escencias paucifloras. Fruto apiculado, verde cuando inmaturo, amarillo verdoso cuando maduro." He reduces C. poeppigii f. anomalum Moldenke to the synonymy of this taxon and this is probably correct. He found it to be "muy abundante también a lo largo de la carretera entre Punta de Piedra y Santo Domingo, Edos. Barinas y Táchira". His spelling of the form epithet as credited to me is erroneous (the generic name is neuter, not feminine) and his citation of the publication of it as being in volume "9" of Phytologia is also incorrect. Concerning it he says (1975): "He examinado la población del Llano venezolano y he encontrado que la llamada forma anomala aparece en los árboles en el lado por donde reciben el viento! Simplemente las flores expuestas al viento del Llano, que en épocas es muy fuerte, se alargan y se aplanan hasta el punto de hacerlas aparecer diferentes a las del otro lado, que conservan la forma típica.

"Por lo expuesto rechazo esta forma y c eo que no tenga validez, ya que sería una inconsecuencia colocar la mitad un árbol en un taxon y la mitad restante en otro. Hay ejemplares de herbario en flor muy similares a C. macrophyllum....Aun el mismo Dr. Moldenke a veces ha dudado sobre su interpretación y yo llego a creer que bajo C. poeppigii f. anomala se han colocado especímenes de otras especies, como C. macrophyllum y C. venezuelense.

"Si estudiamos cuidadosamente la estrictura de los cálices, la nervadura, y el peculiar desprendimiento de los esterigmas de las hojas viegas, es a este último taxon (C. venezuelense) al que corresponde el tipo de C. poeppigii f. anomala, y allí lo coloco sinonímia."

He also reviews in detail the checkered history of López-Palacios 2924, 3156, & 3283. He finally compared these with the type of C. venezuelense in the Gray Herbarium (which he found to bear two labels, one asserting that it was collected at Colonia Tovar, and the other that it was collected "Cetus: Caracas & La Guaira"). He concludes that "Sin embargo, saqué en claro que el material por mí colectado era sin lugar a dudas coespecífico con el de Fendler, y también algún otro material que tanto el Dr. Moldenke como yo habíamos considerado que pertenecía a C. poeppigii f. anomala, a saber: Bernardi 2142, tipo de la forma acabada de citar (determinación del Dr. Moldenke) y Ruiz-Terán 1177 (determinación mía), que igualmente concuerdan con el tipo de C. venezuelense."

The vernacular name, "oreja de burro", has been recorded for C. venezuelense. Material has been misidentified and distributed in some herbaria as C. dryanderae Moldenke.

Additional citations: VENEZUELA: Apure: López-Palacios 2928 (Ac, Ld). Mérida: López-Palacios & Bautista 3283 (Ld). Táchira: López-Palacios 3156 (Ld, Z).

CITHAREXYLUM VIRIDE Moldenke

Additional bibliography: Moldenke, Phytologia 7: 70—71. 1959;

Moldenke, Résumé Suppl. 16: 3 & 4. 1968; Gibson, Fieldiana Bot. 24 (9): 189. 1970; Sáez T. & Nasser C., Revist. Biol. Trop. 18: 136. 1971; Farnsworth, Pharmacog. Titles 6 (9): iii. 1971; Moldenke, Fifth Summ. 1: 79, 87, & 90 (1971) and 2: 861. 1971; Farnsworth, Pharmacog. Titles 6, Cum. Gen. Ind. [31]. 1973; Moldenke in Woodson & Schery, Ann. Mo. Bot. Gard. 60: 93, 99--100, & 145. 1973; Moldenke, Phytologia 31: 346--348, 454, & 459 (1975) and 32: 70. 1975.

Recent collectors describe this species as an arborescent shrub or tree, 2.3--8 m. tall, the trunk 3--6 inches in diameter, the crown full and spreading, the leaves firmly membranous, rich-green above, paler-green beneath, the flowers sweet-scented, the calyx green, the corolla-lobes spreading, the fruiting-pedicels white, the fruiting-calyx light-green, and the fruit orange or bright-orange. The corolla is uniformly described as white (e.g., Cooper III.384, Skutch 4315, Steyermark 41825). Jiménez M. says of the fruit: "anaranjados primero, lurgo parde oscuro".

Collectors have encountered the plant in cacao plantations, clearings, forests, embankments on streamsides, the forested edges of creeks in tropical rainforests and moist secondary forests, in very moist habitats partly in the shade along roadsides, and "infrequent" in secondgrowth, at altitudes of sealevel to 1500 meters, flowering from December to April and in June, and fruiting in February, July, August, and December. The fruits are referred to as "berries" by Woodson & Schery, by actually are drupes. Skutch 4315 in the Missouri Botanical Garden herbarium exhibits one binary leaf.

The species is certainly very closely related to C. cooperi Standl. The two taxa may be distinguished as follows:

Leaf-blades subglabrate, pulverulent, or merely puberulent on the lamina beneath, more or less distichously short-pubescent only along the midrib . . . . . C. viride

Leaf-blades rather densely velutinous over the entire lower surface . . . . . C. cooperi

Gibson (1970) comments that "A plant of Costa Rica and Panama, C. viride Moldenke, is very much like C. hexangulare and may prove synonymous with it. The type of C. viride, Cooper & Slater 157, from Panama, is a fruiting specimen, and the species was described without flowering material. Later collections of flowering material identified by Moldenke as C. viride differ from C. hexangulare only in their slightly broader calyces. Although the leaves of C. viride are described as densely puberulent beneath, leaves of the type specimens are essentially glabrous beneath and only very minutely pubescent along the lower part of the costae and in the axils of some veins."

Material of C. viride has been misidentified and distributed in some herbaria (and even cited by me in previous publications) as C. caudatum L., C. cooperi Standl., C. hirtellum Standl., and C. integerrimum (Kuntze) Moldenke. On the other hand, the Molina R., Williams, Burger, & Wallenta 17478, distributed as C. viride,

is actually C. hexangulare Greenm.

Additional citations: GUATEMALA: Izabal: J. A. Steyermark 41825 (N). COSTA RICA: Guanacaste: Brenes 12322 (N); Jiménez M. 1165 (W--2751901). San José: Molina R., Burger, Jiménez, & Wallenta 18045 (N); Skutch 4315 (E--1157067, N). PANAMA: Bocas del Toro: G. P. Cooper 384 (F--579254, F--579523, K, N, N--photo, W--1521573, W--1521580, Y--11975Y, Z--photo). Chiriquí: P. H. Allen 3661 (E--1572261, N, N); Cooper & Slater 201 (N); Dwyer & Hayden 7762 (E--1926253); P. White 223 (E--1190153); Woodson & Schery 755 (E--1204855, N). Province undetermined: Stork 42 [Western Panama] (Mi, W--1166830).

CITHAREXYLUM WEBERBAUERI Hayek

Additional synonymy: Citharexylum webercaueri Hayek apud Hocking, Excerpt. Bot. A.11: 504, sphalm. 1967.

Additional & emended bibliography: Prain, Ind. Kew. Suppl. 4, imp. 1, 49 (1913) and imp. 2, 49. 1958; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 668, 671, & 680--681. 1960; Moldenke, Phytologia 13: 317. 1966; Hocking, Excerpt. Bot. A.11: 504. 1967; Moldenke, Biol. Abstr. 49: 4199. 1968; Moldenke, Résumé Suppl. 16: 19. 1968; Moldenke, Fifth Summ. 1: 140, 431, & 437 (1971) and 2: 861. 1971; Moldenke, Phytologia 31: 338. 1975.

Macbride (1960) cites only the type collection, Weberbauer 3731, from Huánuco, Peru, and comments that this plant is "A meter tall, resembling C. flexuosum but the leaves not rounded, the racemes few-flowered, the blossoms small.....; this as [=and] C. andinum Mold. may be genetically distinct but the problem is certainly open to question."

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ADDITIONAL NOTES ON THE GENUS PITRAEA. III

Harold N. Moldenke

PITRAEA Turcz., Bull. Soc. Imp. Nat. Mosc. 35 (2): 328--329. 1862.

Synonymy: Castelia Cav., Anal. Cienc. Nat. Madrid 3: 134, pl. 30, Icon. & Descr. 6: 60, pl. 583. 1801 [nom. rejic.; not Castelia Liebm., 1853, nor Castela Turp., 1806, nor Castellia Tin., 1817]. Cartelia Cav. apud C. Gay, Hist. Fis. Chile Bot. 5: 7, in syn. sphalm. 1849. Phelloderma Miers, Trans. Linn. Soc. Lond. Bot. 27: 100. 1870. Priva Juss. ex Miers, Trans. Linn. Soc. Lond. Bot. 27: 100, in syn. 1870 [not Priva Adans., 1763]. Bouchea Gay ex Miers, Trans. Linn. Soc. Lond. Bot. 27: 100, in syn. 1870 [not Bouchea Cham., 1832]. Bastelia Cav. ex Moldenke, Alph. List Cit. 4: 1088, sphalm. 1949.

Additional & emended bibliography: Pers., Sp. Pl. 3: 349. 1819; Spach, Hist. Nat. Veg. Phan. 9: 227. 1840; Walp., Repert. Bot. Syst. 4: 36. 1845; C. Gay, Hist. Fis. Chile Bot. 5: 7 & 25—27, fig. 1 (1849) and Atlas pl. 55. 1854; Hieron., Bol. Acad. Nat. Córdoba 4: 407. 1881; Voss in Vilm., Blumengärt. 1: 825. 1895; Rehnelt, Pareys Blumengärt., ed. 1, 277. 1932; Wangerin in Just, Bot. Jahresber. 54 (1): 1170 [366]. 1932; Parsa, Fl. Iran 4 (1): 534. 1949; Lanjouw, Internat. Code Bot. Nom., ed. 8, 248 & 282. 1956; Anon., Taxon 7: 119. 1958; Anon., U. S. Dept. Agr. Bot. Subj. Index 15: 14358. 1958; Bullock, Taxon 7: 10. 1958; Rickett & Stafleu, Taxon 8: 301. 1959; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 611 & 661—662. 1960; Caro, Kurtziana 1: 271—282. 1961; Burkart, Excerpt. Bot. A.5: 467. 1962; Hocking, Excerpt. Bot. A.5: 42 (1962) and A.6: 533. 1963; Melchior in Engl., Syllab. Pfl., ed. 12, 2: 437. 1964; F. A. Barkley, List Ord. Fam. Anthoph. 76 & 150. 1965; Chopra, Badhwa, & Ghosh, Poison. Pl. India 2: 694. 1965; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 7, 207, 862, 885, & 921. 1966; Lanjouw, Internat. Code Bot. Nom., ed. 10, 305 & 358. 1966; Moldenke, Phytologia 15: 41—42 (1967) and 16: 506. 1968; Moldenke, Biol. Abstr. 49: 1325 (1968) and 49 (3): S. 29 & S.73. 1968; Hocking, Excerpt. Bot. A.13: 569. 1968; Moldenke, Résumé Suppl. 16: 19. 1968; Anon., Torr. Bot. Club Ind. Am. Bot. Lit. 3: 305 & 308. 1969; Soukup, Raymondiana 3: 26 & 45. 1970; G. Taylor, Ind. Kew. Suppl. 14: 105. 1970; Heusser, Pollen & Spores Chile 82. 1971; Moldenke, Fifth Summ. 1: 5, 139, 147, 181, 191, 195, 356, 396, 398, 399, 422, & 424 (1971) and 2: 600, 603, 612, 614, 681, 688, 703, 755, & 857. 1971; Stafleu, Internat. Code Bot. Nom., ed. 11, 325 & 381. 1972; Thanikaimoni, Inst. Franç. Pond. Trav. Sect. Scient. & Techn. 12 (1): 187 & 258. 1972; Airy Shaw in J. C. Willis, Dict. Flow. Pl., ed. 8, 213, 885, & 908. 1973; Altschul, Drugs & Foods 245. 1973; Moldenke, Phytologia 26: 501 (1973) and 28: 454 & 507. 1974; Troncoso, Darwiniana 18: 296, 301, 302, 304, 361—364, 408, & 411, fig. 19 & 20. 1974; Moldenke, Phytologia 31: 384, 385, 387, 391—394, 406, 411, & 412. 1975.

The two previously issued numbers in this series of notes on this genus were entitled "Additional notes on the genus Castelia" (I in Phytologia 7: 368. 1961; II in Phytologia 15: 41—42. 1967). It is most unfortunate, in my opinion, that the International Code of Botanical Nomenclature (1956, 1972) has now legislated against the use of Castelia Cav. (1801) in favor of Pitraea Turcz. (1862), a name which will unquestionable very often be confused with Petrea Houst. which is often written as "Petraea". Troncoso (1974) comments in this connection: "Esta género fue originariamente descrito por Cavanilles, 1801 bajo el epíteto Castelia, nombre considerado como Nom. rejic. (cfr. Código Intern. Nom. Bot.: 249. 1956) por constituir un caso de homonimia con respecto a Castela Turpin (ambos nombres dados en homenaje a J. de Dios Castel)." Juan de Dios Castel was a Spanish companion of Loefling on his trip up the Orinoco River. Castela Turp., however, was not published until 1806, so if these names are to be considered homonyms, it is Turpin's which ought to be rejected! Castela Turp.

was published in Ann. Mus. Hist. Nat. Paris 7: 78 for a genus in the Simaroubaceae, the conserved type of which is C. depressa Turp.

It should be noted here that the Walpers (1845) reference cited in the bibliography above is often dated "1846", but pages 1—192 of this volume of the work were actually issued in 1845.

Troncoso (1974) also comments that "No he podido observar la capa de albumen señalado por Moldenke y Caro en las semillas de Pitraea. En semillas perfectamente maduras se diferencia netamente el embrión y el tegumento blando e incoloro que lo rodea, el cual parecería conservar una delgadísima capa de albumen residual aplicado al tegmen y formando parte del mismo. Este albumen residual que parece ser común en muchas familias (Belzung: 927. 1900), no puede tenerse en cuenta para señalarlo como carácter albuminoso de la semilla."

Macbride (1960) says that the genus "Differs from Priva especially in the thick hard merely rugulose pyrenes (Briquet) and in the (in part) verticillate flowers, tuberous roots (Moldenke) — Kobuski, following Briquet and Rusby, included it in Priva, which classification indicates its closest living affinity, but in floristic work it conveniently may be considered a separate entity; moreover, Moldenke listed (after Miers and others) 12 contrasting characters, notably the calyx not globosely dilated in fruit, corolla-tube veins straight, staminode present, nutlets joined in fruit."

Airy Shaw (1966) regards Pitraea as the valid name for the genus, but regards Phelloderma as a synonym of Priva Adans., a disposition which is entirely incorrect since Phelloderma is based on the same taxon as is Pitraea. In Phytologia 6: 234 (1958) the Greek words were inadvertently omitted in the derivation of the name Phelloderma. They are φελλος and δερμα.

PITRAEA CUNEATO-OVATA (Cav.) Caro, Kurtziana 1: 274. 1961.

Additional & emended synonymy: Castelia cuneato-ovata Cav., Anal. Cienc. Nat. Madrid 3: 134—135, pl. 30 & Icon. & Descr. Pl. 6: 60, pl. 583. 1801. Priva laevis A. L. Juss., Ann. Mus. Hist. Nat. Paris 7: 70. 1806. Verbena tuberosa R. Grah., N. Phil. Journ. 29: 174. 1840. Priva? orchioides Walp., Repert. Bot. Syst. 4: 36. 1845. Verbena lobelioides Grah. ex Walp., Repert. Bot. Syst. 4: 33, in syn. 1845. Verbena orchioides Walp., Repert. Bot. Syst. 4: 36, in syn. 1845. Verbena lobelioides Hort. ex Schau. in A. DC., Prodr. 11: 533. 1847. Bouchea copiapensis C. Gay, Hist. Fis. Chile Bot. 5: 26 & Atlas 1: pl. 55. 1849. Cartelia cuneato-ovata Cav. apud C. Gay, Hist. Fis. Chile Bot. 5: 7, sphalm. 1849. Pitraea chilensis Turcz., Bull. Soc. Imp. Nat. Mosc. 35 (2): 329. 1862. Bouchea copiapina Gay ex R. A. Phil., Anal. Univ. Chil. 35: 193. 1870. Phelloderma cuneato-ovata (Cav.) Miers, Trans. Linn. Soc. Lond. Bot. 27: 100.

1870. Castilleja cuneato ovata Cav. apud F. Phil., Cat. Pl. Vasc. Chil. 217, sphalm. 1881. Phelloderma cuneato-ovata Miers ex Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 493. 1894. Priva orchidoides Walp. ex Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 628, in syn. 1894. Castelia cuneo-ovata Cav. ex Voss in Vilm., Blumengärt. 1: 825, in syn. 1895. Verbena orchioides Hort. ex Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 1179. 1895. Verbena orchiodes Walp. ex Voss in Vilm., Blumengärt. 1: 825, in syn. 1895. Priva cuneato-ovata (Cav.) Rusby, Bull. Torrey Bot. Club 27: 80. 1900. Priva cuneato-ovatis (Cav.) Rusby apud Grenz., Ann. Mo. Bot. Gard. 13: 74. 1926. Priva cuneato-obovata (Cav.) Rusby apud Wangerin in Just, Bot. Jahresber. 54 (1): 1170, sphalm. 1932. Bouchea copiapensis Clos.-Phil. ex Moldenke, Prelim. Alph. List Invalid Names 7, in syn. 1940. Bastelia cuneato-ovata Cav. ex Moldenke, Alph. List Cit. 4: 1088, sphalm. 1949. Castelia laevis Melchior in Engl., Syllab. Pflanzenfam., ed. 12, 2: 437. 1964.

Additional & emended bibliography: Pers., Sp. Pl. 3: 349. 1819; Walp., Repert. Bot. Syst. 4: 36. 1845; C. Gay, Hist. Fis. Chile 5: 25—27 (1849) and Atlas pl. 55. 1854; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 493. 1894; Voss in Vilm., Blumengärt. 1: 825. 1895; C. Gay, Hist. Fis. Chil. Bot. 5: 7 & 25—26, fig. 1. 1849; Reiche & Phil., Fl. Chil. 5: 304—305. 1910; Sturtevant, Notes Edible Pl., imp. 1, 454. 1919; Grenz., Ann. Mo. Bot. Gard. 13: 74 & 88. 1926; Wangerin in Just, Bot. Jahresber. 65 (1): 1170 [366]. 1932; Metcalfe & Chalk, Anat. Dicot. 1035 & 1040. 1950; Darlington & Wylie, Chrom. Atlas 324. 1956; Lanjouw, Internat. Code Bot. Nom., ed. 8, 249. 1956; Anon., Taxon 7: 119. 1958; Bullock, Taxon 7: 10. 1958; R. C. Foster, Contrib. Gray Herb. 184: 169. 1958; Rickett & Stafleu, Taxon 8: 301. 1959; J. F. Macbr., Field Mus. Publ. Bot. 13 (5): 661—662. 1960; Caro, Kurtziana 1: 271—282. 1961; Burkart, Excerpt. Bot. A.5: 467. 1962; Hocking, Excerpt. Bot. A.5: 42 (1962) and A.6: 533. 1963; Melchior in Engl., Syllab. Pflanzenfam., ed. 12, 2: 437. 1964; Lanjouw, Internat. Code Bot. Nom., ed. 10, 305. 1966; Hocking, Excerpt. Bot. A.13: 569. 1968; Bolkh., Grif, Matvej., & Zakhar., Chrom. Numb. Flow. Pl. 714. 1969; Anon., Biores. Index 6: 6422. 1970; Feldman & Garcia, Plant Dis. Rep. 54: 722—723. 1970; G. Taylor, Ind. Kew. Suppl. 14: 105. 1970; Heusser, Pollen & Spores Chile 62, pl. 59-671. 1971; Moldenke, Fifth Summ. 1: 139, 147, 181, 191, 195, 356, 396, 399, & 424 (1971) and 2: 600, 603, 614, 681, 688, 703, & 857. 1971; Hedrick, Sturtevant Notes Edible Pl., imp. 2, 454. 1972; F. Perry, Fls. World 305 & 318. 1972; Stafleu, Internat. Code Bot. Nom., ed. 11, 325. 1972; Altschul, Drugs & Foods 245. 1973; Rouleau, Taxon Index Vols. 1-20, part 1: 73. 1973; Troncoso, Darwiniana 18: 361—364 & 411, fig. 19 & 20. 1974; Moldenke, Phytologia 28: 454 (1974) and 31: 384, 385, 387, 391—394, 406, 411, & 412. 1975.

Additional illustrations: Caro, Kurtziana 1: fig. 1. 1961;