & 805. 1924; Bean, Garden 88: 183—184. 1924; Chung, Mem. Sci. Soc. China 1 (1): 228. 1924; Dreer, Gard. Book 86: 174. 1924; Gilg in Engl., Syllab. Pflanzenfam., ed. 9 & 10, 340 & 394. 1924; Makino, Illust. Fl. Jap. [216]. 1924; Olmsted, Coville, & Kelsey, Stand. Pl. Names, ed. 1, 70. 1924; R. N. Parker, For. Fl. Punjab, ed. 2, 395 & 403—404. 1924; L. H. Bailey, Man. Cult. Pl., ed. 1, imp. 2, 634, 802, & 805. 1925; Nean, Trees Shrubs Hardy Brit. Isls., ed. 3, 1: 301. 1925; Wangerin, Justs Bot. Jahresber. 46 (1): 368. 1925; J. C. Willis, Dict. Flow. Pl., ed. 5, 124 & 678. 1925; A. W. Hill, Ind. Kew. Suppl. 6: 38. 1926; Koidzumi, Bot. Mag. Tokyo 40: 333. 1926; Borsch, Hardy Herb. Alp. Pl. 8. 1927; Clute, Am. Botanist 33: [111]. 1927; Fedde & Schust., Justs Bot. Jahresber. 47 (2): 245. 1927; Itô, Icon. Pl. Formos. pl. 349. 1927; Rehd. in Rehd. & Wils., Journ. Arnold Arb. 8: 195. 1927; Kirk, Brit. Gard. Fls. 432. 1927; Osmaston, For. Fl. Kumaon 405 & 413—414. 1927; Hottes, Book Shrubs, ed. 1, 151—152. 1928; Kränzlin, Mitt. Deutsch. Dendrol. Gesel. 40: 353. 1928; Rehd. in Rehd. & Wils., Journ. Arnold Arb. 9: 112. 1928; Sasaki, List Fl. Formos. 350 & 425. 1928; Bean, Trees Shrubs Hardy Brit. Isls., ed. 4, 1: 301. 1929; Fedde, Justs Bot. Jahresber. 47 (2): 292. 1929; A. W. Hill, Ind. Kew. Suppl. 7: 41. 1929; E. H. Wils., China Moth. Gard. 23. 1929; L. H. & E. Z. Bailey, Hortus, ed. 1, 124. 1930; Kammerer, Bull. Pop. Inform. Morton Arbor. 5: 28 & 50. 1930; Hottes, Book Shrubs, ed. 2, 176—177. 1931; Stapf, Ind. Lond. 2: 82 & 238. 1930; Stapf, Curtis Bot. Mag. 154: pl. 9219. 1930; E. D. Merr., Sunyat. 1: 30. 1930; W. Trelease, Wint. Bot., ed. 3, imp. 1, 323 & 334. 1931; Bonstedt in Encke, Pareys Blumen-gärtn., ed. 1, 273, 282—283, & 662. 1932; Masamune, Trans. Nat. Hist. Soc. Formos. 22: 169. 1932; P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 1, 7, 162—182, & 189, pl. 30—33. 1932;

P'ei, *Sinensia* 2: 76--77. 1932; Schelle, *Pareys Blumengärtn.*, ed. 1, 282--283. 1932; Wilder, *Frag. Path*, imp. 1, 113 & 385. 1932; Bean, *Trees Shrubs Hardy Brit. Isls.* 3, ed. 1, 75. 1933; Chittenden, *Gard. Chron.*, ser. 3, 94: 226 & 231, fig. 108. 1933; Fedde, *Justs Bot. Jahresber.* 51 (2): 269. 1933; Makino, *Gensyoku Yagai-shokubutu [Nature-Col. Wild Pl.]* 3: 201. 1933; Terasaki, *Nippon Shokubutsu Zufu [Jap. Bot. Illustr. Album]*, ed. 1, fig. 1455. 1933; Tu, *Chinese Bot. Dict.*, abridgd. ed., 662, 663, & 1389. 1933; Chittenden, *Gard. Chron.*, ser. 3, 94, 226, & 231, fig. 108. 1933; Chittenden, *Journ. Roy. Hort. Soc.* 59: 301 & *Proc.* cxxviii. 1934; Crevost & Pételot, *Bull. Econ. Indo-chine* 37: 1296. 1934; Dreer, *Gard. Book* [96]: 130. 1934; *Hand.-Mazz.*, *Act. Hort. Gotob.* 9: 68--69. 1934; Junell, *Symb. Bot. Upsal.* 1 (4): 112, 113, 115, 116, 118--120, 131, 204, & 284, fig. 182 & 183, pl. 7, fig. 4. 1934; Kingdon-Ward, *Pl. Hunt. Tibet* 17 & 171. 1934; Zander, *Gross. Gart.-lex.* 131. 1934; L. H. Bailey, *Florists Handl. Verbenac.* [mss.]. 1935; L. H. & E. Z. Bailey, *Hortus*, imp. 2, 124. 1935; Bobbink & Atkins, *Roses Ornament. Trees Shrubs* 52 & 59. 1935; Dop in Lecomte, *Fl. Gén. Indo-chine* 4: 776, 874, & 885, fig. 90. 1935; Dreer, *Gard. Book* [97]: 21, 117, 131, & 135. 1935; Hu, *Bull. Chin. Bot. Soc.* 1 (2): 95. 1935; H. F. MacMill., *Trop. Plant. Gard.*, ed. 4, 104. 1935; E. D. Merr., *Trans. Am. Philos. Soc.*, ser. 3, 24 (2): 338 & 419. 1935; Rehd., *Journ. Arnold Arb.* 16: 311--313 & 472. 1935; Bean, *Trees Shrubs Hardy Brit. Isls.* 3, ed. 2, 75. 1936; Bedevian, *Illustr. Polyglott. Dict.* 150--151. 1936; Chittenden, *Journ. Roy. Hort. Soc.* 61: *Proc.* cxxxiii & clv. 1936; Diels in Engl., *Syllab. Pflanzenfam.*, ed. 11, 339. 1936; Dop in Lecomte, *Fl. Gén. Indo-chine* 4: 874 & 884--886. 1936; Dreer, *Gard. Book* [98]: 5, 21, & 121. 1936; Hillier, *Journ. Roy. Hort. Soc.* 61: 107--108. 1936; Makins, *Ident. Trees Shrubs*, ed. 1, 46, 62, 258, & 316, fig. 34 L & 50 F. 1936; Rehd., *Journ. Arnold Arb.* 16: 311. 1936; Wangerin, *Justs Bot. Jahresber.* 56 (1): 669. 1936; Wilder, *Frag. Path*, imp. 2, 113 & 385. 1936; Farrington, *N. Y. Herald Trib.* July 25, 2: 14. 1937; Hara, *Bot. Mag. Tokyo* 51: 52. 1937; Rehd., *Journ. Arnold Arb.* 18: 243, 244, & 283. 1937; Wangerin, *Justs Bot. Jahresber.* 57 (1): 696. 1937; L. H. Bailey, *Man. Cult. Pl.*, ed. 1, imp. 3, 634, 802, & 805. 1938; Chittenden, *Ornam. Flow. Trees Shrubs* 145. 1938; Dahlgren, *Svensk Bot. Tidsk.* 32: 231. 1938; Fedde, *Justs Bot. Jahresber.* 57 (2): 742. 1938; Fletcher, *Kew Bull. Misc. Inf.* 1938: 405, 406, 409, & 437. 1938; Hao, *Engl. Bot. Jahrb.* 68: 633. 1938; H. W. Harv., *Ga. Univ. Exp. Sta. Serv. Bull.* 402, ed. 2, 34. 1938; Honda, *Siebold-Kenkyu* 579. 1938; E. D. Merr., *Journ. Arnold Arb.* 19: 362. 1938; Terazaki, *Nippon Shokubutsu Zufu [Nature-Col. Wild Pl.]* fig. 2489. 1938; Fedde, *Justs Bot. Jahresber.* 58 (2): 505. 1939; *Hand.-Mazz.*, *Act. Hort. Gotob.* 13: 336. 1939; Kanjilal, Das, Kanjilal, & De, *Fl. Assam* 3: 458, 459, 494--496, & 546. 1939; Mold., *Annot. List* 108. 1939; Sakata, *Reliable Seeds Nursery* 1939: 28. 1939; Totty's *Catalogue* 1939: 35. 1939; Bobbink & Atkins, [Catalogue] 1940: 67. 1940; Makino, *Illust. Fl. Nipp.* 185, fig. 553 & 554. 1940; Mold., *Prelim. Alph. List Inv. Names* 23 & 55. 1940; Mold., *Suppl. List*

Common Vern. Names 4. 1940; Rehd., Man. Cult. Trees, ed. 2, 806 & 933. 1940; Terasaki, Niopon Shokubutsu Zufu [Ja. Bot. Illust. Album], ed. 2, fig. 553. 1940; W. Trelease, Pl. Mat. Decorat. Gard. Woody Pl., ed. 5, imp. 1, 145. 1940; Anon., Gard. Chron., ser. 3, 110: 110 & 117, fig. 60. 1941; L. H. Bailey, Man. Cult. Pl., ed. 1, imp. 4, 634, 802, & 805. 1941; L. H. & E. Z. Bailey, Hortus Sec., imp. 1, 145. 1941; Biswas, Indian For. Rec., ser. 2 Bot., 3: 41. 1941; Bobbink & Atkins, [Catalogue] 1941: 43. 1941; Doney, Brooklyn Bot. Gard. Rec. 30: 23. 1941; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 2, 84--85. 1941; Fedde & Schust., Justs Bot. Jahresber. 60 (2): 571. 1941; A. D. Hall, Journ. Roy. Hort. Soc. 66: 455 & Proc. lxi. 1941; Heydenric, Gartenschönh. 22: 92. 1941; Mold., Phytologia 2: 13. 1941; Mold., Suppl. List Inv. Names [1], 2, & 6. 1941; Sakata, Reliable Seeds Nursery 1941: 54. 1941; E. H. Walker, Contrib. U. S. Nat. Herb. 28: 655. 1941; Wangerin & Krause, Justs Bot. Jahresber. 60 (1): 662 & 753. 1941; Worsdell, Ind. Lond. Suppl. 1: 190. 1941; Hottes, Book Shrubs, ed. 4, 176--177. 1942; A. P. Johnson, Journ. Roy. Hort. Soc. 67: 366, fig. 120. 1942; Kelsey & Dayton, Stand. Pl. Names, ed. 2, 92--93. 1942; Mold., Alph. List Inv. Names 6, 12, 23, & 33. 1942; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 54--56, 58, 60, 71, & 87. 1942; Lemée, Dict. Descrip. Syn. Gen. Pl. Phan. 8b: 650 & 657. 1943; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 1, 104 & 204. 1943; L. H. Bailey, Man. Cult. Pl., ed. 1, imp. 5, 634, 802, & 805. 1944; E. L. D. Seymour, New Gard. Encycl., ed. 3, 154, 230, & 1279. 1944; Trotter, Common Commenc. Timb. India 229. 1944; Erdtman, Svensk Bot. Tidsk. 39: 281--284, fig. 5 & 6. 1945; Mold., Phytologia 2: 95. 1945; Higgins, Some Good Gard. Pl. 14. 1946; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 272 & 447 (1946) and imp. 2, 2: 175, 1214, & 1219. 1946; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 2, 104. 1946; E. L. D. Seymour, New Gard. Encycl., ed. 4, 154, 230, & 1279. 1946; Mold., Alph. List Inv. Names Suppl. 1: 2, 4, 16, & 29. 1947; P'ei, Bot. Bull. Acad. Sin. 1: 6. 1947; Hara, Enum. Sperm. Jap., imp. 1, 1: 186--187. 1948; Makins, Ident Trees Shrubs, ed. 2, 46, 62, 289, & 355, fig. 34 L & 50 F. 1948; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 3, 104 (1948) and ed. 5, imp. 4, 104. 1949; Aul, N. Y. Herald Trib., May 8, 5: 11. 1949; L. H. Bailey, Man. Cult. Pl., ed. 2, 845--846, 1042, & 1047. 1949; "R. G.", N. Y. Times, Aug. 28, X:23. 1949; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 123, 128, 130, 131, 133, 134, 137, 157, & 178. 1949; H. N. & A. L. Mold., Pl. Life 2: 22--24, 26, 34, 58, & 59. 1948; Parsa, Fl. Iran 4 (1): [531] & 535--536, fig. 252. 1949; Rehd., Bibliog. Cult. Trees 585--586. 1949; Turrill, Curtis Bot. Mag. 166: pl. 75. 1949; Bean, Trees Shrubs Hardy Brit. Isls., ed. 7, 1: 365--367. 1950; P. Henderson, Everything Gard. 120. 1950; Hottes, Book Shrubs, ed. 5, 176--177. 1950; Metcalfe & Chalk, Anat. Dicot. 2: 1032--[1034], 1036, 1040, & 1041, fig. 247E, 1950; Sastri, Wealth India 2 (R): 90. 1950; A. Taylor, Sunday News [N. Y.], Sept. 3, 2: 12. 1950; A. W. Anderson, How We Got Fls., imp. 1, 213 & 271. 1951; Kelly Bros., 1951 Gard. Book 44. 1951; Lawrence, Taxon. Vasc. Pl., imp. 1, 688. 1951; E. L. D. Seymour, New Gard. Encycl., ed. 5, 154, 230, & 1279. 1951; J. C. Willis, Dict. Flow. Pl.,

ed. 6, 124 & 678. 1951; Blackburn, Trees Shrubs East. N. Am. xi, 21, 108, 327, & 329. 1952; Erdtman, Pollen Morph. Pl. Tax., ed. 1, 448. 1952; Hottes, Book Shrubs, [ed. 6, imp. 1], 176--177. 1952; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 5, 104. 1952; E. J. Salish., Ind. Kew. Suppl. 11: 45. 1953; Wayside Gard., Horticulture 31: 175. 1953; Anon., N. Y. Herald Trib., Feb. 21, 4: 15. 1954; Iwanami, Bot. Mag. Tokyo 67: 28--33. 1954; Lombardo, Invent. Pl. Cult. Montevide. 54 & 248. 1954; Mold., Journ. Calif. Hort. Soc. 15: 87. 1954; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 6, 104. 1954; Tamm, Arch. Mikrobiol. 20: 281. 1954; Grubov, Konsp. Fl. M.N.R. 233. 1955; Plaumann, Gartenwelt 18: 285, fig. 1. 1955; Angely, Cat. Estat. Gen. Bot. Fan. 17: 3. 1956; Bean in Chittenden, Roy. Hort. Soc. Dict. 1: 405--406. 1956; Boerner in Maatsch, Pareys Illust. Gartenbaulex. 1: 205. 1956; Chittenden, Roy. Hort. Soc. Dict. Suppl. 177. 1956; Ikuse, Pollen Grains Jap. 128. 1956; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 7, 104. 1956; R. N. Parker, For. Fl. Punjab, ed. 3, 576. 1956; Wyman, Shrubs Vines Am. Gard. 121--122 & 415. 1956; Anon., Commonw. Mycol. Inst. Index Fungi Petrak Cum. Index 2: 279. 1957; Chen' & Chahou, Rast. Pokrov. Sulenkhe 89. 1957; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14354. 1958; Hottes, Book Shrubs, [ed. 6, imp. 2], 176--177. 1958; Iljin, Acad. Sci. Bot. Inst. Dept. Repr., Mat. Hist. Fl. Veg. USSR. 3: 152, 215, & 216, fig. 44. 1958; Mattoon, Pl. Buyers Guide, ed. 6, 88. 1958; Mold., Am. Midl. Nat. 59: 335. 1958; Anon., Kew Bull. Gen. Index 67. 1959; R. M. Carleton, Ind. Common Names Herb. Pl. 15, 16, & 85. 1959; Durand & Jacks., Ind. Kew. Suppl. 1, imp. 3, 84--85. 1959; Hara, Outline Phytogeogr. Jap. 7 & 69. 1959; Hay, Gard. Chron. 145: 411. 1959; Hocking, Excerpt. Bot. A.1: 429. 1959; Hottes, Book Shrubs, [ed. 6, imp. 3], 176--177. 1959; Mold., Phytologia 7: 77--78. 1959; Mold., Résumé 160, 165, 168, 171--173, 177, 214, 237, 243, 245, 248--250, 262--264, 267, 272, 319--322, 354, 389, 392, 418, & 445. 1959; Mold., Résumé Suppl. 1: 11 & 14. 1959; Nut Tree Nursery, Spring '59 Price List. 1959; Bonsted in Encke, Pareys Blumengärtn., ed. 2, 2: 448--449. 1960; Grindal, Everyday Gard. India, ed. 16, 32, 34, & 183. 1960; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 272 & 447 (1960) and imp. 3, 2: 175, 1214, & 1219. 1960; Kelsey Nursery Serv., Short Guide Cat. 165: 35. 1960; Mold., Biol. Abstr. 35: 1688. 1960; Mold., Résumé Suppl. 2: 6. 1960; Nath, Bot. Surv. South. Shan States 305. 1960; Potztal in Encke, Pareys Blumen-gärtn., ed. 2, 2: 439. 1960; Prain, Ind. Kew. Suppl. 5, imp. 2, 49. 1960; Puri, Indian For. Ecol. 406. 1960; E. H. Walker, Bibliog. East. Asiat. Bot. Suppl. 1: 234. 1960; Wang, Pollen Grains China. 1960; J. D. Wils. & Hedden, Farm Home Res. Ohio Agr. Exp. Sta. 45: 8--9 & 41. 1960; Deb, Bull. Bot. Surv. India 3: 314. 1961; Haines, Bot. Bihar Orissa, ed. 2, 2: 738 & 758--759. 1961; Hershey, Price List Spring '61 Nut Tree Nurs. 4. 1961; Kelsey Nursery Serv., Short Guide Cat. 167: 25. 1961; Rau, Bull. Bot. Surv. India 3: 238. 1961; Runner, Rep. Groff Coll. 362. 1961; J. D. Wils., Hedden, & Walker, U. S. Dept. Agr. Eur. Pl. Ind. Pl. Disease Reporter 45: 380--383. 1961; R. M. Carleton, Ind. Common Names Herb. Pl., imp. 2, 16 & 85. 1962; Hocking, Excerpt. Bot.

A.4: 592. 1962; Kelway, Seaside Gard., imp. 1, 49, 138, 169, & 201. 1962; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 8, 104. 1962; Mold., Résumé Suppl. 3: 19, 27, & 30. 1962; Nair & Rehman, Bull. Nat. Bot. Gard. Lucknow 76: 2, 19, & 21, fig. 25. 1962; Pearce Seeds Plants, Our Am. Wild Fls. 15. 1962; Whitlock & Rankin, New Techn. Dried Fls. 21 & 27. 1962; J. D. Wils. & Hedden, U. S. Dept. Agr. Bur. Pl. Ind. Pl. Disease Reporter 46 (3): 186—188, fig. 1—3. 1962; J. D. Wils. & Hedden, Hort. Abstr. 32: 666. 1962; E. B. Anderson in Anderson, Balf., Fish, Wallis, & Finnis, Oxford Book Gard. Fls., imp. 1, 171 & 203, pl. 171, fig. 5. 1963; Bush-Brown, Shrubs Trees Home Landsc. 77—79, [205], & 206, fig. 23. 1963; W. J. Cody, Ind. Sem. Canada Dept. Agr. 1963: 12. 1963; Dalla Torre & Harms, Gen. Siphonog., imp. 2, 433. 1963; Graf, Exotica 3: 1483 & 1568. 1963; Li, Woody Fl. Taiwan 17, 824, 825, 944, & 960, fig. 331. 1963; Maheshwari, Fl. Delhi 276 & 280. 1963; Pearce, New High-lights Fls. 8. 1963; Pearce, Seeds Plants 1963: 13. 1963; Piringer, Downes, & Borthwick, Am. Journ. Bot. 50: 86—90 & 1055. 1963; Prain, Bengal Pl., imp. 2, 1: 66 (1963) and imp. 2, 2: 624. 1963; Schmelzer, Phytopath. Zeitschr. 46: [235]. 1963; E. L. D. Seymour, New Gard. Encycl., ed. 6, 154, 230, & 1279. 1963; Sharma & Mukhopadhyay, Journ. Genet. 58: 359, 370—371, 375, 377, 380, 383, & 384, pl. 11, fig. 42—45 & pl. 12, fig. 46—48. 1963; E. B. Anderson in Anderson, Balf., Fish, Wallis, & Finnis, Oxford Book Gard. Fls., imp. 2, 171 & 203, pl. 171, fig. 5. 1964; Cave, Ind. Pl. Chromos. Numb. 2: 330. 1964; R. Good, Geogr. Flow. Pl. 134. 1964; Kelway, Seaside Gard., imp. 2, 49, 138, 169, & 201. 1964; C. E. Lewis in Florists Publ. Co., New Pronounc. Dict. Pl. Names 14. 1964; Lord, Shrubs Trees Austral. Gard., ed. 2, 254. 1964; R. A. Ludwig, Ind. Sem. Canada Dept. Agr. 1964: 7. 1964; Melchior in Engl., Syllab. Pflanzenfam., ed. 12, 2: 437. 1964; Menninger, Seaside Pl. 91, 268, & 288. 1964; Mold., Biol. Abstr. 45: 3521. 1964; Pearce, Seeds Plants Gard. Aristoc. 8. 1964; Santapau, Excerpt. Bot. A.7: 16. 1964; E. L. D. Seymour, New Gard. Encycl., ed. 7, 154, 230, & 1279. 1964; Sharma, Bull. Bot. Surv. India 6: 101. 1964; Yotaro, Gard. Pl. World 2: 49, pl. 25, fig. 2. 1964; Airy Shaw, Kew Bull. Misc. Inf. 1965: 266. 1965; F. A. Barkley, List Ord. Fam. Anthoph. 76, 143, & 149. 1965; Boss, Handb. Shrubs 9, 17, 36, 104, & 122. 1965; J. & L. Bush-Brown, Am. Gard. Book, ed. 4, 252, 269, & 378. 1965; Dakshini, Journ. Indian Bot. Soc. 44: 416 & 419. 1965; Garibaldi, Atti Giorn. Stud. Prop. Spec. Legn. Pisa 1964: 145—154. 1965; R. E. & C. R. Harrison, Trees Shrubs 47, pl. 127. 1965; Hoag, Trees Shrubs North. Plains 203, 205, & 206. 1965; Maheshwari & Singh, Dict. Econ. Pl. India 35. 1965; Mold., Résumé Suppl. 12: 7. 1965; P. K. K. Nair, Asia Monogr. India 1 (5): [Pollen Grains W. Himal. Pl.] 35 & 97, pl. 12, fig. 154. 1965; Ohwi, Fl. Jap. 763 & 766. 1965; N. Taylor, Guide Gard. Shrubs Trees 335, opp. 342, & 432, fig. 8. 1965; Wu, Act. Phytotax. Sin. 10: 56. 1965; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 7, 119, 205, 700, & 1177. 1966; A. W. Anderson, How We Got Fls., imp. 2, 213 & 271. 1966; G. L. Davis, Syst. Embryol. Angiosp. 271. 1966; Erdtman, Pollen Morth. Pl. Tax., ed. 2, 448. 1966; Everett, Reader's Digest Compl. Book

Gard. 115, 414, 420, 660, & 681. 1966; Giraud, Bull. Soc. Hort. Fr. 139 [Jard. Fr. 10 2(F)]: 374. 1966; Hellyer, Shrubs Colour 24—25 & 27. 1966; Matthew, Bull. Bot. Surv. India 8: 164. 1966; Mold., Résumé Suppl. 13: 5. 1966; G. Taylor, Ind. Kew. Suppl. 13: 25. 1966; DeWit, Pl. World High. Pl. 2: 185. 1967; Doolittle & Tiedebohl, Southwest. Gard., ed. 2, 171. 1967; Glasau, Sommergr. Ziergeh. 67. 1967; Gupta, Season. Fls. Indian Summer Resorts Moos. 67 & 81. 1967; Harlan & Jenkins, Biol. Abstr. 48: 5997—5998. 1967; Harlan & Jenkins, U. S. Dept. Agr. Bur. Pl. Ind. Pl. Disease Reporter 51: 103—105. 1967; Hyland, U. S. Dept. Agr. Pl. Invent. 169: 41. 1967; Jaycox, Journ. Kans. Entom. Soc. 40: 124—126. 1967; Kramer, Taxon 16: 239. 1967; E. Lawrence, South. Gard., ed. 2, 171, 183, & 216. 1967; Mitra, Elem. Syst. Bot. Angiosp., ed. 2 abrdgd. ed., 141. 1967; Mold., Résumé Suppl. 15: 14. 1967; Pal & Krishnamurthi, Flow. Shrubs 21—22, 132, 133, & 146. 1967; Pande, Bull. Dept. Med. Pl. Nepal 1: 36. 1967; Patzak & Rech. in Rech., Fl. Iran 43: 1 & 8. 1967; R. R. Stewart, Pakist. Journ. Forest. 17: 515. 1967; Tingle, Check List Hong Kong Pl. 38. 1967; W. Trelease, Wint. Bot., ed. 3, imp. 2, 323 & 334. 1967; Wayside Gardens, [Catalogue] 1967: 137 & 224. 1967; Wils. & Bell, Fragrant Year 187. 1967; E. B. Anderson in Anderson, Balf., Fish, Wallis, & Finnis, Oxford Book Gard. Fls., imp. 3, 171 & 203, pl. 171, fig. 5. 1968; Cathey, Proc. Am. Soc. Hort. Sci. 93: 693—698. 1968; Deb, Sengupta, & Malik, Bull. Bot. Soc. Beng. 22: 199 & 210. 1968; Encke, Schönst. Kalt Warmhauspfl. 393. 1968; Hyland, U. S. Dept. Agr. Pl. Invent. 172: 19, 108, & 118. 1968; Jaitly, Guignard, & Mestre, Comp. Rend. Acad. Sci. Paris D.267: 59—61, fig. 1—13, & pl. 1, fig. 1—4. 1968; A. Löve, Taxon 17: 203 & 576. 1968; McGinnies, Goldman, & Paylore, Deserts World 481. 1968; Mold., Résumé Suppl. 16: 9 & 19 (1968) and 17: 7. 1968; A. & I. Nehrling, Easy Gard. Drought-Resist. Pl., imp. 1, 166 & 169. 1968; Schmelzer & Schmidt, Phytopath. Zeitschr. 62: [105], 106, 108, 124, & 125. 1968; Sherk & Buckley, Ornament. Shrubs Canada 52. 1968; Stucchi, FIORI 11: 129. 1968; W. Trelease, Pl. Mat. Decorat. Gard. Woody Pl., ed. 5, imp. 2, 145. 1968; Watling, N. Zeal. Pl. Gard. 7: 252. 1968; Anon., Biol. Abstr. 50 (22): S.30. 1969; Bolkh., Grif, Matvej., & Zakhar., Chromos. Numb. Flow. Pl., imp. 1, 714. 1969; Coats, Pl. Hunting 106. 1969; L. T. Evans, Introd. Flowering 460. 1969; Fogg, Concise Guide Shrubs 30 & 31. 1969; Hay & Synge, Color. Dict. Fls. Pl. Home 187 & 188, pl. 1496 & 1497. 1969; J. Hutchins., Evol. Phytol. Flow. Pl. Dicot. 473 & 674. 1969; Kapoor, Singh, Kapoor, & Srivastava, Lloydia 32: 303. 1969; Plowden, Man. Pl. Names 247. 1969; Rau, Bull. Bot. Surv. India 10, Suppl. 2: 61. 1969; Sahni, Indian For. 95: 334 & 346. 1969; Schmelzer & Schmidt, Hort. Abstr. 39: 135. 1969; Suwal, Fl. Phulch. Godaw. 89. 1969; Synge, Suppl. Dict. Gard., ed. 2, 227 & 239. 1969; Widder, Excerpt. Bot. A.14: 159. 1969; Barbey, Arbor. Ornament., ed. 4, 65 & 72. 1970; Bean, Trees Shrubs Hardy Brit. Isls., ed. 8, 1: 517—519, pl. 30. 1970; Cathey, Hort. Abstr. 40: 185. 1970; El-Gazzar & Wats., New Phytol. 69: 469, 473, 483, & 485. 1970; Farnsworth, Pharmacog. Titles 5 (11): iv & item 14140.

1970; Franch., Pl. David., imp. 2, 1: 231. 1970; Grubov, Ivanina, & Tschernева, Pl. Asiat. Cent. 5: 6—8. 1970; Kelway, Garden. Coast 166 & 174. 1970; McGourty, 1200 Trees [Plants Gard 26 (2):] 65. 1970; R. J. Moore, Reg. Veg. 68: 71. 1970; "A. R.", Biol. Abstr. 51: 13600. 1970; Rouleau, Guide Ind. Kew., imp. 1, 36 & 352. 1970; Schmelzer, Phytopath. Zeit. 67: [285], 292, 293, & 321—326. 1970; E. L. D. Seymour, New Gard. Encycl., ed. 8, 154, 230, & 1279. 1970; D. R. W. Alexander, Hong Kong Shrubs 21. 1971; Angely, Fl. Anal. Fitogeogr. S. Paulo, ed. 1, 841. 1971; Aschersleben, Hort. Abstr. 41: 206. 1971; Brandis, Indian Trees, imp. 5, 502 & 512—513. 1971; Erdtman, Pollen Morph. Pl. Tax., ed. 3, 448. 1971; Farnsworth, Pharmacog. Titles 5, Cumul. Gen. Ind. 1971; Lawrence, Taxon. Vasc. Pl., imp. 2, 688. 1971; Mold., Fifth Summ. 1: 267, 269—272, 282, 287, 292—294, 307—309, 313, 354, 356, 408, 414, 415, 422, 423, 443, 444, 446, 452, 461, & 462 (1971) and 2: 571—573, 575, 641, 727, 734, 773, 856, 971, & 972. 1971; Mold., Phytologia 20: 487 & 505 (1971) and 22: 6. 1971; Mukhopadhyay, Pollen Morph. Verb. [thesis]. 1971; Schmelzer, Hort. Abstr. 41: 206. 1971; Wyman, Gard. Encycl., imp. 1, 140, 191, 766, & 1024 (1971) and imp. 2, 140, 191, 766, & 1024. 1972; E. B. Anderson in Anderson, Balf., Fish, Wallis, & Finnis, Oxford Book Fls., imp. 4, 171 & 203, pl. 171, fig. 5. 1972; Anon., Commonw. Myc. Inst. Index Fungi 3: 823. 1972; Anon., U. S. Dept. Agr. Pl. Sci. Res. Div. Home Gard. Bull. 181: 2 & 20. 1972; R. Bailey, Good Housekeep. Illust. Encycl. Gard. 4: 502 (1972) and 15: 2303. 1972; Crockett, Flow. Shrubs 100. 1972; Encke & Buchheim in Zander, Handwörterb. Pflanz., ed. 10, 158, 537, & 539. 1972; Gamble, Man. Indian Timb., ed. 2, imp. 3, 524 & 544. 1972; Gill, Biol. Abstr. 54: 3419—3420. 1972; Gill, Bull. Torrey Bot. Club 99: 36—38. 1972; Hara, Enum. Sperm. Jap., imp. 2, 1: 186—187. 1972; Hocking, Excerpt. Bot. A. 21: 30. 1972; Huang, Pollen Fl. Taiwan 242 & 243, pl. 162, fig. 4—6. 1972; Mold., Biol. Abstr. 54: 6295. 1972; Mold., Phytologia 23: 453 & 505. 1972; F. Perry, Fls. World 304 & 313. 1972; Queens Bot. Gard. Soc., Pl. Seaside Gard. 1. 1972; Queens Bot. Gard. Soc., Shrubs Area [2]. 1972; Rouleau, Taxon Index 1: 72. 1972; V. & H. Singh, Journ. Bombay Nat. Hist. Soc. 69: 356. 1972; Skinner, Ornament. Pl. Coast. Northw. 75. 1972; R. R. Stewart, Annot. Cat. in Nasir & Ali, Fl. West. Pakist. 605. 1972; Wyman, Arnoldia 32: 36. 1972; Thanikaimoni, Inst. Franç. Pond. Trav. Sect. Scient. Techn. 12 (1): 47 (1972) and 12 (2): 27. 1973; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 122, 210, 718, & 1207. 1973; Anon., Biol. Abstr. 56 (3): B.A.S.I. C, S.39 (1973) and 56 (10): B.A.S.I.C. S.42. 1973; Anon., Ind. Sem. Agrartud. Egyet. Gödöllő [Hungary] 1973: 19. 1973; Farnsworth, Pharmacog. Titles 8 (7): iii & 564. 1973; Gamble, Man. Indian Timb., ed. 2, imp. 3, 544. 1973; Hegnauer, Chemotax. Pfl. 6 [Chem. 21]: 658 & 666. 1973; Hosozawa & al., Phytochem. 12: 1833—1834. 1973; Huxley, Hardwicke, & Toogood, Decid. Gard. Trees 30, 151, & 211. 1973; Leigh & Boden, Convent. Internat. Trade Endang. Sp. 14 & 69. 1973; Mold., Biol. Abstr. 56: 1243 & 5366. 1973; Mold., Phytologia 25: 504 (1973) and 26: 177 & 501. 1973; Schuler,

Gardn. Basic Book Trees Shrubs 234 & 312. 1973; Seabrook, Shrubs Gard., imp. 1, 11, 16, 39, 110, & [145]. 1973; Wedge, Pl. Names, ed. 1, 3 (1973) and ed. 2, 3. 1974; Anon., Biol. Abstr. 57 (5): B.A.S.I.C. E.45. 1974; L. H. & E. Z. Bailey, Hortus Sec., imp. 18, 145. 1974; Bolkh., Grif, Matvej., & Zakhar., Chromos. Numb. Flow. Pl., imp. 2, 714. 1974; El-Gazzar, Egypt. Journ. Bot. 17: 75 & 78. 1974; Farnsworth, Pharmacog. Titles 9 (3): v (1974) and 9 (8): ii. 1974; "N. F. G.", Biol. Abstr. 57: 2962. 1974; Gibbs, Chemotax. Flow. Pl. 3: 1752—1754. 1974; Harkness, Seedlist Handb. 44. 1974; Hersey, Flow. Shrubs Small Trees 50, fig. 109. 1974; Hocking, Excerpt. Bot. A.23: 291 & 293. 1974; Hosozawa & al., Phytochem. 13: 1019—1020. 1974; Hosozawa & al., Tetrahyd. Let. 43: 3753—3754. 1974; Howes, Dict. Useful Pl. 24 & 48. 1974; A. Löve, Taxon 27: 385. 1974; Mold., Phytologia 28: 443, 444, 446, 448, & 507. 1974; F. Perry, Compl. Guide Plants Fls. pl. 418. 1974; Troncoso, Darwiniana 18: 408. 1974; Wilder, Frag. Gard. 113 & 385. 1974; Asher, Guide Bot. Period. 1: 608. 1975; Kelway, Gard. Sandy Soil 42 & 135—136. 1975; Kooiman, Act. Bot. Néerl. 24: 464, 465, & 467. 1975; Mold., Phytologia 31: 390, 391, & 412. 1975; A. & I. Nehrling, Easy Gard. Draught-Resist. Pl., imp. 2, 166 & 169. 1975; Seabrook, Shrubs Your Gard., imp. 2, 11, 16, 39, 110, & [145]. 1975; Whitlock & Rankin, Dried Fls. 21 & 27. 1975; L. H. & E. Z. Bailey, Hortus Third 1149. 1976; Cleene & DeLey, Bot. Rev. 42: 412 & 452. 1976; Gault, Color Dict. Shrubs pl. 53. 1976; A. L. Mold., Phytologia 33: 303. 1976; Mold., Phytologia 33: 507 (1976) and 34: 272 & 500. 1976; Thanikaimoni, Inst. Franç. Pond. Trav. Scient. Techn. 13: 50, 328, & 383. 1976; Babu, Herb. Fl. Dehra Dun 395 & 396. 1977; Balakrishn., Bull. Bot. Surv. India 16: 169—173. 1977; Erdtman, Pollen Morph. Pl. Tax., ed. 3, 448. 1977; Mold., Phytologia 35: 507 (1977) and 36: 39 & 502. 1977; Prance & Elias, Extinct. Forever, imp. 1, 416. 1977; Speta, Candollea 32: 146 & 155. 1977; Troth & Nicolson, Phytologia 35: 225 & 227. 1977; Balakrishn., Biores. Ind. 15 (4): B.137. 1978; Heathcote in Heywood, Flow. Pl. World 237. 1978; Hsiao, Fl. Taiwan 4: [410] & 418—420, pl. 1057. 1978; Layzell & Horton, Canad. Journ. Bot. 56: 1844—1851, fig. 1—14. 1978; Lord, Trees Shrubs Austral. Gard., ed. 5, 254. 1978; Mierow & Shrestha, Himal. Fls. 93. 1978; Mukherjee & Chanda, Trans. Bose Res. Inst. 41: 47. 1978; Prance & Elias, Extinct. Forever, imp. 2, 416. 1978; Wright, Perry, Boyd, & Elsley, Compl. Book Gard. 106, 172, 372, & 386. 1978; Layzell & Horton, Biol. Abstr. 67: 1151. 1979; Milz & Rimoler, Zeitschr. Naturforsch. Wiesb. 346: 325. 1979; G. W. Park, Park's Springtime 1979: 4. 1979; Hsiao, Fl. Taiwan 6: 121. 1980; Lauener, Notes Roy. Bot. Gard. Edinb. 38: 483. 1980; Mold., Phytol. Mem. 2: 255—259, 271, 276, 277, 281—284, 299, 300, 304, 346, 347, 374, 378, 379, 386, 387, 460—462, & 529. 1980; G. W. Park, Park's Springtime 1980: 4. 1980; Roxb., Hort. Beng., imp. 2, 46. 1980; Mold., Phytologia 45: 343 & 504 (1980), 46: 54 & 505 (1980), 47: 335 & 504 (1981), and 48: 122, 123, 399, & 506. 1981; Brenan, Ind. Kew. Suppl. 16: 58. 1981; Hickey & King, 100 Fam. Flow. Pl. 346—348. 1981; Hu, Chin. Mat. Med. 182 & 218.

1981; Munz & Slauson, Ind. Illust. Living Things Outside N. Am. 260 & 328. 1981; Pant, Uniyal, & Prasad, Journ. Bomb. Nat. Hist. Soc. 78: 51. 1981; Rouleau, Repert. Nom. Gen. Ind. Kew. 56 & 479. 1981; Mold., Phytologia 50: 258, 416, 417, 422, 424, & 505 (1982) 51: 302 & 488 (1982), and 52: 114. 1982; Weber & Wittman, Phytologia 51: 379. 1982.

Mostly bushes, small soft-wooded shrubs or subshrubs, rarely small trees or even subherbaceous, erect or spreading to rambling or even prostrate, often very fragrant, glabrous or puberulent to incanous-tomentellous or -tomentose; branches mostly few, ascending or rarely prostrate; twigs slender, round in cross-section or very obscurely tetragonal; pith relatively large, rounded, white, continuous; leaves simple, deciduous, decussate-opposite or ternate, exstipulate, usually glanduliferous; petioles very slender, mostly short; leaf-blades chartaceous, mostly rather small, linear to ovate, marginally entire to dentate or serrate, mostly apically acuminate, sometimes obtuse, often minutely punctate with glistening yellow punctiform glands; inflorescence mostly axillary or running into a terminal thyrse, cymose or corymbose, the cymes opposite, few- to many-flowered, rarely 1-flowered, often showy, the terminal ones sometimes forming a narrow, compound, spike-like panicle, the axillary ones short and often sessile; bracts small to minute or even absent; flowers relatively small, short-pedicellate or subsessile, complete, perfect, zygomorphic; calyx inferior, gamosepalous, campanulate, mostly subactinomorphic, usually deeply 5-lobed or 5-fid, rarely 4- or 6-lobed, persistent & somewhat accrescent in fruit, the lobes lanceolate to triangular, subequal, apically acute, usually 2 anterior, 2 lateral, and 1 posterior, valvate in bud; corolla gamopetalous, tubular or infundibular to hypocrateriform, zygomorphic, mostly surpassing the calyx, usually blue, purple, or violet to rose, rarely white, cochlear in prefloration, usually 5- [rarely 4-] lobed, usually bilabiate, the tube short, cylindric, equaling or surpassing the calyx-tube, the limb spreading, subequally 5-lobed or [usually] the lobes quite unequal, alternate to the calyx-lobes, the upper lip either composed of 3 or 4 subequal erect lobes and the lower lip larger, spreading and incurved, or else the lower lip even larger, innermost in prefloration, concave or cucullate, 3-lobed, with the middle lobe slightly larger, patent, and usually apically crisped, emarginate, toothed, or fimbriate, sometimes entire, the 2 posterior lobes much shorter, equal, oblong or ovate to obovate, flat, spreading; stamens 4, didynamous, inserted below the middle or in the upper part of the corolla-tube, alternate with the anterior and lateral corolla-lobes, the anterior pair longer, involute in bud, exerted in anthesis; filaments separate, filiform throughout or basally thickened; anthers terminal, bilocular, subrotund, the thecae short, parallel or often basally divaricate, apically united or divergent, introrse, the connective inconspicuous; pistil one, superior, compound, regularly bicarpellary or often [abnormally] tricarpellary, elongate, the third carpel, when present, rolled up between the other two; style filiform, elongate, api-

cally bifid, the branches short, unequal, apically stigmatiferous, the shorter one posterior, often surpassing and curving above the anthers or else shorter than the stamens (probably depending on developmental age); ovary single, superior, compound, ellipsoid or subglobose, 4-lobed, externally glabrous or pubescent, imperfectly 4-locular or sometime unilocular with 2 lateral parietal placentae, each 2-lamellate and 2-ovulate, or, when 4-locular, each locule 1-ovulate; ovules pendulous, lateral, apically attached, semi-anatropous, the chalaza superior, the micropyle inferior; fruit capsular or rarely subdrupaceous when immature with a thin fleshy pericarp, small, globose, shorter than and enclosed by the persistent fruiting-calyx, usually dry on maturity and with 4 concave valves, separating into 4 nutlets, the valves basally dehiscent, one of each pair inwardly curved and placentiferous and marginally seed-bearing; nutlets 1-seeded, dorsally compressed and with one margin alate, ventrally concave, centrally unequally carinate, with no central axial cavity present; cotyledons 2, thick, elliptic; radicle inferior; endosperm absent.

Type species: Caryopteris mongholica Bunge.

A rather small genus of about 23 accepted taxa, along with a few cultivars, native to the lower Himalayan or subhimalayan region of Pakistan, Nepal, Bhutan, Tibet, India, and Burma, north into China and Mongolia, and east to Korea, Taiwan, Japan, and Thailand. Several species are cultivated for ornament either in their original form or as cultivars.

Pal & Krishnamurthi (1967) comment that "Caryopteris species are natives of East Asia and have their widest distribution in China and Japan. In India they are fully adapted to grow in the plains and it is common to find them in the shrubberies....[They] respond favourably to sunny locations and a light, well-drained soil."

The accepted generic name, Caryopteris, is derived from the Greek, karyon, a nut, and pteron, a wing, in allusion to the winged nutlets. Bentham (1876) refers to it as a genus of "4 or 5" species, while Clarke (1885), Durand (1888), Briquet (1895), and Parker (1924) give 5 as the number of species, which, they say, are all native to Mongolia, China, Japan, and the Himalaya region of India. Baillon (1891) gives "5 or 6" as the number of species, all from "central Asia and Japan"; Ohwi (1965) recognized 10 species; Sastri (1950) raised the count to 12, while Encke (1960), Airy Shaw (1973), and Hsiao (1975) recognize 15 in all. It is the type genus of Subfamily Caryopterioideae Briq., Tribe Caryopterideae (Schau.) Mold., and Subtribe Caryopterideae Schau.

Briquet (1895) divides the genus into two sections:

Section 1. Mastacanthus (Endl.) Briq., with the anterior lip of the corolla ciliate-dentate or fimbriate and the anther-thecae parallel or basally slightly divergent, including what he calls C. divaricata, C. incana, C. mongholica, C. nepetaefolia, and C. tangutica.

Section 2. Pseudocaryopteris Briq., with the anterior lip of the corolla merely crisped and the anther-thecae apically (instead

of basally) divergent, including what he calls C. grata, C. paniculata, and C. wallichiana.

Loureiro's original (1790) description of the synonymous genus Barbula is: "Cal. Perianthium 5-fidum: laciniis acutis, erectis, aequalibus. Cor. Ringens, tubo calyci aequali: limbo 5-fido, laciniis 4 lobii superioris ovatis, erectis, sub-aequalibus: labium inferus magnum, patens, incurvum, terminatum fimbria longa, capillari. Stam. Filamenta 4, erecta, quorum 2 longiora, corollam superantia. Antherae sub-rotundae. Pist. Germen sub-rotundum, 4-sulcum. Stylus 2-fidus, brevior staminibus. Stigmata simplicia. Peric. Nullum. Calyx connivens. Sem. 4, sub-rotunda, nuda. Nom. Barbulam dixi a fimbria barbata labii inferiora. Char. Gener. Cor. Labium inferius magnum, fimbriatum: superius 4-fidem, laciniis ovatis." The type species is Barbula sinensis Lour. [= Caryopteris incana f. candida (Schelle) Hara].

The generic name, Mastacanthus, was originally proposed by Endlicher in 1838 as a new name for the Barbula of Loureiro (1790) which is a homonym of the moss genus Barbula of Hedwig (1782), so its typification is the same as that given above for Loureiro's genus. Bocquillon (1863) comments that "Le genre Mastacanthus Endl. a été réuni avec raison au genre Caryopteris Bge. dont il ne diffère que par des caractères qui sont tout au plus spécifiques. Nous croyons devoir y joindre le genre Glossocarya Wall. L'espèce G. mollis, ne diffère du C. mongolica que par son calice plus tubuleux et plissé, par sa corolle à gorge moins dilatée, par les divisions plus grandes de son style, caractères qui ne tiennent qu'à une légère modification dans la forme, et ne suffisent pas pour constituer un genre différent des Caryopteris." None the less, the two genera are kept separate by practically all other workers in the group and certainly habitually seem to me to be very distinct. Both Glossocarya Wall. and Caryopteris Bunge are placed with Hymenopyramis Wall., Peronema Jack, Garrettia Fletcher, and Petraeovitex Oliv. in the Tribe Caryopterideae.

Clarke (1885) asserts that "Though the genus is near Clerodendron, two of the Indian species are easily distinguished by their very short corolla: the third, C. Wallichiana, has the corolla-tube scarcely 1/5 in. [long]. The capsule is hardly less succulent than in several species of Clerodendron, nor is the incurving of the edges of the valves different from what occurs in that genus."

Dahlgren (1938) and Junell (1934) place Caryopteris in the Lamiaceae or mint family, Junell stating that "Caryopteris [ist] sehr bahe mit Amethystea verknüpft, einem einjährigen Kraut, das sicher eine verhältnismässig zentrale Stellung in Ajugeae einnimmt." He says, further, that the so-called Subfamily Caryopterioideae is an unnatural group of genera and should be divided among the Viticeae of the Verbenaceae and the Ajugeae of the Lamiaceae and that both Caryopteris and Glossocarya are closely related to Amethystea, a monotypic genus inhabiting the central Asiatic area from Iran to

Mongolia. Certainly the species of the Mastacanthus section of Caryopteris do bear a striking habitual similarity to Amethystea, but the Pseudocaryopteris group of taxa do not.

Bentham (1876) comments that the "Species omnes a Schauero in genus unicum junctae, etsi in typicis corollae lobus anticus fimbriatus et antherarum loculi paralleli v. vix divergentes, dum in Himalaica lobus anticus corollae margine crispulus tantum et antherarum loculi mox divaricati apice confluentes. Fructus ante maturitatem praesertim in C. grata subdrupaceus, pericarpio tenuiter succusa, maturus tamen in valvas 4 pyrenas auferentes dehiscentens."

Meisner (1877) divides Caryopteris into three divisions:

- (1) Eucaryopteris — "Corolla cyanea fauce villis clausa lobis 4 acutis ovatis, quinto infimo majore fimbriato. Antherae loculis parallelis stylusque ramis longis longe exserta, filamentis rectis. Folia lanceolata acuta integra" (including what he calls C. mongholica Bunge and C. wallichiana Schau.).
- (2) Mastacanthus -- "valvae coriaceae obovoideae, profunde naviculares marginibus introflexis, ventre areola brevior et angustiore depressa instructae, quae clausa est pseudosepta longitudinaliter carinato apice adnato ceterum demum circumcirca soluto. Semen infra apicem pseudosepti affixum late obovoideum. Placenta et gynobasis praecedentis" (including only what he calls C. incana Miq.).
- (3) Phasianurus — "(ex nomine japonico, ob genitalia arcuata longe exserta). Calyx fructifer late campanulatus patens. Valvae Mastacanthi, sed crasse coriaceae, areola ventrali dimidio minore valde impressa, pseudosepto placenta et semine ut in Mastacantho sed tota caryopsis processu filiformi elastice cartilagineo ab ipsa basi pseudosepti exeunte gynobaseos apice affixa! Gynobasis caryopsibus fere triplo brevior, constans e tuberculis conicis minutis 2, inter bases caryopsidum positas, et cruciatim cum his ex lamellis majoribus subcoriaceis 2 ovalibus, quorum margines exteriores incrassati per longitudinem foveant processus elasticos caryopsidum apicibus lamellarum insertos, margines interiores autem inter caryopsides inseruntur (fructus ad C. divaricatam descriptus)." Herein he includes what he calls C. divaricatus S. & Z. and C. nepetaefolia Benth.

Common and vernacular names listed for the genus as a whole are "Bartblume", "Blaubart", "bluebeard", "blue mist", "blue spirea", "caryoptère", "verbena shrub", and "verbena-shrub". Carleton (1959) avers that the name, "bluebeard", applies also to Clintonia borealis, but this is not strictly true — the latter plant is known as "bluebead", from the shape and color of its mature fruit (not "bluebeard").

Bailey (1972) notes that the wood of cultivated species of Caryopteris is winter-killed when the temperature falls below 20° F. The stems and/or branches should then be cut back to stubs a few inches above the ground level in the following spring (perhaps about late March or early April in the Northern Hemisphere, depend-

ing on the region) or when basal shoots begin to appear. Blooms will then be produced on new wood in late summer. The cultivated taxa are easy to grow as pot plants in a cool greenhouse and they are useful outdoors in a border as well (for the low-growing taxa) or in background shrubberies (for the taller species), but there require a well-drained, light, sandy-loam soil in a sunny position. They may be propagated by seeds or cuttings (the latter only in the case of forms and cultivars). In the United States they are hardy in Life Zone 7, root-hardy in Zone 3, and top-hardy to Zone 6. In the New York City area they usually bloom from August to frost. Mostly they are useful also as bee-plants for apiarists. Cuttings made from young growth root easily in sand in summer and early autumn. In 1954 2—3-foot plants sold for \$2.75 each in the U.S.A.; in 1961 18-inch 2-year-old plants were selling for \$1.45 each or 10 for \$12.

Gibbs (1974) reports tannins and cyanogenesis absent in the genus, while leucoanthocyanin is "doubtfully present".

DeWit (1967) tells us that the genus is reported to be "useful" as an aphrodisiac. Some species are used in India and elsewhere to form hedges or as ornamental garden plants, as personally observed by my wife and myself in New Delhi.

Erdtman (1945) has described the pollen morphology of ten species. He notes that its characters suggest the genus Amethystea and that both genera rightfully belong in the Verbenaceae. He maintains that Amethystea and Caryopteris should not be placed in the Lamiaceae, as was recommended by Junell (1934), since to do so would "lessen the striking similarity in pollen morphology in that family".

Members of the genus Caryopteris are quite often attacked by the parasitic fungi, Cercospora caryopteridis and Metasphaeria casaesiana. Schmelzer (1970) reports attacks by the cucumber mosaic virus on C. Xclandonensis Simmonds, while Schmelzer & Schmidt (1968) found alfalfa mosaic attacking C. incana (Thunb.) Miq. Jaycox (1967) reports Anthidium manicatum L., a hymenopteron native to Europe, attacking the roots of Caryopteris at Ithaca, New York, in 1963. Wilson & Hedden (1962) and Harlan & Jenkins (1967) found the roots attacked by the nematode, Meloidogyne hapla Chitwood, producing a form of "root-knot". Control can be effected by the use of the nematocide, Cynem, at 750—1150 ppm or 17.3 percent of DBCP (nemagon). In plots where root-knot control was good the percentage of plants which survived the following winter ranged from 50—90 percent. Where the nematode control was poor, winter-killing was severe, and survival was as low as 9 percent in untreated plots.

It may be worth noting here that the Franchet & Savatier work (1875) listed in the bibliography (above) is sometimes cited as "1: 257" and "1: 260", but the items concerning Caryopteris actually occur on pages 357—358 and 360. The Maximowicz (1882) reference is often erroneously cited as "1881", the titlepage date, for instance by Jackson (1893) and Grubov & al. (1970), but the

pages here concerned were not actually issued until January 21, 1882. Similarly, his 1886 work is also often cited by the title-page date of "1887", but pages 12--121 were actually issued on April 15, 1886.

The Schnitzlein reference in the bibliography (above) is also often cited by the titlepage running-date of "1843-1870", but the verbenaceous portion was issued in 1856. Similarly, the Endlicher reference is often cited as "1836-1856" or as "1839" (for instance, by Rehder, 1942), but the actual date of issuance of the pages here involved is 1838. Diels (1902) cites Maximowicz's *Mél. Biol.* 9: 828-830 reference as "1876", but the actual date of publication was 1877. The Angely (1971) work is often incorrectly cited as "1970". Bocquillon (1862) cites the Roxburgh, *Hortus Bengalensis* work as "Hamilton in Roxb. Hort. Beng."

The W. L. Hunt s.n. [8/17/36], distributed as Caryopteris sp., actually represents a species of Buddleia in the Loganiaceae.

A list of Excluded Species:

Caryopteris esquirolii Léveillé, Feddes Repert. Spec. Nov. 9: 449.

1911 = Pogostemon glaber Benth., Lamiaceae.

Caryopteris fluminis Léveillé, Sert. Yunnan 3. 1916 = Colquhounia seguini Vaniot, Lamiaceae.

Caryopteris glossocarya Bocq. in Baill., *Adansonia*, ser. 1, 2: 111, pl. 19. 1862; Rev. Verbénac. 111, pl. 19. 1863 = Glossocarya mollis Wall.

Caryopteris mairei Léveillé, Sert. Yunnan 3. 1916; Cat. Pl. Yunnan 277 & 298. 1917 = Teucrium palmatum Benth., Lamiaceae.

Caryopteris ? ningpoensis Hemsl., Journ. Linn. Soc. Lond. Bot. 26: 264-265. 1890 = Elsholtzia sp., Lamiaceae.

Caryopteris parvifolia Batalin, Act. Hort. Petrop. 13: 98. 1893 = Plectranthus parvifolius (Batalin) W. A. Talbot, Lamiaceae.

Caryopteris serratum (L.) Moon ex Mold., Phytol. Mem. 2: 379, in syn. 1980 = Clerodendrum serratum (L.) Moon

P'ei (1932), in his excellent monograph of the Verbenaceae of China, gives the following key to the taxa of Caryopteris recognized by him:

1. Inflorescence without bracts or bracteoles, in many-flowered cymes; the lower corolla-lobe toothed or fimbriate; leaves usually mealy-white beneath.
2. Leaves entire, linear or ovate-oblong.
3. Ovary glabrous; lower corolla-lobe strongly fimbriate....
C. mongholica.
- 3a. Ovary pubescent; lower corolla-lobe toothed or shortly fimbriate.
4. Leaves linear, glutinous, with black veins beneath; corolla purplish-blue.....C. glutinosa.
- 4a. Leaves ovate-oblong, not glutinous, without black veins beneath; corolla greenish-yellow.....C. forrestii.
- 2a. Leaves serrate or lobed, lanceolate-ovate.
5. Ovary glabrous.
6. Leaves serrate, ovate, basally subcordate or truncate to

9. Cymes mostly axillary or, if terminal, small and merging into the penultimate axillary ones; leaf-blade serration coarse and uneven; native to China, Taiwan, Korea, and Japan.
10. Stems, branches, peduncles, and pedicels glabrous or only sparsely pilose; leaf-blades sparsely pubescent; corolla blue or purple...C. chosenensis.
- 10a. Stems, branches, peduncles, and pedicels densely glandular-hirsute; leaf-blades long-setulose on both surfaces; corolla white.....C. siccania.
- 9a. Cymes both axillary and regularly forming a very large, loose, wide-spreading, terminal panicle; leaf-blade serration small and uniform; native to Nepal.
11. Mature leaf-blades to 15 cm. long and 10.5 cm. wide.....C. nepalensis.
- 11a. Mature leaf-blades only 4—7 cm. long and 3.2—4.5 cm. wide.....C. nepalensis var. parvifolia.
- 3a. Lower corolla-lip apically fimbriate.
12. Leaf-blades always or usually marginally entire or only irregularly few-toothed.
13. Leaf-blades regularly entire-margined.
14. Leaf-blades linear to linear-oblong, not glutinous nor revolute-margined; ovary glabrous...C. mongholica.
- 14a. Leaf-blades lanceolate, glutinous, marginally revolute; ovary pubescent.....C. glutinosa.
- 13a. Leaf-blades often marginally toothed, the teeth few, scattered, triangular.
15. Corolla blue or bright-blue.....C. Xclandonensis.
- 15a. Corolla deep-blue...C. Xclandonensis cv. Heavenly Blue
- 12a. Leaf-blades mostly more or less toothed on the margins.
16. Leaf-margins regularly incised-dentate, the incisions antorse, obliquely broad-based, apically bluntly subacute, and revolute; vein and veinlet reticulation abundant, fine, conspicuously impressed above.....C. incana var. szechuanensis.
- 16a. Leaf-surface and leaf-margin not as described above.
17. Leaf-blades very narrow, to 3 mm. wide, linear to linear-lanceolate.....C. mongholica var. serrata.
- 17a. Leaf-blades not as described above, mostly ovate or ovate-oblong to oblong-lanceolate or ovate-elliptic, mostly 12—30 mm. wide.
18. Corolla white.....C. incana f. candida.
- 18a. Corolla not white.
19. Plants erect in growth.
20. Upper corolla-lobes densely long-villous.....C. trichosphaera.
- 20a. Upper corolla-lobes not long-villous.
21. Corolla blue or violet-blue; growth compact; plants very hardy, 2—3 feet tall; inflorescence scattered.

22. Petioles 2.5--3 cm. long; leaf-blades 8.5--9
cm. long and 4.5--5 cm. wide.....C. incana f. macrophylla.
- 22a. Petioles only 0.4--1.2 cm. long; leaf-blades
2--8 cm. long and 1.2--3 cm. wide... C. incana.
- 21a. Corolla pink; growth more rampant; plants less
hardy, 5--6 feet tall, very free-flowering, the
long branches completely covered with inflores-
cences.....C. incana f. superba.
- 19a. Plants dwarf, prostrate or ascending.....
C. incana f. nana.
- 1a. Cymes only 1--3- or few-flowered; leaf-blades ovate; corolla-
lobes all entire.
23. Peduncles 3- or few-flowered; calyx-lobes lanceolate and
apically acuminate; corolla-tube usually 9 mm. long; plants
erect.....C. terniflora.
- 23a. Peduncles mostly 1-flowered; calyx-lobes ovate, apically
acute; corolla-tube usually only 4 mm. long; plants creep-
ing.....C. nepetaefolia.

Some botanists, like Maximowicz (1886), P'ei (1932), and others, prefer to regard C. tangutica as a valid species, and then separate it from its most closely related species as follows:

1. Calyx 5-fid; leaf-blades ovate-oblong, coarsely serrate; ovary glabrous..... C. incana.
- 1a. Calyx only 5-dentate; leaf-blades lanceolate or linear-lanceolate; ovary pubescent.
2. Leaf-blades linear-lanceolate, marginally entire or sparsely serrate; lower corolla-lip fringes 2- or 3-fid,..... C. mongholica.
- 2a. Leaf-blades lanceolate, sparsely incised-serrate; lower corolla-lip fringes simple..... C. tangutica.

CARYOPTERIS CHOSENENSIS Mold., Phytologia 51: 302. 1982.

Synonymy: Clerodendron divaricatum Sieb. & Zucc., Abhandl. Akad. Wiss. Muench. Math.-Phys. 4 (3) [Fl. Jap. Fam. Nat. 2]: 154. 1846 [not Clerodendrum divaricatum Jack, 1820]. Caryopteris divaricata (Sieb. & Zucc.) Maxim., Bull. Acad. Imp. Sci. St.-Pétersb. 23: 390. 1877. Caryopteris divaricata S. Z. apud Maxim., Bull. Acad. Imp. Sci. St.-Pétersb. 23: 390. 1877. Cariopteris divaricata Maxim. apud Franch., Nouv. Arch. Mus. Hist. Nat. Paris, ser. 2, 6: 111. 1883. Caryopteris divaricata Maxim. apud Forbes & Hemsl., Journ. Linn. Soc. Lond. Bot. 26: 263. 1890. Microtaena ? coreana Léveillé, Feddes Repert. Spec. Nov. 9: 223. 1911. Caryopters divaricata (Sieb. & Zucc.) Maxim. ex P'ei, Mem. Sci. Soc. China 1 (3): 179, sphalm. 1932. Caryopteris coreana (Léveillé) Honda, Siebold-Kenkyu 579. 1938. Caryopteris coreana Honda ex Mold., Fifth Summ. 1: 422. in syn. 1971.

Bibliography: Sieb. & Zucc., Abhandl. Akad. Wiss. Muench. Math.-

Phys. 4 (3) [Fl. Jap. Fam. Nat. 2]: 154. 1846; Miq., Ann. Mus. Bot. Lugd.-Bat. 2: 99. 1865; Miq., Prol. Fl. Jap. 31. 1865; Maxim., Bull. Acad. Imp. Sci. St.-Petersb. 31: 87. 1866; Maxim., Mém. Biol. Acad. Imp. Sci. St.-Petersb. 12: 522. 1866; Franch & Savat., Enum. Pl. Jap. 1: 360. 1875; Iinuma, Somoku Dzusetsu, ed. 1, 11: pl. 38. 1875; Maxim., Bull. Acad. Imp. Sci. St.-Petersb. 23 [Diagn. Pl. Nov. Asiat. Dec. 1]: 389 & 390. 1877; Maxim., Mém. Biol. Acad. Imp. Sci. St.-Petersb. 9: 829 & 830. 1877; Maxim., Bull. Soc. Nat. Mosc. 54: 41. 1879; Franch., Nouv. Arch. Mus. Hist. Nat. Paris, ser. 2, 6: 111. 1883; Franch., Pl. David., imp. 1, 1: 231. 1884; Forbes & Hemsl., Journ. Linn. Soc. Lond. Bot. 26 [Ind. Fl. Sin. 2]: 263. 1890; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 447. 1893; Briq. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 4 (3a): 178. 1895; Diels, Fl. Cent.-China 550. 1902; Schelle in Beissner, Schelle, & Zabel, Handb. Launholz-Benen. 426. 1903; Lévillé, Feddes Repert. Spec. Nov. 9: 223. 1911; Nakai, Fl. Korea 2: 137. 1911; C. K. Schneid., Illust. Handb. Laubholzk. 2: 596. 1911; Makino, Somoku Dzusetsu [Iconogr. Pl. Nipp.], ed. 2, 11: pl. 38. 1912; Matsum., Ind. Pl. Jap. 2 (2): 530—531. 1912; Diels, Notes Roy. Bot. Gard. Edinb. 7: 347. 1913; Makino, Somoku Dzusetsu [Iconogr. Pl. Nipp.], ed. 3, 11: pl. 38. 1917; Nakai, Bot. Mag. Tokyo 35: 205. 1921; Chung, Mem. Sci. Soc. China 1 (1): 228. 1924; Makino, Illust. Fl. Jap. [216]. 1924; Stapf, Ind. Lond. 2: 82 & 238. 1930; P'ei, Mem. Sci. Soc. China 1 (3): 163, 164, & 178—180. 1932; Makino, Gensyoku Yagai-shokubutu [Nature-Col. Wild Pl.] 3: 201. 1933; Terasaki, Nippon Shokubutsu Zufu [Jap. Bot. Illust. Album] fig. 1455. 1933; Tu, Chinese Bot. Dict., abrdgd. ed., 1389. 1933; Crevost & Pételot, Bull. Econ. Indo-chine 37: 1296. 1934; Hand.-Mazz., Act. Hort. Gotob. 9: 69. 1934; Junell, Symb. Bot. Upsal. 1 (4): 115, 116, 118—120, & 131, fig. 182. 1934; Hara, Bot. Mag. Tokyo 51: 52. 1937; Dahlgren, Svensk Bot. Ridsk. 32: 231. 1938; Honda, Siebold-Kenkyu 579. 1938; Makino, Illust. Fl. Nipp. 185, fig. 553. 1940; Terasaki, Nippon Shokubutsu Zufu [Jap. Bot. Illust. Album], ed. 2, fig. 553. 1940; Worsdell, Ind. Lond. Suppl. 1: 190. 1941; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 56, 58, 71, & 87. 1942; Erdtman, Svensk Bot. Tidsk. 39: 282—284, fig. 6. 1945; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 447. 1946; Mold., Alph. List Inv. Names Suppl. 1: 4. 1947; Hara, Enum. Sperm. Jap., imp. 1, 1: 186. 1948; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 131, 134, 157, & 178. 1949; Bean in Chittenden, Roy. Hort. Soc. Dict. Gard. 1: 405. 1956; Ikuse, Pollen Grains Jap. 128. 1956; Iljin, Acad. Sci. Bot. Inst. Dept. Repr. Mat. Hist. Fl. Veg. USSR. 3: 216. 1958; Hara, Outline Phytogeogr. Jap. 7. 1959; Hay, Gard. Chron. 145: 411. 1959; Mold., Résumé 168, 171, 172, 214, 249, 250, 262, 320, & 445. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 447. 1960; Hocking, Excerpt. Bot. A.4: 592. 1962; Wu, Act. Phytotax. Sin. 10: 56. 1965; Mold., Résumé Suppl. 12: 7 (1965) and 13: 5. 1966; Ohwi, Fl. Jap. 766. 1965; Hyland, U. S. Dept. Agr. Pl. Invent. 172: 108 & 118. 1968; El-Gazzar & Wats., New Phytol. 69: 483 & 485. 1970; Franch., Pl. David., imp. 2, 1: 231. 1970; Mold., Fifth Summ. 1:

287, 307—309, 356, 422, 423, & 443 (1971) and 2: 572 & 856. 1971; Hara, Enum. Sperm. Jap., imp. 2, 1: 186. 1972; Farnsworth, Pharmacog. Titles 8 (7): iii & 564. 1973; Hosozawa & al., Phytochem. 12: 1833—1834. 1973; Anon., Biol. Abstr. 57 (5): B.A.S.I.C. E.45. 1974; El-Gazzar, Egypt. Journ. Bot. 17: 75 & 78. 1974; Farnsworth, Pharmacog. Titles 9 (3): v (1974) and 9 (8): ii. 1974; "N. F. G.", Biol. Abstr. 57: 2962. 1974; Hosozawa & al., Phytochem. 13: 1019—1020. 1974; Hosozawa & al., Tetrahed. Let. 43: 3753—3754. 1974; Asher, Guide Bot. Period. 1: 608. 1975; Kooiman, Act. Bot. Neerl. 24: 464. 1975; Mierow & Shrestha, Himal. Fls. 93. 1978; Lauener, Notes Roy. Bot. Gard. Edinb. 38: 483. 1980; Mold., Phytol. Mem. 2: 276, 299, 300, 346, & 524. 1980; Mold., Phytologia 50: 258 (1982) and 51: 302. 1982.

Illustrations: Iinuma, Somoku Dzusetsu, ed. 1, 11: pl. 38. 1875; Makino, Somoku Dzusetsu [Iconogr. Pl. Nipp.], ed. 2, 11: pl. 38 (1912) and ed. 3, 11: pl. 38. 1917; Makino, Illust. Fl. Jap. [216]. 1924; Makino, Gensyoku Yagai-shokubutu [Nature-Col. Wild Pl.] 3: 201. 1933; Terasaki, Nippon Shokubutsu Zufu [Jap. Bot. Illust. Album] fig. 1455. 1933; Tu, Chinese Bot. Dict., abrdgd. ed., 1389. 1933; Junell, Symb. Bot. Upsal. 1 (4): 119, fig. 182. 1934; Makino, Illust. Fl. Nipp. 185, fig. 553. 1940; Terasaki, Nippon Shokubutsu Zufu [Jap. Bot. Illust. Album], ed. 2, fig. 553. 1940; Erdtman, Svensk Bot. Tidsk. 39: 282, fig. 6. 1945; Hay, Gard. Chron. 145: 411. 1959; Mierow & Shrestha, Himal. Fls. 93 (in color). 1978.

An ill-scented, green, glabrous or thinly pubescent, hardy, perennial herb or subshrub, 0.4—1.8 m. tall; stems tetragonal, green, branched, glabrous; branches divaricate, tetragonal, glabrous or sparsely pubescent; leaves decussate-opposite, strongly scented, the lower ones petiolate, the upper ones sessile; lower petioles to 2 cm. long, upper ones to 3 mm. long, pubescent, sometimes alate; leaf-blades membranous, green, ovate to broadly ovate (lower ones) of lanceolate to oblong (upper ones), [2.5—] 4—15 cm. long, 4—8 cm. wide, apically short-acuminate, marginally coarsely and obtusely or acutely dentate or serrate, basally shallowly cordate to rounded (lower ones) or attenuate (upper ones), sparsely pubescent on both surfaces; secondaries usually 5 per side; inflorescence very laxly paniculate, the cymes axillary in the uppermost leaf-axils or subterminal, loosely few-flowered or many-flowered, divaricate, dichotomous or usually twice trifid and 3—7-flowered, bracteate; peduncles long, slender, about 5.5 cm. long, sparsely pubescent or often scattered glandular-pilose; pedicels filiform, 6—8 mm. long, often scattered glandular-pilose; calyx obconic or cupuliform, 2—3 mm. long, externally sparsely pubescent, internally glabrous, the rim subtruncate or very shortly and minutely 5-dentate, the teeth very small, deltoid, about 0.6 mm. long, apically acute; corolla blue-purple or light-blue to "blue-white", about 1.5 cm. long, externally pubescent, the tube broadly or narrowly cylindric, 8—13 mm. long, slightly exserted from the calyx, internally sparsely pubescent, the limb oblique, the lobes marginally entire.

[to be continued]



Moldenke, Harold N. 1983. "Notes on the genus *Caryopteris* (Verbenaceae)." *Phytologia* 52(6), 415–437.

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